NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN CONSENT OF RAYTHEON CO.

REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR 01754		
A	UPGRADE TO CLASS A WITH CHANGE PER TDRR 18898 DR H. Wong CHK APPD		6-3-65

REQUIREMENTS:

1. DESCRIPTION:

   A. THIS MATERIAL IS AN EPOXY RESIN EQUIVALENT TO EMERSON & CUMING STYCAST 2850.

2. PROPERTIES: WHEN INGREDIENTS ARE MIXED AND CURED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, THIS MATERIAL SHALL EXHIBIT THE FOLLOWING PROPERTIES.

   A. THERMAL CONDUCTIVITY: 4.0 BTU/FT^2/HR/°F/IN. MINIMUM.

   B. SPECIFIC GRAVITY: 2.0 TO 2.5.

   C. IZOD IMPACT: 0.20 TO 0.25 FT.LB./IN. OF NOTCH.

   D. THERMAL EXPANSION COEFFICIENT: 35 X 10^{-6} INCH PER INCH PER °C, MAXIMUM.

   E. VOLUME RESISTIVITY AT 77°F: 10^{14} OHM-CM.

   F. DIELECTRIC CONSTANT 10^2 TO 10^{10} CYCLES: 4.7 MAXIMUM.

   G. DIELECTRIC STRENGTH: 400 VOLT/MIL MINIMUM.

   H. CURED COLOR: BLACK.

3. OPERATING TEMPERATURE: -55°F TO 285°F.

4. SHELF LIFE: 1 YEAR MINIMUM AT 77°F.

5. SUPPLIER SHALL CONFORM TO MIL-Q-9858.

6. QUANTITIES SHALL BE AS SPECIFIED ON PURCHASE ORDER.

7. PREPARATION FOR DELIVERY PER ND 1002215.

PROCURE ONLY FROM APPROVED SOURCES AS LISTED IN CONTRACTOR'S QUALIFIED VENDORS LIST.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN DATE 27 May 63
CHECKED 4 June 63
APPROVAL 6/19/63
APPROVAL 6/14/63
APPROVAL 6/13/63
NASA APPROVAL 6-26-63
MIT APPROVAL 26 Jun 63
MIT APPROVAL 6/25/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

EPOXY RESIN, THERMALLY CONDUCTIVE

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. -
SIZE C
NASA DRAWING NO. 1006904
SCALE NONE
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR 01754		
A	UPGRADE TO CLASS A WITH CHANGE PER TDRR 18898 DR H. Wong CHK APPD H. Maynard		6-3-65
B	REPLACED WITH CHANGE BY REV C PER TDRR 20594 DR H. Wong CHK B.V. English APPD H Maynard		

REQUIREMENTS:

1. DESCRIPTION:

   A. THIS MATERIAL IS AN EPOXY RESIN EQUIVALENT TO EMERSON & CUMING STYCAST 2850.

2. PROPERTIES: WHEN INGREDIENTS ARE MIXED AND CURED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, THIS MATERIAL SHALL EXHIBIT THE FOLLOWING PROPERTIES.

   A. THERMAL CONDUCTIVITY: 4.0 BTU/FT^2/HR/°F/IN. MINIMUM.

   B. SPECIFIC GRAVITY: 2.0 TO 2.5.

   C. IZOD IMPACT: 0.20 TO 0.25 FT.LB./IN. OF NOTCH.

   D. THERMAL EXPANSION COEFFICIENT: 15 X 10^{-6} INCH PER INCH PER °C, MAXIMUM.

   E. VOLUME RESISTIVITY AT 77°F: 10^{14} OHM-CM.

   F. DIELECTRIC CONSTANT 10^2 TO 10^{10} CYCLES: 4.7 MAXIMUM.

   G. DIELECTRIC STRENGTH: 400 VOLT/MIL MINIMUM.

   H. CURED COLOR: BLACK.

3. OPERATING TEMPERATURE: -55°F TO 285°F.

4. SHELF LIFE: 1 YEAR MINIMUM AT 77°F.

5. SUPPLIER SHALL CONFORM TO MIL-Q-9858.

6. QUANTITIES SHALL BE AS SPECIFIED ON PURCHASE ORDER.

7. PREPARATION FOR DELIVERY PER ND 1002215.

Ⓑ REPLACED WITH CHANGE BY REV C

PROCURE ONLY FROM APPROVED SOURCES AS LISTED IN CONTRACTOR'S QUALIFIED VENDORS LIST.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498

DRAWN DATE 27 May 63
CHECKED J. Ruggeri / H. Maynard 4 June 63
APPROVAL 6/19/63
APPROVAL 6/14/63
APPROVAL 6/13/63
NASA APPROVAL 6-26-63
MIT APPROVAL 26 June 63
MIT APPROVAL 6/25/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

EPOXY RESIN,
THERMALLY CONDUCTIVE
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.	SIZE	NASA DRAWING NO.
49956	C	1006904
SCALE NONE	WT	SHEET 1 OF 1

1006904 B

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR 01754		

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REQUIREMENTS:

1. DESCRIPTION:
   - A. THIS MATERIAL IS AN EPOXY RESIN EQUIVALENT TO EMERSON & CUMING STYCAST 2850.
2. PROPERTIES: WHEN INGREDIENTS ARE MIXED AND CURED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS, THIS MATERIAL SHALL EXHIBIT THE FOLLOWING PROPERTIES.
   - A. THERMAL CONDUCTIVITY: 4.0 BTU/FT^2/HR/°F/IN. MINIMUM.
   - B. SPECIFIC GRAVITY: 2.0 TO 2.5.
   - C. IZOD IMPACT: 0.20 TO 0.25 FT.LB./IN. OF NOTCH.
   - D. THERMAL EXPANSION COEFFICIENT: 15 X 10^{-6} INCH PER INCH PER °C, MAXIMUM.
   - E. VOLUME RESISTIVITY AT 77°F: 10^{14} OHM-CM.
   - F. DIELECTRIC CONSTANT 10^2 TO 10^{10} CYCLES: 4.7 MAXIMUM.
   - G. DIELECTRIC STRENGTH: 400 VOLT/MIL MINIMUM.

3. CURED COLOR: BLACK.

3. OPERATING TEMPERATURE: -55°F TO 285°F.

4. SHELF LIFE: 1 YEAR MINIMUM AT 77°F.

5. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

6. QUANTITIES SHALL BE AS SPECIFIED ON PURCHASE ORDER.

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01754 DATE 26 Jun 63

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498

DRAWN Ray Wheeler DATE 27 May 63
CHECKED J. Ruggeri / H. Maynard 4 JUNE '63
APPROVAL J. Murray 6/19/63
APPROVAL J. S. 6/14/63
APPROVAL E. Gotthard JP 6/13/63
NASA APPROVAL W. J. 6-26-63
MIT APPROVAL W. 26 Jun 63
MIT APPROVAL L. Geldman 6/25/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

EPOXY RESIN,
THERMALLY CONDUCTIVE
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006904
SCALE NONE
WT
SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1006904

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
	CLASS B RELEASE PER TDRR		
A	CLASS II CHANGE PER RD-R5581 DR S. Pifol CHK J. Ruggeri APPD A. Maynard	12/11/63	JJS
B	REVISION LETTER CHANGED PER TDRR 10465 DR S. T. Pifol CHK W. L. Bowrey APPD A. Maynard	7/8/64	MB

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01394 DATE 5/28/63

NOTES:

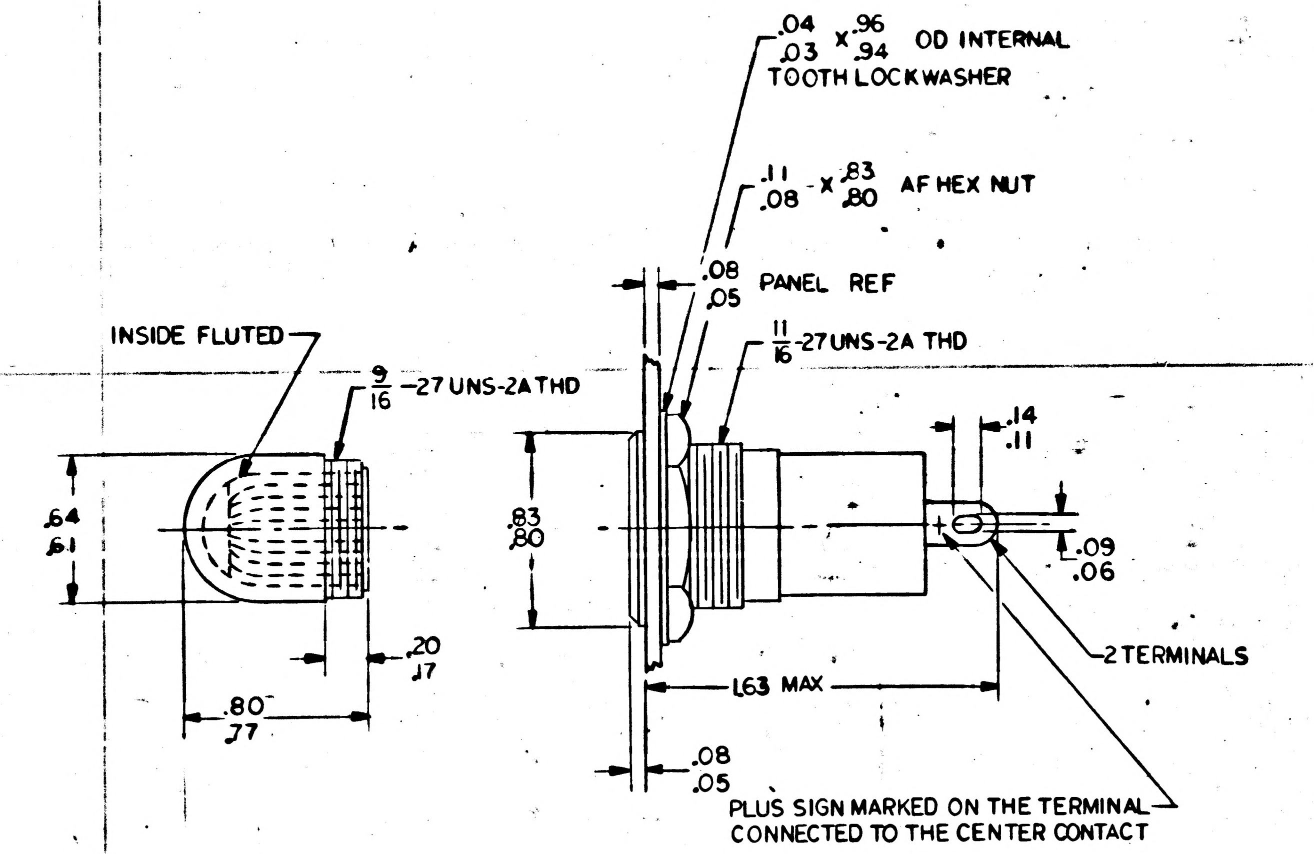
1. GENERAL REQUIREMENTS:
   - A. INDICATOR-LIGHT HOUSING: SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-L-3661, EXCEPT FOR PHYSICAL DIMENSIONS.
     - (1) DIELECTRIC WITHSTANDING VOLTAGE: 1150 VOLTS RMS.
   - B. LENS: SHALL BE FLUTED, STOVEPIPE, TRANSPARENT PLASTIC.
     - (1) COLOR: AS SPECIFIED IN TABLE I.
   - C. HOUSING IS INTENDED TO ACCOMMODATE NE51H, T-3-1/4 GLOW LAMPS (MIL-L-15098).
   - D. TEMPERATURE RANGE: -55° TO +71°C.
   - E. MARKING: INDICATOR LIGHT HOUSING SHALL BE MARKED PER MIL-STD-130 WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, RATED VOLTAGE AND RATED CURRENT OR WATTAGE, AND TYPE NUMBER.
     - (1) UNIT PACKAGES, INTERMEDIATE PACKAGES, AND EXTERIOR SHIPPING CONTAINERS SHALL BE MARKED WITH THE NASA DRAWING, DASH NUMBER AND REVISION LETTER.

2. CONSTRUCTION REQUIREMENTS:
   - A. TERMINALS: TWO (2) SOLDERABLE TERMINALS.
     - (1) STRENGTH: 5 POUNDS.
   - B. TORQUE: HOUSING TO LAMP HOLDER: 2 POUND-INCHES.
   - C. CONTACT SPRING PRESSURE: 50 TO 150 OUNCES.

3. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.

TABLE I

DASH NO.	LENS COLOR
-1	RED
-2	YELLOW(AMBER)
-3	WHITE(TRANSLUCENT)
-4	YELLOW
-5	CLEAR



PLUS SIGN MARKED ON THE TERMINAL CONNECTED TO THE CENTER CONTACT

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN DATE 27APR63
CHECKED 2 May 63
APPROVAL 14 May 63
APPROVAL C. Sperling 14 May 63
APPROVAL E. Murphy 14 May 63
NASA APPROVAL
MIT APPROVAL 5/28/63
MIT APPROVAL 29 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS.

INDICATOR, LIGHT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE C
NASA DRAWING NO. 1006905
SCALE NONE
WT
SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1006905

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
	CLASS B RELEASE PER TDRR		

NOTES:

1. GENERAL REQUIREMENTS:
   - A. INDICATOR-LIGHT HOUSING: SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-L-3661, EXCEPT FOR PHYSICAL DIMENSIONS.
     - (1) DIELECTRIC WITHSTANDING VOLTAGE: 1500 VOLTS RMS.
   - B. LENS: SHALL BE FLUTED, STOVEPIPE, TRANSPARENT PLASTIC.
     - (1) COLOR: AS SPECIFIED IN TABLE I.
   - C. HOUSING IS INTENDED TO ACCOMMODATE NE51H, T-3-1/4 GLOW LAMPS (MIL-L-15098).
   - D. TEMPERATURE RANGE: -55° TO +71°C.
   - E. MARKING: INDICATOR LIGHT HOUSING SHALL BE MARKED PER MIL-STD-130 WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, RATED VOLTAGE AND RATED CURRENT OR WATTAGE, AND TYPE NUMBER.
     - (1) UNIT PACKAGES, INTERMEDIATE PACKAGES, AND EXTERIOR SHIPPING CONTAINERS SHALL BE MARKED WITH THE NASA DRAWING, DASH NUMBER AND REVISION LETTER.

2. CONSTRUCTION REQUIREMENTS:
   - A. TERMINALS: TWO (2) SOLDERABLE TERMINALS.
     - (1) STRENGTH: 5 POUNDS.
   - B. TORQUE: HOUSING TO LAMP HOLDER: 2 POUND-INCHES.
   - C. CONTACT SPRING PRESSURE: 50 TO 150 OUNCES.

3. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01384 DATE 5/28/63

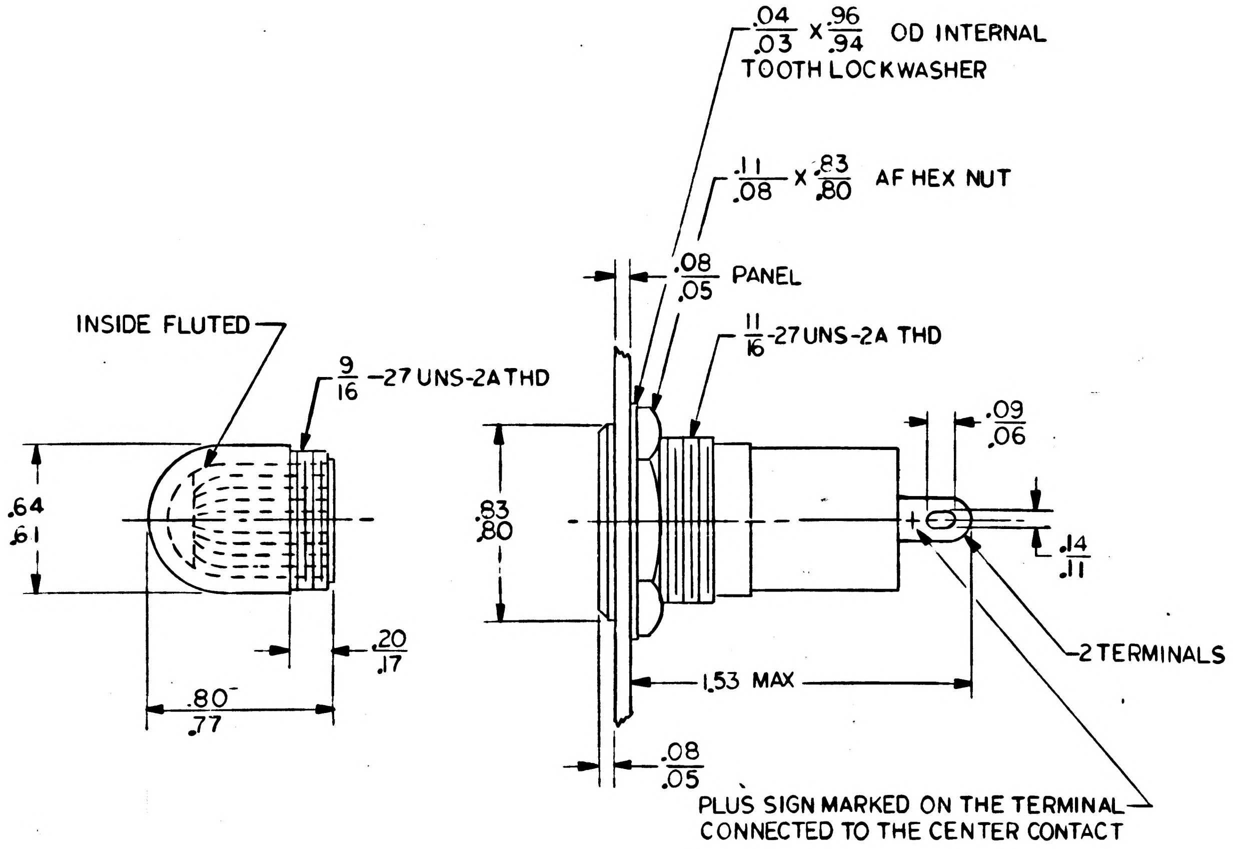
.04/.03 X .96/.94 OD INTERNAL TOOTH LOCKWASHER
.11/.08 X .83/.80 AF HEX NUT
.08/.05 PANEL
11/16-27UNS-2A THD
INSIDE FLUTED
9/16 -27 UNS-2A THD
.64/.61
.83/.80
.09/.06
.14/.11
2 TERMINALS
.20/.17
.80/.77
1.53 MAX
.08/.05
PLUS SIGN MARKED ON THE TERMINAL CONNECTED TO THE CENTER CONTACT

TABLE I

DASH NO.	LENS COLOR
-1	RED
-2	YELLOW(AMBER)
-3	WHITE(TRANSLUCENT)
-4	YELLOW
-5	CLEAR

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN DATE 27APR63
CHECKED 2MAY63
APPROVAL 14MAY63
APPROVAL C. Sperling 14MAY63
APPROVAL E. Murphy 19MAY63
NASA APPROVAL 5/29/63
MIT APPROVAL
MIT APPROVAL 29May63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INDICATOR, LIGHT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. ——
SIZE C
NASA DRAWING NO. 1006905
SCALE NONE
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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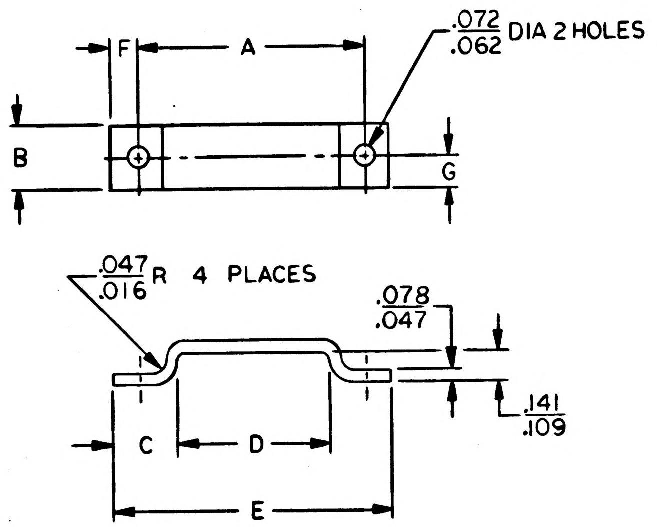
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		

NOTES:

1. GENERAL REQUIREMENTS:
   A. MARKING: CONTAINERS SHALL BE MARKED IN ACCORDANCE WITH MIL-STD-129 WITH THE MANUFACTURER'S NAME, IDENTIFYING NUMBER, NASA NUMBER, DASH NUMBER AND REVISION LETTER.
2. CONSTRUCTION REQUIREMENTS:
   A. MATERIAL: LAMINATED GLASS FIBER, EPOXY RESIN PER MIL-P-18177C, TYPE GEE.
3. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS AS CONTAINED IN ND 1015404, CLASS 3.

FOR INFORMATION ONLY
CLASS B RELEASE PER TDRR NO 00943 DATE 24 Apr 63

DASH NO.	A	B	C	D	E	F	G
1	.567 .557	.203 .172	.267 .234	.267 .234	.766 .734	.110 .078	.110 .078
2	.943 .933	.267 .234	.297 .266	.641 .609	1.203 1.172	.141 .109	.141 .109



PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTES

HEAT TREATMENT NONE

FINAL FINISH NONE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498

DRAWN R. Kane DATE 27 Mar 63
CHECKED 8 APR 63
APPROVAL C Sevley 12 Apr 63
APPROVAL 12 Apr 63
APPROVAL 12 Apr 63
NASA APPROVAL 4/24/63
MIT APPROVAL E C Hall 24 April 63
MIT APPROVAL 24 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BRACKET, CABLE SUPPORT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006906
SCALE NONE
WT
SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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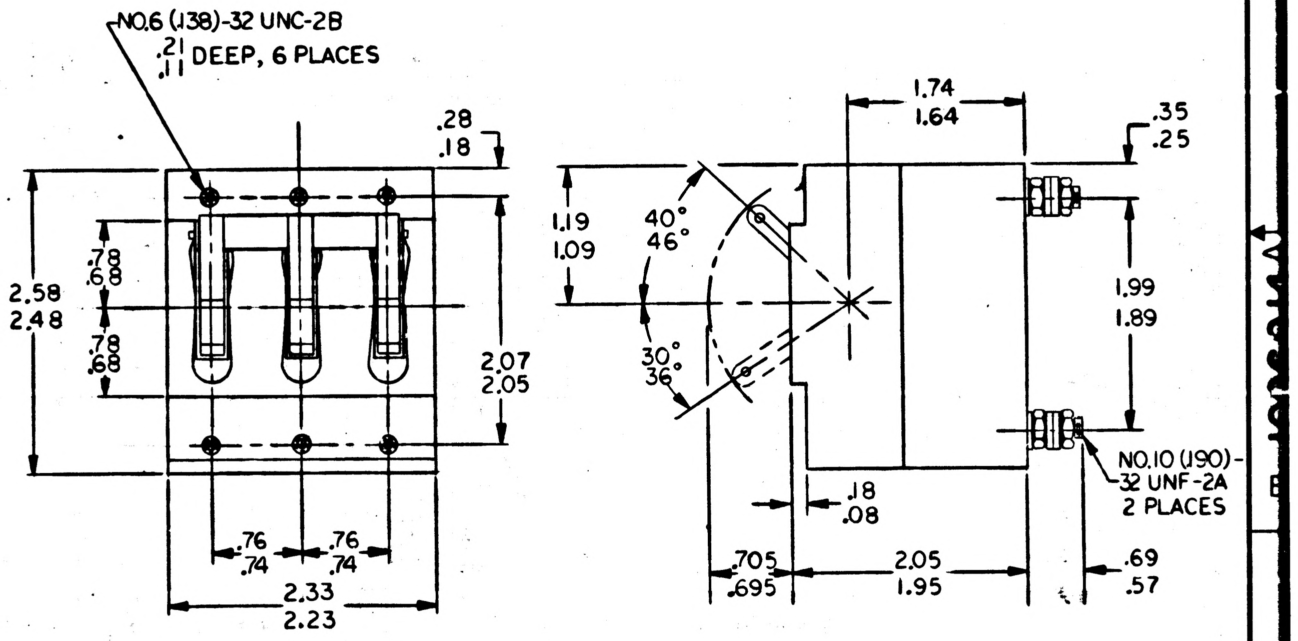
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		
A	CHANGED PER TDRR 02531 DR C. Crespi CHK J. Ruggeri APPD C Sperling		WK

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NOTES:

1. GENERAL REQUIREMENTS:
   A. THE CIRCUIT BREAKERS DELINEATED ON THIS DRAWING SHALL BE OF THE STANDARD MAGNETIC-HYDRAULIC CONSTRUCTION WHICH PROVIDES FOR A CONTROLLED DELAYED TRIPPING ACTION FOR OVERLOADS UP TO APPROXIMATELY 10 TIMES THE RATED CURRENT. FOR HIGH OVERLOADS OR SHORT CIRCUITS THE MAGNETIC FEATURE SHALL OVERRIDE AND CAUSE INSTANTANEOUS TRIPPING.
   B. THESE CIRCUIT BREAKERS SHALL HAVE A TRIP-FREE ACTION (CANNOT BE HELD CLOSED AGAINST A FAULT) FOR EACH POLE. THEY SHALL ALSO BE GANGED SUCH THAT A 1-POLE FAULT SHALL OPERATE AS A MULTI-POLE FAULT (THIS FEATURE IS KNOWN AS COMMON TRIP).
2. ELECTRICAL REQUIREMENTS:
   A. CURRENT RATING: SEE TABLE III & IV ON SHEET 2.
   B. VOLTAGE RATING: SEE TABLE III & IV ON SHEET 2.
   C. TIME DELAY CHARACTERISTICS: SEE TABLES I & II ON SHEET 2.
   D. CONTACT ARRANGEMENT: IN SERIES WITH THE COIL.
   E. DIELECTRIC STRENGTH: 1500 VRMS MINIMUM.
   F. INSULATION RESISTANCE: 100 MEGOHMS AT 100 VDC (MINIMUM).
3. CONSTRUCTION:
   A. CASE: MOLDED, EXPLOSION-PROOF, PLASTIC CASE WITH METAL SCREW THREAD INSERTS FOR MOUNTING. MATERIAL PER MIL-M-14, TYPE MFH.
   B. CONNECTIONS: THREADED BINDING POSTS.
4. QUALITY ASSURANCE:
   A. MANUFACTURER SHALL CONFORM TO ALL THE QUALITY ASSURANCE PROVISIONS OF ND 1002034, CLASS 3.
5. MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL; PART NUMBER; AND CURRENT, VOLTAGE AND FREQUENCY RATING. EACH UNIT AND SHIPPING CONTAINER SHALL ALSO CONTAIN THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.

FOR INFORMATION ONLY
CLASS B RELEASE PER TDRR NO. 00943 DATE 24 Apr 63



A	A
-	-
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN R. Kane DATE 6 Apr. 63 12 APR 63
CHECKED [illegible] / D. M. Sleeper
APPROVAL C Sperling 18 Apr 63
APPROVAL [illegible] 18 Apr 63
APPROVAL [illegible]
NASA APPROVAL [illegible] 4/24/63
[illegible] 24 Apr 63
MIT APPROVAL E C Hall 24 April 63
MIT APPROVAL W [illegible] 24 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CIRCUIT BREAKER ASSEMBLY
THREE POLE, TIME DELAY
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. SIZE C NASA DRAWING NO. 1006914
SCALE NONE WT SHEET 1 OF 2

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
A	CHANGED PER TDRR 102531 DR CHK APPD C Sperling		WK

TABLE I

TIME LAPSE TO TRIP / PERCENT RATED LOAD	60 CPS				DC			
	CURVE 4		CURVE 5		CURVE 4		CURVE 5	
	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC
UP TO 100%	MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP	
MAY TRIP 101-125%								
125	15	70	1.0	6.0	12	50	.75	3.0
150	7.0	25	.60	2.5	6.0	.21 ←	.39	1.4
200	3.0	9.45	.25	.84	2.5	8.0	.155	.55
300	1.15	3.6	.09	.30	.73	2.4	.067	.22
400	.56	1.8	.052	.156	.36	1.2	.04	.13
500	.30	1.0	.033	.10	.215	.66	.025	08
600	.19	.60	.02	.07	.155	.50	.016	.05
700	.094	.30	.014	.05	.089	.30	.012	.04
800	.04	.13	.012	.043	.011	.06	.011	.035
900	.012	.06	.012	.043	.01^{+}	.03	.011	.03
1000	.01^{+}	.03	.010^{+}	.043	.01^{+}	.03	.011	.03
OVER 1000	.01^{+}	.03	.010^{+}	.03	.01^{+}	.03	.010^{+}	.03

TABLE II

TIME LAPSE TO TRIP / PERCENT RATED LOAD	400 CPS					
	CURVE 14		CURVE 15		CURVE 16	
	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC
UP TO 100%	MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP	
MAY TRIP 101-150%						
150	60	420	7.0	70	.60	4.0
200	22	80	2.2	8.0	.20	.60
300	8.0	24	.80	2.4	.07	.21
400	4.0	12	.40	1.25	.035	.12
500	2.2	7.5	.25	.80	.025	.08
550	1.3	4.0	.20	.60	.020	.06
600	.40	1.4	.15	.45	.015	.05
650	.03	.10	.03	.10	.012	.04
700	.01^{+}	.04	.01^{+}	.04	.010^{+}	.037
800	.01^{+}	.032	.01^{+}	.032	.010^{+}	.032
900	.01^{+}	.031	.01^{+}	.031	.010^{+}	.031
OVER 1000	.01^{+}	.03	.01^{+}	.03	.010^{+}	.03

TABLE III

DASH NO. / AMP CURRENT RATING	DASH NUMBERS FOR VARIOUS TIME DELAYS AND FREQUENC						
	32 VDC		125 V 60 CPS		120 V 400 CPS		
	CURVE 4	CURVE 5	CURVE 4	CURVE 5	CURVE 14	CURVE 15	CURVE 16
7.5	- 1	- 2	- 3	- 4	- 5	- 6	- 7
10	- 8	- 9	-10	-11	-12	-13	-14
15	-15	-16	-17	-18	-19	-20	-21
20	-22	-23	-24	-25	-26	-27	-28
30	-29	-30	-31	-32	-33	-34	-35

TABLE IV

DASH NO. / AMP CURRENT RATING	DASH NUMBERS FOR VARIOUS TIME DELAYS AND FREQUENCIES						
	50 VDC MAX		250 V 60 CPS MAX		250 VAC 400 CPS MAX		
	CURVE 4	CURVE 5	CURVE 4	CURVE 5	CURVE 14	CURVE 15	CURVE 16
7.5	-36	-37	-38	-39	-40	-41	-42
10	-43	-44	-45	-46	-47	-48	-49
15	-50	-51	-52	-53	-54	-55	-56
20	-57	-58	-59	-60	-61	-62	-63
30	-64	-65	-66	-67	-68	-69	-70

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 00943 DATE 24 Apr 63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

RAYTHEON
RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.

DRAWN R. Kane DATE 6 MR 63
CHECKED 12 APR 63
APPROVAL C Sperling 18 Apr 63
APPROVAL 18 Apr 63
APPROVAL
NASA APPROVAL 4/24/63
24 Apr 63
MIT APPROVAL 24 April 63
MIT APPROVAL WK for 24 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CIRCUIT BREAKER ASSEMBLY
THREE POLE, TIME DELAY

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006914
SCALE NONE
WT
SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

INCHES
0 1 2
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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		

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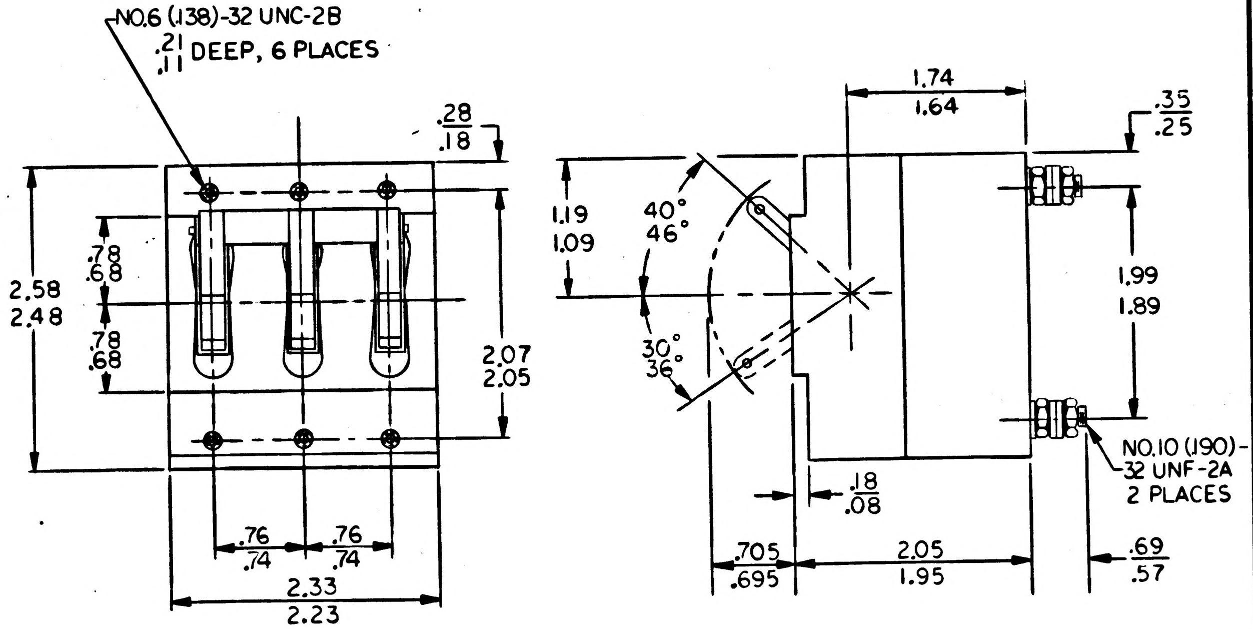
NOTES:

1. GENERAL REQUIREMENTS:
   A. THE CIRCUIT BREAKERS DELINEATED ON THIS DRAWING SHALL BE OF THE STANDARD MAGNETIC-HYDRAULIC CONSTRUCTION WHICH PROVIDES FOR A CONTROLLED DELAYED TRIPPING ACTION FOR OVERLOADS UP TO APPROXIMATELY 10 TIMES THE RATED CURRENT. FOR HIGH OVERLOADS OR SHORT CIRCUITS THE MAGNETIC FEATURE SHALL OVERRIDE AND CAUSE INSTANTANEOUS TRIPPING.
   B. THESE CIRCUIT BREAKERS SHALL HAVE A TRIP-FREE ACTION (CANNOT BE HELD CLOSED AGAINST A FAULT) FOR EACH POLE. THEY SHALL ALSO BE GANGED SUCH THAT A 1-POLE FAULT SHALL OPERATE AS A MULTI-POLE FAULT (THIS FEATURE IS KNOWN AS COMPANION OR COMMON TRIP).
2. ELECTRICAL REQUIREMENTS:
   A. CURRENT RATING: SEE TABLE III & IV ON SHEET 2.
   B. VOLTAGE RATING: SEE TABLE III & IV ON SHEET 2.
   C. TIME DELAY CHARACTERISTICS: SEE TABLES I & II ON SHEET 2.
   D. CONTACT ARRANGEMENT: IN SERIES WITH THE COIL.
   E. DIELECTRIC STRENGTH: 1500 VRMS MINIMUM.
   F. INSULATION RESISTANCE: 100 MEGOHMS AT 100 VDC (MINIMUM).
3. CONSTRUCTION:
   A. CASE: MOLDED, EXPLOSION-PROOF, PLASTIC CASE WITH METAL SCREW THREAD INSERTS FOR MOUNTING. MATERIAL PER MIL-M-14, TYPE MFH.
   B. CONNECTIONS: THREADED BINDING POSTS.
4. QUALITY ASSURANCE:
   A. MANUFACTURER SHALL CONFORM TO ALL THE QUALITY ASSURANCE PROVISIONS OF ND 1002034, CLASS 3.
5. MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL; PART NUMBER; AND CURRENT, VOLTAGE AND FREQUENCY RATING. EACH UNIT AND SHIPPING CONTAINER SHALL ALSO CONTAIN THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.

FOR INFORMATION ONLY
CLASS B RELEASE PER TDRR NO. 00943 DATE 24 Apr 63



PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTES
HEAT TREATMENT
FINAL FINISH

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN R. Kane DATE 6 Apr 63
CHECKED D. McSleeper 12 APR 63
APPROVAL C Sperling 18Apr63
APPROVAL 18Apr63
APPROVAL
NASA APPROVAL 4/24/63
Dennis Colamino 24Apr63
MIT APPROVAL E C Hall 24 April 63
MIT APPROVAL 24Apr63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CIRCUIT BREAKER ASSEMBLY
THREE POLE, TIME DELAY
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006914
SCALE NONE
WT
SHEET 1 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

INCHES
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PHOTOGRAPHIC SCALE ONLY

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED

TABLE I

TIME LAPSE TO TRIP / PERCENT RATED LOAD	60 CPS				DC			
	CURVE 4		CURVE 5		CURVE 4		CURVE 5	
	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC
UP TO 100%	MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP	
FROM 101% TO 124%	15	MAY NOT TRIP EVER	1.0	MAY NOT TRIP EVER	12	MAY NOT TRIP EVER	.80	MAY NOT TRIP EVER
125	15	60	1.0	6.0	12	50	.80	3.0
150	7.0	25	.60	2.0	6.0	20	.40	1.4
200	3.0	9.0	.25	.80	2.5	8.0	.16	.55
300	1.2	3.5	.10	.30	.80	2.4	.07	.22
400	.60	1.5	.05	.15	.40	1.2	.04	.13
500	.30	1.0	.03	.10	.22	.66	.025	08
600	.20	.60	.02	.07	.16	.50	.017	.05
700	.10	.30	.014	.05	.10	.30	013	.04
800	.04	.12	.012	.04	.02	.06	.011	.03
900	.02	.06	.011	.04	.01+	.03	.011	.03
1000	.01+	.04	.010+	.03	.01+	.03	.011	.03
OVER 1000	.01+	.03	.010+	.03	.01+	.03	.010+	.03

TABLE II

TIME LAPSE TO TRIP / PERCENT RATED LOAD	400 CPS					
	CURVE 14		CURVE 15		CURVE 16	
	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC
UP TO 100%	MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP	
FROM 101% TO 149%	70	MAY NOT TRIP EVER	7.0	MAY NOT TRIP EVER	.70	MAY NOT TRIP EVER
150	70	420	7.0	70	.70	4.0
200	22	80	2.2	8.0	.20	.60
300	8.0	22	.80	2.2	.07	.20
400	4.0	11	.40	1.2	.035	.10
500	2.2	7.2	.26	.80	.025	.08
550	1.3	4.0	.20	.60	.020	.06
600	.40	1.2	.14	.40	.015	.05
650	.03	.10	.03	.10	.012	.04
700	.01+	.04	.01+	.04	.010+	.03
800	.01+	.03	.01+	.03	.010+	.03
900	.01+	.03	.01+	.03	.010+	.03
OVER 900	.01+	.03	.01+	.03	.010+	.03

TABLE III

DASH NO. / AMP CURRENT RATING	DASH NUMBERS FOR VARIOUS TIME DELAYS AND FREQUENCIES						
	32 VDC		125 V 60 CPS		120 V 400 CPS		
	CURVE 4	CURVE 5	CURVE 4	CURVE 5	CURVE 14	CURVE 15	CURVE 16
7.5	-1	-2	-3	-4	-5	-6	-7
10	-8	-9	-10	-11	-12	-13	-14
15	-15	-16	-17	-18	-19	-20	-21
20	-22	-23	-24	-25	-26	-27	-28
30	-29	-30	-31	-32	-33	-34	-35

TABLE IV

DASH NO. / AMP CURRENT RATING	DASH NUMBERS FOR VARIOUS TIME DELAYS AND FREQUENCIES						
	50 VDC		250 V 60 CPS		208 V 400 CPS		
	CURVE 4	CURVE 5	CURVE 4	CURVE 5	CURVE 14	CURVE 15	CURVE 16
7.5	-36	-37	-38	-39	-40	-41	-42
10	-43	-44	-45	-46	-47	-48	-49
15	-50	-51	-52	-53	-54	-55	-56
20	-57	-58	-59	-60	-61	-62	-63
30	-64	-65	-66	-67	-68	-69	-70

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 00943 DATE 24Apr63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

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FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

RAYTHEON
RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.

DRAWN R. Kane DATE 6 Mar 63
CHECKED [illegible] / D. M. Sheep 12 APR 63
APPROVAL C. Sneeling 18Apr63
APPROVAL [illegible] 18Apr63
APPROVAL [illegible] 24Apr63 / J. [illegible]
NASA APPROVAL [illegible] 4/24/63
24Apr63, Dennis M. Scelma
MIT APPROVAL Eldon C Hall 24 Apr 63
MIT APPROVAL W Kupfer 24 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CIRCUIT BREAKER ASSEMBLY
THREE POLE, TIME DELAY

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006914
SCALE NONE
WT
SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

MASTER

INCHES
0 1 2
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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
A	CHANGED PER TDRR 02531 DR C. Crespin CHK J. Ruggeri APPD C Sperling	—	

NOTES:

1. GENERAL REQUIREMENTS:
   - A. THE CIRCUIT BREAKERS DELINEATED ON THIS DRAWING SHALL BE OF THE STANDARD MAGNETIC-HYDRAULIC CONSTRUCTION WHICH PROVIDES FOR A CONTROLLED DELAYED TRIPPING ACTION FOR OVERLOADS UP TO APPROXIMATELY 10 TIMES THE RATED CURRENT. FOR HIGH OVERLOADS OR SHORT CIRCUITS THE MAGNETIC FEATURE SHALL OVERRIDE AND CAUSE INSTANTANEOUS TRIPPING.
   - B. THESE CIRCUIT BREAKERS SHALL HAVE A TRIP-FREE ACTION (CANNOT BE HELD CLOSED AGAINST A FAULT) FOR EACH POLE.
2. ELECTRICAL REQUIREMENTS:
   - A. CURRENT RATING: SEE TABLE III & IV ON SHEET 2.
   - B. VOLTAGE RATING: SEE TABLE III & IV ON SHEET 2.
   - C. TIME DELAY CHARACTERISTICS: SEE TABLES I & II ON SHEET 2.
   - D. CONTACT ARRANGEMENT: IN SERIES WITH THE COIL.
   - E. DIELECTRIC STRENGTH: 1500 VRMS MINIMUM.
   - F. INSULATION RESISTANCE: 100 MEGOHMS AT 100 VDC (MINIMUM).
3. CONSTRUCTION:
   - A. CASE: MOLDED, EXPLOSION-PROOF, PLASTIC CASE WITH METAL SCREW THREAD INSERTS FOR MOUNTING. MATERIAL PER MIL-M-14, TYPE MFH.
   - B. CONNECTIONS: THREADED BINDING POSTS.
   - ~~C. MULTIPOLE ARRANGEMENT: SEVERAL SINGLE POLE BREAKERS MOUNTED TOGETHER ON A COMMON BASE AND HAVING THE LEVERS CONNECTED TOGETHER.~~
4. QUALITY ASSURANCE:
   - A. MANUFACTURER SHALL CONFORM TO ALL THE QUALITY ASSURANCE PROVISIONS OF ND 1002034, CLASS 3.
5. MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL; PART NUMBER; AND CURRENT, VOLTAGE AND FREQUENCY RATING. EACH UNIT AND SHIPPING CONTAINER SHALL ALSO CONTAIN THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.

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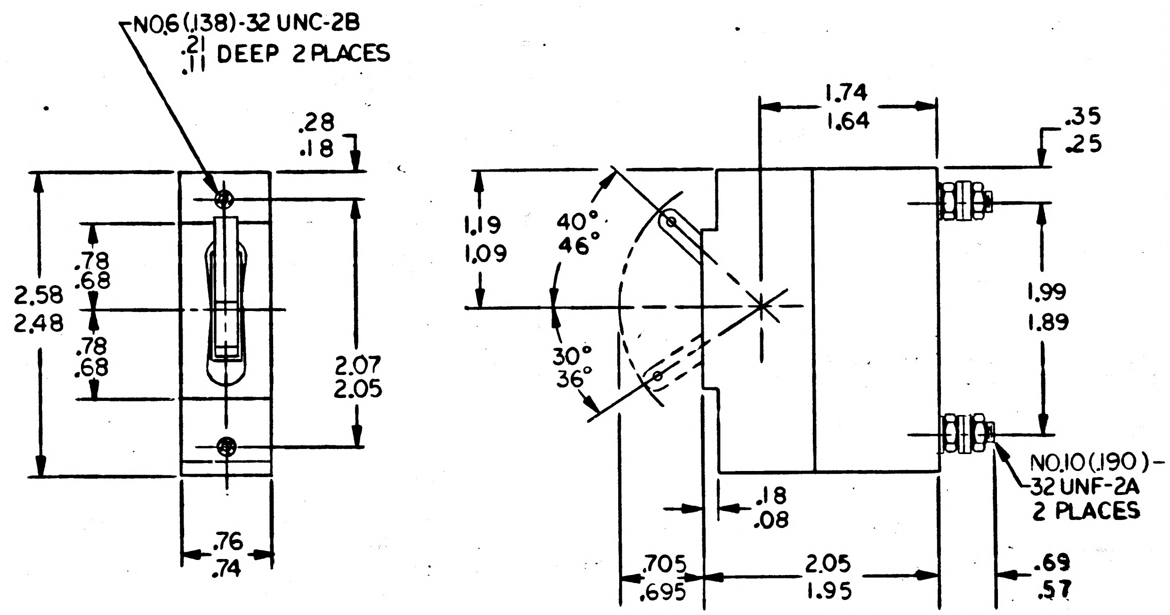

A	A
SHEET 1	SHEET 2

REVISION STATUS OF SHEETS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON
RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN R. Kane DATE 6 APR 63
CHECKED D. M. Sleeper 12 APR 63
APPROVAL C Sperling 18 Apr 63
APPROVAL 18 Apr 63
APPROVAL 18 Apr 63
NASA APPROVAL 4/24/63
24 Apr 63
MIT APPROVAL E C Hall 24 April 63
MIT APPROVAL 24 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CIRCUIT BREAKER
SINGLE POLE, TIME DELAY

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006915
SCALE NONE
WT
SHEET 1 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1006915A

INCHES
0 1 2
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M

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	CHANGED PER TDRR 02531 DR L. Crespi CHK J. Ruggeri APPD C. Sprtli		WK

TABLE I

TIME LAPSE TO TRIP / PERCENT RATED LOAD	60 CPS				DC			
	CURVE 4		CURVE 5		CURVE 4		CURVE 5	
	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC
UP TO 100%	MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP	
MAY TRIP 101-125%								
125	15	70	1.0	6.0	12	50	.75	3.0
150	7.0	25	.60	2.5	6.0	.21 ←	.39	1.4
200	3.0	9.45	.25	.84	2.5	8.0	.155	.55
300	1.15	3.6	.09	.30	.73	2.4	.067	.22
400	.56	1.8	.052	.156	.36	1.2	.04	.13
500	.30	1.0	.033	.10	.215	.66	.025	08
600	.19	.60	.02	.07	.155	.50	.016	.05
700	.094	.30	.014	.05	.089	.30	.012	.04
800	.04	.13	.012	.043	.011	.06	.011	.035
900	.012	.06	.012	.043	$.01^{+}$	.03	.011	.03
1000	$.01^{+}$	.03	$.010^{+}$	.043	$.01^{+}$	.03	.011	.03
OVER 1000	$.01^{+}$	.03	$.010^{+}$	.03	$.01^{+}$	.03	$.010^{+}$	.03

TABLE II

TIME LAPSE TO TRIP / PERCENT RATED LOAD	400 CPS					
	CURVE 14		CURVE 15		CURVE 16	
	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC
UP TO 100%	MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP	
MAY TRIP 101-150%						
150	60	420	7.0	70	.60	4.0
200	22	80	2.2	8.0	.20	.60
300	8.0	24	.80	2.4	.07	.21
400	4.0	12	.40	1.25	.035	.12
500	2.2	7.5	.25	.80	.025	.08
550	1.3	4.0	.20	.60	.020	.06
600	.40	1.4	.15	.45	.015	.05
650	.03	.10	.03	.10	.012	.04
700	$.01^{+}$	.04	$.01^{+}$	.04	$.010^{+}$	.037
800	$.01^{+}$	.032	$.01^{+}$	.032	$.010^{+}$	.032
900	$.01^{+}$	.031	$.01^{+}$	.031	$.010^{+}$	.031
OVER 1000	$.01^{+}$	.03	$.01^{+}$	.03	$.010^{+}$	.03

TABLE III

DASH NO. / AMP CURRENT RATING	DASH NUMBERS FOR VARIOUS TIME DELAYS AND FREQUENCIES						
	32 VDC		125 V 60 CPS		120 V 400 CPS		
	CURVE 4	CURVE 5	CURVE 4	CURVE 5	CURVE 14	CURVE 15	CURVE 16
7.5	- 1	- 2	- 3	- 4	- 5	- 6	- 7
10	- 8	- 9	-10	-11	-12	-13	-14
15	-15	-16	-17	-18	-19	-20	-21
20	-22	-23	-24	-25	-26	-27	-28
30	-29	-30	-31	-32	-33	-34	-35

TABLE IV

DASH NO. / AMP CURRENT RATING	DASH NUMBERS FOR VARIOUS TIME DELAYS AND FREQUENCIES						
	50 VDC MAX		250 V 60 CPS MAX		250 VAC 400 CPS MAX		
	CURVE 4	CURVE 5	CURVE 4	CURVE 5	CURVE 14	CURVE 15	CURVE 16
7.5	-36	-37	-38	-39	-40	-41	-42
10	-43	-44	-45	-46	-47	-48	-49
15	-50	-51	-52	-53	-54	-55	-56
20	-57	-58	-59	-60	-61	-62	-63
30	-64	-65	-66	-67	-68	-69	-70

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 00943 **DATE** 24 April 63

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
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MATERIAL

HEAT TREATMENT

FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.

DRAWN R. Kane DATE 6 APR 63
CHECKED 17 APR 63
APPROVAL C. S. 18 Apr 63
APPROVAL 18 Apr 63
APPROVAL
NASA APPROVAL 4/24/63
Dennis M. Sullivan Apr 19 63
MIT APPROVAL E C Hall 24 April 63
MIT APPROVAL 24 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CIRCUIT BREAKER
SINGLE POLE, TIME DELAY
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006915
SCALE NONE
WT
SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1006915A

INCHES
0 2
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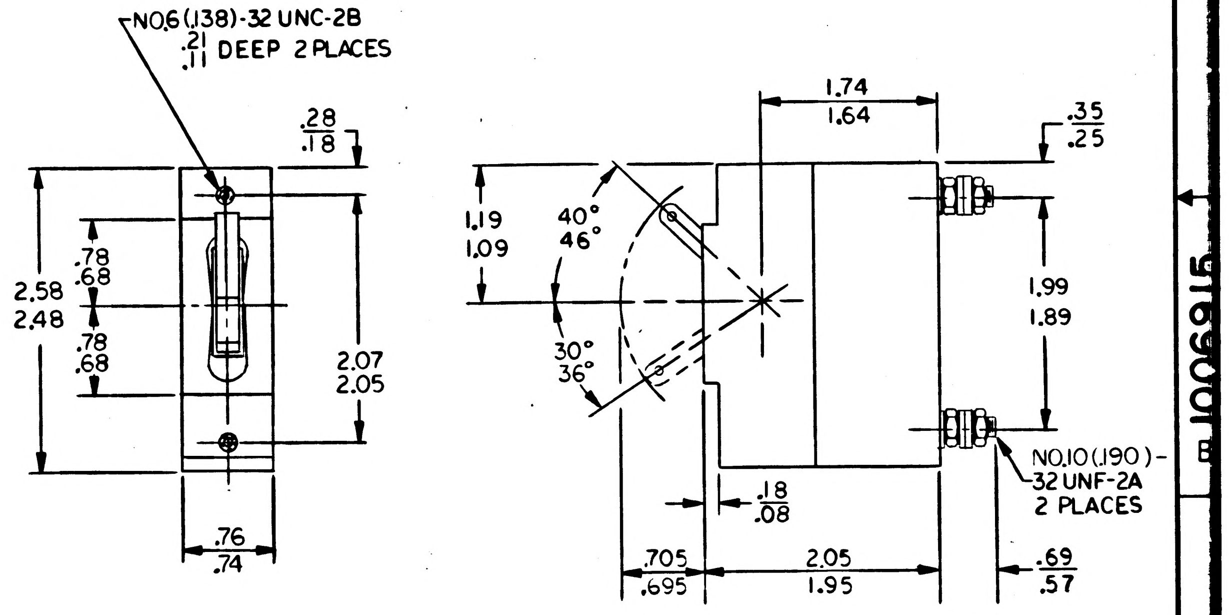
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

NOTES:

1. GENERAL REQUIREMENTS:
   - A. THE CIRCUIT BREAKERS DELINEATED ON THIS DRAWING SHALL BE OF THE STANDARD MAGNETIC-HYDRAULIC CONSTRUCTION WHICH PROVIDES FOR A CONTROLLED DELAYED TRIPPING ACTION FOR OVERLOADS UP TO APPROXIMATELY 10 TIMES THE RATED CURRENT. FOR HIGH OVERLOADS OR SHORT CIRCUITS THE MAGNETIC FEATURE SHALL OVERRIDE AND CAUSE INSTANTANEOUS TRIPPING.
   - B. THESE CIRCUIT BREAKERS SHALL HAVE A TRIP-FREE ACTION (CANNOT BE HELD CLOSED AGAINST A FAULT) FOR EACH POLE.
2. ELECTRICAL REQUIREMENTS:
   - A. CURRENT RATING: SEE TABLE III & IV ON SHEET 2.
   - B. VOLTAGE RATING: SEE TABLE III & IV ON SHEET 2.
   - C. TIME DELAY CHARACTERISTICS: SEE TABLES I & II ON SHEET 2.
   - D. CONTACT ARRANGEMENT: IN SERIES WITH THE COIL.
   - E. DIELECTRIC STRENGTH: 1500 VRMS MINIMUM.
   - F. INSULATION RESISTANCE: 100 MEGOHMS AT 100 VDC (MINIMUM).
3. CONSTRUCTION:
   - A. CASE: MOLDED, EXPLOSION-PROOF, PLASTIC CASE WITH METAL SCREW THREAD INSERTS FOR MOUNTING. MATERIAL PER MIL-M-14, TYPE MFH.
   - B. CONNECTIONS: THREADED BINDING POSTS.
   - C. MULTIPOLE ARRANGEMENT: SEVERAL SINGLE POLE BREAKERS MOUNTED TOGETHER ON A COMMON BASE AND HAVING THE LEVERS CONNECTED TOGETHER.
4. QUALITY ASSURANCE:
   - A. MANUFACTURER SHALL CONFORM TO ALL THE QUALITY ASSURANCE PROVISIONS OF ND 1002034, CLASS 3.
5. MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL; PART NUMBER; AND CURRENT, VOLTAGE AND FREQUENCY RATING. EACH UNIT AND SHIPPING CONTAINER SHALL ALSO CONTAIN THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.

FOR INFORMATION ONLY
CLASS B RELEASE PER TDRR NO. 00943 DATE 24 Apr 63



SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

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RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN F. Kano DATE 6 APR 63
CHECKED D. M. Sleeper 12 APR 63
APPROVAL C. Sperling 18 Apr 63
APPROVAL 18 Apr 63
APPROVAL
NASA APPROVAL 4/24/63 24 Apr 63
MIT APPROVAL E C Hall 24 Apr 63
MIT APPROVAL 24 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CIRCUIT BREAKER
SINGLE POLE, TIME DELAY

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006915
SCALE NONE
WT
SHEET 1 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

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1006915

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

TABLE I

TIME LAPSE TO TRIP / PERCENT RATED LOAD	60 CPS				DC			
	CURVE 4		CURVE 5		CURVE 4		CURVE 5	
	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC
UP TO 100%	MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP	
FROM 101% TO 124%	15	MAY NOT TRIP EVER	1.0	MAY NOT TRIP EVER	12	MAY NOT TRIP EVER	.80	MAY NOT TRIP EVER
125	15	60	1.0	6.0	12	50	.80	3.0
150	7.0	25	.60	2.0	6.0	20	.40	1.4
200	3.0	9.0	.25	.80	2.5	8.0	.16	.55
300	1.2	3.5	.10	.30	.80	2.4	.07	.22
400	.60	1.5	.05	.15	.40	1.2	.04	.13
500	.30	1.0	.03	.10	.22	.66	.025	08
600	.20	.60	.02	.07	.16	.50	.017	.05
700	.10	.30	.014	.05	.10	.30	013	.04
800	.04	.12	.012	.04	.02	.06	.011	.03
900	.02	.06	.011	.04	$.01^{+}$	.03	.011	.03
1000	$.01^{+}$	.04	$.010^{+}$	.03	$.01^{+}$	.03	.011	.03
OVER 1000	$.01^{+}$	.03	$.010^{+}$	.03	$.01^{+}$	.03	$.010^{+}$	.03

TABLE III

DASH NO. / AMP CURRENT RATING	DASH NUMBERS FOR VARIOUS TIME DELAYS AND FREQUENCIES						
	32 VDC		125 V 60 CPS		120 V 400 CPS		
	CURVE 4	CURVE 5	CURVE 4	CURVE 5	CURVE 14	CURVE 15	CURVE 16
7.5	-1	-2	-3	-4	-5	-6	-7
10	-8	-9	-10	-11	-12	-13	-14
15	-15	-16	-17	-18	-19	-20	-21
20	-22	-23	-24	-25	-26	-27	-28
30	-29	-30	-31	-32	-33	-34	-35

TABLE II

TIME LAPSE TO TRIP / PERCENT RATED LOAD	400 CPS					
	CURVE 14		CURVE 15		CURVE 16	
	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC	MAY TRIP AFTER ___ SEC	MUST TRIP BEFORE ___ SEC
UP TO 100%	MUST NOT TRIP		MUST NOT TRIP		MUST NOT TRIP	
FROM 101% TO 149%	70	MAY NOT TRIP EVER	7.0	MAY NOT TRIP EVER	.70	MAY NOT TRIP EVER
150	70	420	7.0	70	.70	4.0
200	22	80	2.2	8.0	.20	.60
300	8.0	22	.80	2.2	.07	.20
400	4.0	11	.40	1.2	.035	.10
500	2.2	7.2	.26	.80	.025	.08
550	1.3	4.0	.20	.60	.020	.06
600	.40	1.2	.14	.40	.015	.05
650	.03	.10	.03	.10	.012	.04
700	$.01^{+}$	.04	$.01^{+}$	.04	$.010^{+}$	.03
800	$.01^{+}$	.03	$.01^{+}$	.03	$.010^{+}$	.03
900	$.01^{+}$	.03	$.01^{+}$	.03	$.010^{+}$	.03
OVER 900	$.01^{+}$	.03	$.01^{+}$	.03	$.010^{+}$	.03

TABLE IV

DASH NO. / AMP CURRENT RATING	DASH NUMBERS FOR VARIOUS TIME DELAYS AND FREQUENCIES						
	50 VDC		250 V 60 CPS		208 V 400 CPS		
	CURVE 4	CURVE 5	CURVE 4	CURVE 5	CURVE 14	CURVE 15	CURVE 16
7.5	-36	-37	-38	-39	-40	-41	-42
10	-43	-44	-45	-46	-47	-48	-49
15	-50	-51	-52	-53	-54	-55	-56
20	-57	-58	-59	-60	-61	-62	-63
30	-64	-65	-66	-67	-68	-69	-70

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 00943 DATE 24 April 63

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RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.

DRAWN R. Kane DATE 6 APR 63
CHECKED [illegible] D. M. [illegible] 12 APR 63
APPROVAL C. Sherling 15 Apr 63
APPROVAL [illegible] 18 Apr 63
APPROVAL [illegible] 18 Apr 63 J. Pancoster
NASA APPROVAL [illegible] 4/19/63 Dennis M. [illegible] Apr 15 63
MIT APPROVAL E C Hall 24 April 63
MIT APPROVAL W Coffer 24 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CIRCUIT BREAKER
SINGLE POLE, TIME DELAY
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006915
SCALE NONE WT SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1006915

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		

NOTES:

1. GENERAL REQUIREMENTS:
   - A. UNITS SHALL MEET THE REQUIREMENTS OF MIL-I-6181 WITH EXCEPTIONS AND ADDITIONS AS NOTED HEREIN.
   - B. UNITS SHALL PROVIDE 100 DECIBEL ATTENUATION TO RADIO FREQUENCY INTERFERENCE OVER A FREQUENCY RANGE OF 15 KILOCYCLES TO 10 KILOMEGACYCLES.
   - C. THE FILTER WILL HAVE A MAXIMUM STATIC PRESSURE OF 0.2 IN. (OF H_2O) WHEN 500 CFM OF AIR IS PUSHED THROUGH IT [illegible].
   - D. MARKING: UNITS SHALL BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH THE MANUFACTURER'S NAME, IDENTIFYING NUMBER, NASA DRAWING NUMBER, AND REVISION LETTER TO APPEAR ON REAR OF UNIT.
2. CONSTRUCTION REQUIREMENTS:
   - A. CASE: 16 GAGE COLD ROLLED STEEL, CADMIUM PLATED AND CHROMATED PER QQ-P-416, CLASS 3, TYPE II.
   - B. GRILLE: STEEL, PAINTED WITH ONE COAT OF SEMIGLOSS ENAMEL TT-E-529, CLASS B, COLOR NO 26440 OF FED-STD-595, PER MIL-F-14072.
   - C. WASHABLE AIR FILTER: EXPANDED ALUMINUM MESH IN ALUMINUM FRAME. ALUMINUM IRRIDATED PER MIL-C-5541.
   - D. RFI FILTER: SHALL BE OF SUCH MATERIAL AND DESIGN AS NECESSARY TO MEET THE ELECTRICAL AND AIR FLOW REQUIREMENTS OF THIS SPECIFICATION.
   - E. FILTERING CHARACTERISTICS: THE AIR FILTER SHALL BE CAPABLE OF ARRESTING AND RETAINING 85% OF PARTICLES 5 MICRONS AND LARGER WHEN SUITABLY SPRAYED WITH OIL INTENDED FOR THE PURPOSE.
3. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS AS CONTAINED IN ND 1015404, CLASS 3.

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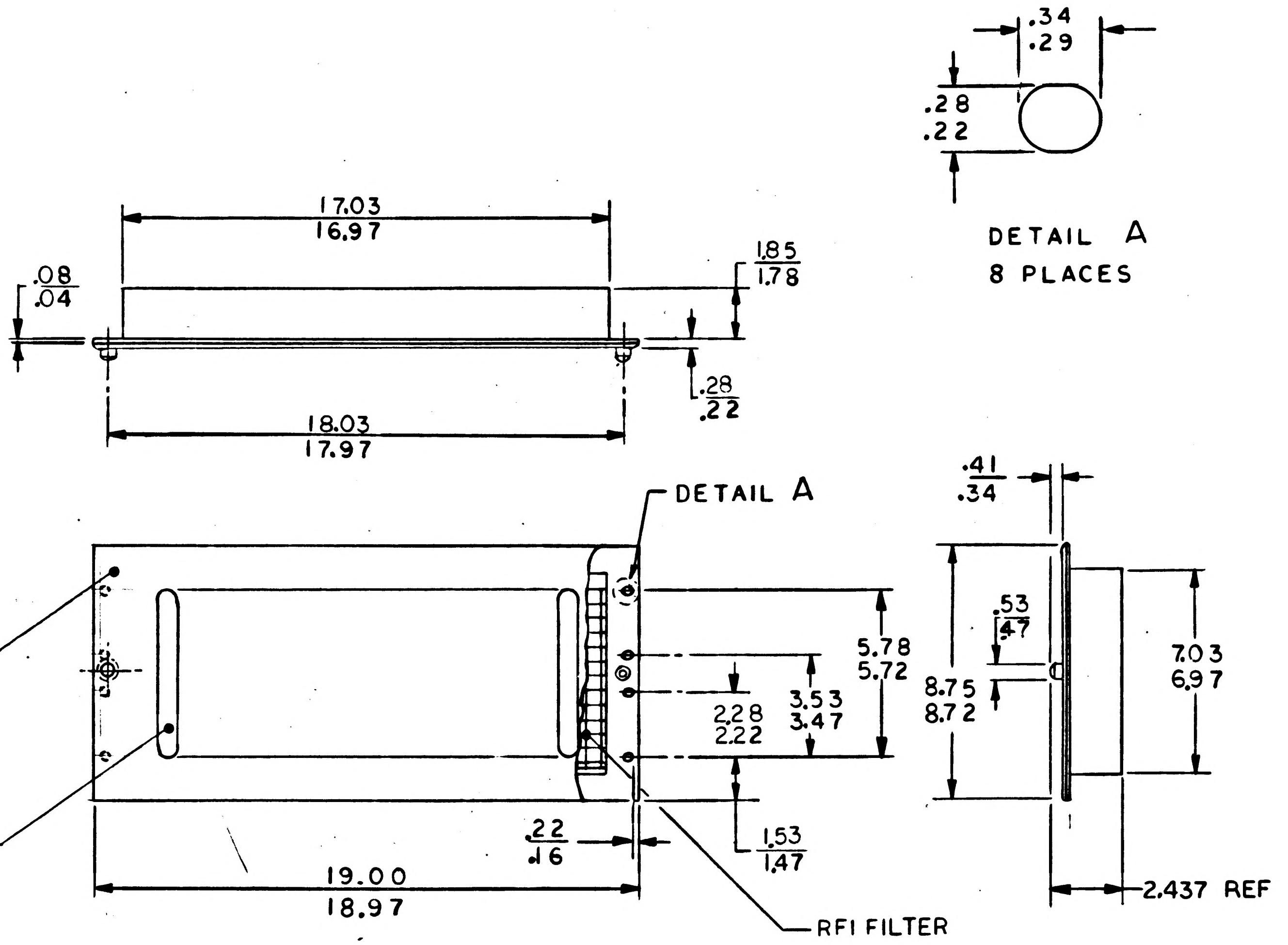

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RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498

DRAWN Ray Wheeler DATE 9 May 63
CHECKED J. Ruggeri / H. Maynard 21 MAY 63
APPROVAL C. Sperling 31 MAY 63
APPROVAL 5/31/63
APPROVAL 5/31/63
NASA APPROVAL 9/5/63
MIT APPROVAL 9/5/63
MIT APPROVAL 9/5/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FILTER, AIR
RFI SHIELDED
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	C	1006918
SCALE NONE	WT	SHEET 1 OF 1

INCHES
0 1 2
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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		
A	REVISED PER TDRR 02169 w Maynard CHK J. Ruggeri APPD C Sperling	14 Aug 63	WK

NOTES:

1. GENERAL REQUIREMENTS:
   - A. INDICATOR-LIGHT HOUSING: SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-L-3661, EXCEPT FOR PHYSICAL DIMENSIONS.
     - (1) DIELECTRIC WITHSTANDING VOLTAGE: 1000 VOLTS RMS.
     - (2) CONTACT RESISTANCE: 0.05 OHMS, MAXIMUM AT ONE (1) AMPERE.
   - B. LENS: SHALL BE CYLINDRICAL TRANSLUCENT PLASTIC.
     - (1) COLOR: AS SPECIFIED IN TABLE I.
   - C. INDICATOR-LIGHT HOUSING IS INTENDED TO ACCOMMODATE MIDGET-FLANGE-BASE, T-1-3/4, INCANDESCENT LAMPS.
   - D. TEMPERATURE RANGE: -55° TO +71°C.
   - E. MARKING: INTERMEDIATE PACKAGES, AND EXTERIOR SHIPPING CONTAINERS SHALL BE MARKED WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER, MANUFACTURER'S TYPE NUMBER, RATED VOLTAGE AND CURRENT.
     - (1) [illegible] INTERMEDIATE PACKAGES, AND [illegible] SHIPPING CONTAINERS [illegible] BE MARKED WITH THE NASA [illegible], AND REVISION [illegible].
2. CONSTRUCTION REQUIREMENTS:
   - A. TERMINALS: TWO (2) SOLDERABLE TERMINALS.
     - (1) STRENGTH: 2 POUNDS.
   - B. CONTACT-SPRING PRESSURE: 12 TO 36 OUNCES.
3. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.

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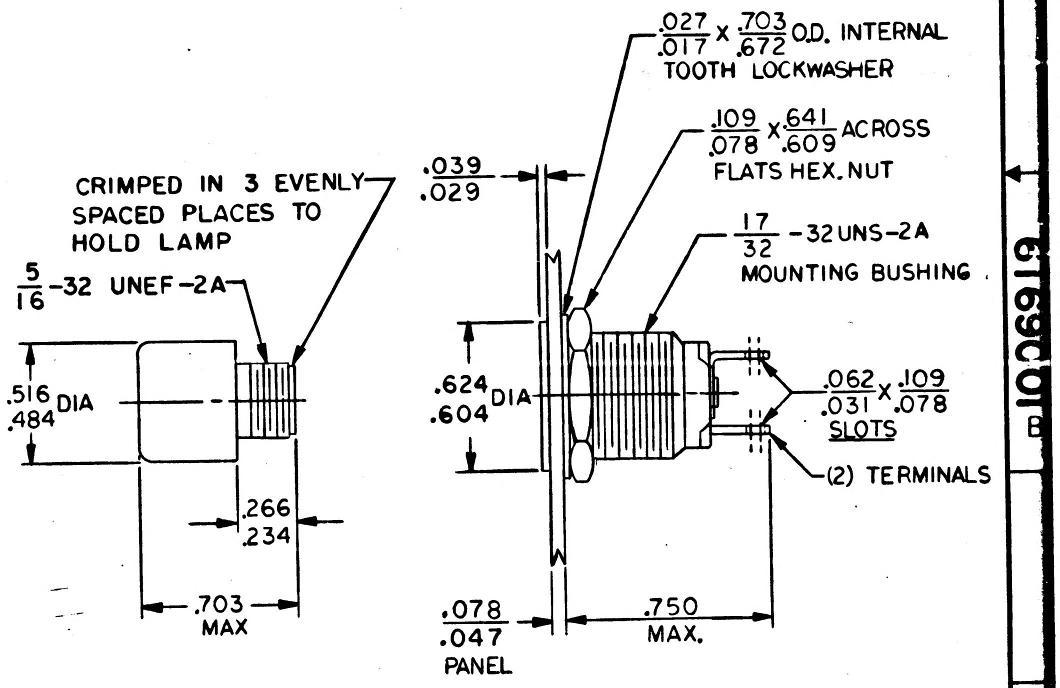
CLASS B RELEASE TDRR NO. 01131 DATE 5-1-63



$\frac{.027}{.017}$ X $\frac{.703}{.672}$ O.D. INTERNAL TOOTH LOCKWASHER
$\frac{.109}{.078}$ X $\frac{.641}{.609}$ ACROSS FLATS HEX. NUT
$\frac{17}{32}$ -32 UNS-2A MOUNTING BUSHING
CRIMPED IN 3 EVENLY SPACED PLACES TO HOLD LAMP
$\frac{.039}{.029}$
$\frac{5}{16}$ -32 UNEF-2A
$\frac{.516}{.484}$ DIA
$\frac{.624}{.604}$ DIA
$\frac{.062}{.031}$ X $\frac{.109}{.078}$ SLOTS
(2) TERMINALS
$\frac{.266}{.234}$
.703 MAX
$\frac{.078}{.047}$ PANEL
.750 MAX.

TABLE I

DASH NO.	LENS COLOR
-1	RED
-2	GREEN
-3	YELLOW(AMBER)
-4	BLUE
-5	WHITE(TRANSLUCENT)
-6	YELLOW
-7	CLEAR

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

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RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN R. Kone DATE 12 APR. 63
CHECKED J. Ruggeri A.Y 16 APR 63
APPROVAL [illegible] JJS 4/25/63
APPROVAL C Sperling 4/25/63
APPROVAL [illegible]
NASA APPROVAL W J Rhine 5-1-63
4/30/63 [illegible]
MIT APPROVAL Eldon C Hall 5/1/63
MIT APPROVAL W [illegible] May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

LIGHT, INDICATOR, INCANDESCENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006919
SCALE NONE
WT
SHEET 1 OF 1

1006919

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN CONSENT OF RAYTHEON CO.

REVISIONS

	SYM	DESCRIPTION	DATE	APPROVED
Ⓜ	-	CLASS B RELEASE PER TDRR		
Ⓐ	A	REVISED PER TDRR 02169 W Maynard CHK J. Ruggeri APPD C Sperling	14 Aug 63	WK
	B	REVISED PER TDRR 03432 DR S. Orifice CHK J Ruggeri APPD A. Maynard	10/30/63	WK

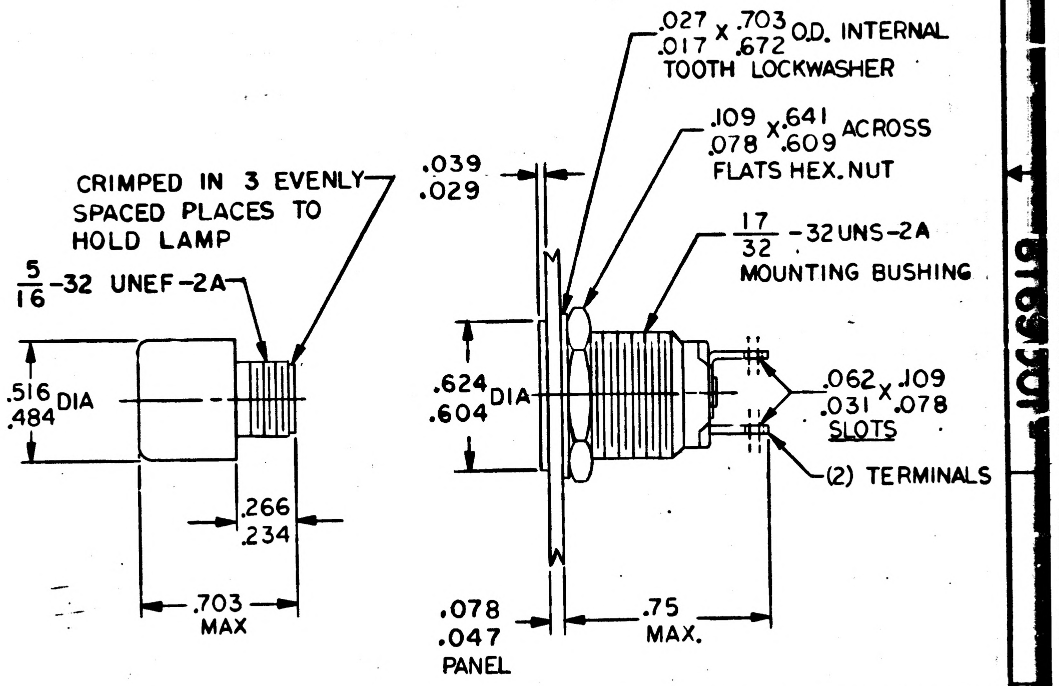
NOTES:

1. GENERAL REQUIREMENTS:
   - A. INDICATOR-LIGHT HOUSING: SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-L-3661, EXCEPT FOR PHYSICAL DIMENSIONS.
     - (1) DIELECTRIC WITHSTANDING VOLTAGE: 1000 VOLTS RMS.
     - (2) CONTACT RESISTANCE: 0.05 OHMS, MAXIMUM AT ONE (1) AMPERE.
   - B. LENS: SHALL BE CYCLINDRICAL TRANSPARENT OR TRANSLUCENT PLASTIC AS SPECIFIED IN TABLE I.
     - (1) COLOR: AS SPECIFIED IN TABLE I.
   - C. INDICATOR-LIGHT HOUSING IS INTENDED TO ACCOMMODATE MIDGET-FLANGE-BASE, T-1-3/4, INCANDESCENT LAMPS.
   - D. TEMPERATURE RANGE: -55° TO +71°C.
   - E. MARKING: INTERMEDIATE PACKAGES, AND EXTERIOR SHIPPING CONTAINERS SHALL BE MARKED WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER, MANUFACTURER'S TYPE NUMBER, RATED VOLTAGE AND CURRENT.
     - (1) [illegible] INTERMEDIATE PACKAGES, AND EXTERIOR SHIPPING CONTAINER SHALL BE MARKED WITH THE NASA DRAWING, DASH [illegible] REVISION LETTER.
2. CONSTRUCTION REQUIREMENTS:
   - A. TERMINALS: TWO (2) SOLDERABLE TERMINALS.
     - (1) STRENGTH: 2 POUNDS.
   - B. CONTACT-SPRING PRESSURE: 12 TO 36 OUNCES.
3. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.

TABLE I

LENS COLOR	TRANSPARENT DASH NO.	TRANSLUCENT DASH NO.
RED	-1	-1A
GREEN	-2	-2A
AMBER	-3	-3A
BLUE	-4	-4A
WHITE	-5	-5A
YELLOW	-6	-6A
CLEAR	-7	-7A

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01131 DATE 5-1-63



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON
RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN R. Kone DATE 12 APR. 63
CHECKED J. Ruggeri A.Y 16 APR 63
APPROVAL JJS 4/25/63
APPROVAL C Sperling 4/25/63
APPROVAL 26 Apr 63
NASA APPROVAL W J Rhine 5-1-63
4/30/63
MIT APPROVAL Eldon C Hall 5/1/63
MIT APPROVAL May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

LIGHT, INDICATOR, INCANDESCENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006919
SCALE NONE
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN CONSENT OF RAYTHEON CO.

REVISIONS

	SYM	DESCRIPTION	DATE	APPROVED
Ⓜ	-	CLASS B RELEASE PER TDRR 01131		
ⓐ	A	REVISED PER TDRR 02169 W Maynard CHK J. Ruggeri APPD C Sperly	14 Apr 63	WH
ⓐ	B	REVISED PER TDRR 03432 DR S. Perfiro CHK J Ruggeri APPD A. Maynard	10/17/63	WH
	C	UPGRADE TO CLASS A WITH CHANGE PER TDRR 18898 DR H. Wong CHK [illegible] APPD H. Maynard		

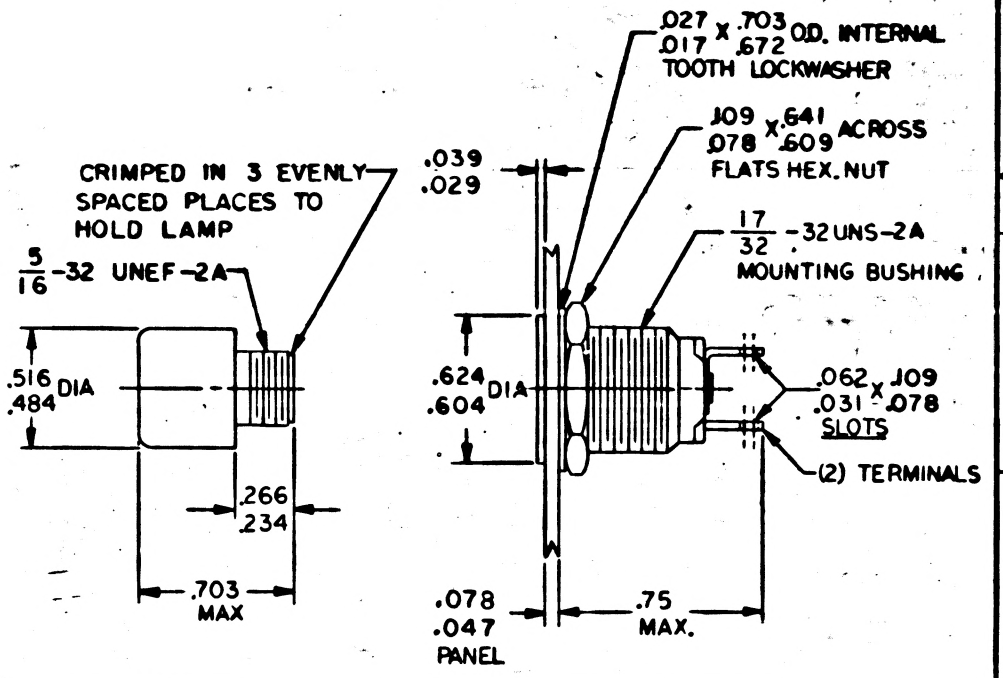
NOTES:

1. GENERAL REQUIREMENTS:
   - A. INDICATOR-LIGHT HOUSING: SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-L-3661, EXCEPT FOR PHYSICAL DIMENSIONS.
     - (1) DIELECTRIC WITHSTANDING VOLTAGE: 1000 VOLTS RMS.
     - (2) CONTACT RESISTANCE: 0.05 OHMS, MAXIMUM AT ONE (1) AMPERE.
   - B. LENS: SHALL BE CYCLINDRICAL TRANSPARENT OR TRANSLUCENT PLASTIC AS SPECIFIED IN TABLE I.
     - (1) COLOR: AS SPECIFIED IN TABLE I.
   - C. INDICATOR-LIGHT HOUSING IS INTENDED TO ACCOMMODATE MIDGET-FLANGE-BASE, T-1-3/4, INCANDESCENT LAMPS.
   - D. TEMPERATURE RANGE: -55° TO +71°C.
   - E. MARKING: INTERMEDIATE PACKAGES, AND EXTERIOR SHIPPING CONTAINERS SHALL BE MARKED WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER, MANUFACTURER'S TYPE NUMBER, RATED VOLTAGE AND CURRENT.
2. CONSTRUCTION REQUIREMENTS:
   - A. TERMINALS: TWO (2) SOLDERABLE TERMINALS.
     - (1) STRENGTH: 2 POUNDS.
   - B. CONTACT-SPRING PRESSURE: 12 TO 36 OUNCES.
3. SUPPLIERS SHALL CONFORM TO MIL-Q-9858.

TABLE I

LENS COLOR	TRANSPARENT DASH NO.	TRANSLUCENT DASH NO.
RED	-1	-1A
GREEN	-2	-2A
AMBER	-3	-3A
BLUE	-4	-4A
WHITE	-5	-5A
YELLOW	-6	-6A
CLEAR	-7	-7A

4. PREPARATION FOR DELIVERY PER MD 1002215.



PROCURE ONLY FROM APPROVED SOURCES AS LISTED IN CONTRACTOR'S QUALIFIED VENDORS LIST.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN R. Kono DATE 12 Apr 63
CHECKED J. Ruggeri A.Y 16 APR 63
APPROVAL [illegible] 4/15/63
APPROVAL C. Sperling 4/15/63
APPROVAL [illegible]
NASA APPROVAL W J [illegible] 5-1-63
4/30/63 [illegible]
MIT APPROVAL [illegible] 5/1/63
MIT APPROVAL [illegible] May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

LIGHT, INDICATOR, INCANDESCENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006919
SCALE NONE
WT
SHEET 1 OF 1

1006919 C

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN CONSENT OF RAYTHEON CO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION. THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

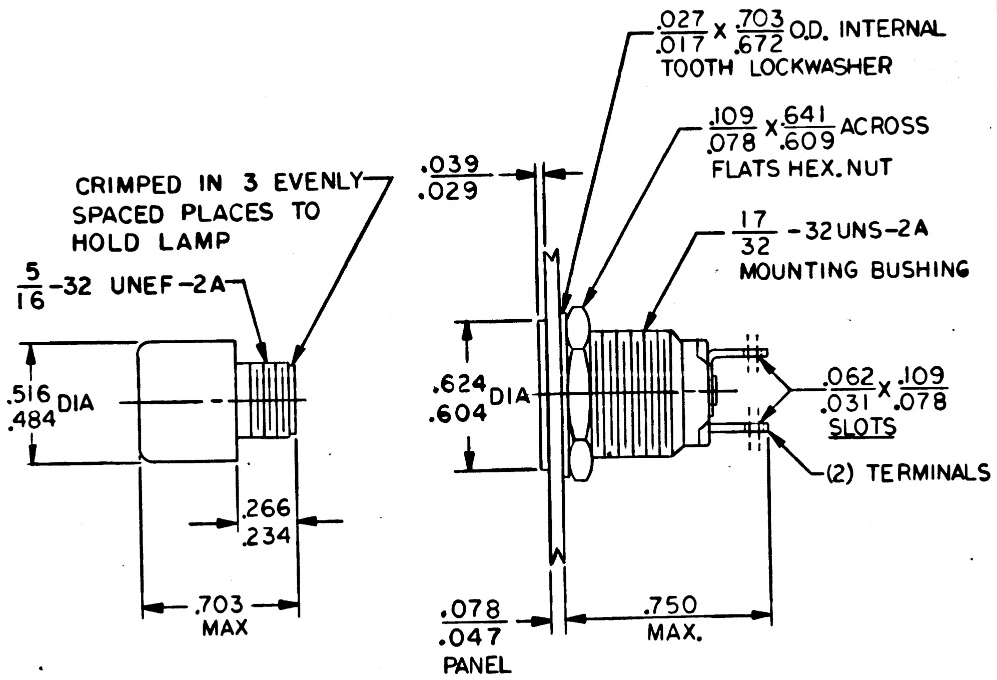
NOTES:

1. GENERAL REQUIREMENTS:
   - A. INDICATOR-LIGHT HOUSING: SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-L-3661, EXCEPT FOR PHYSICAL DIMENSIONS.
     - (1) DIELECTRIC WITHSTANDING VOLTAGE: 1000 VOLTS RMS.
     - (2) CONTACT RESISTANCE: 0.05 OHMS, MAXIMUM AT ONE (1) AMPERE.
   - B. LENS: SHALL BE CYLINDRICAL TRANSLUCENT PLASTIC.
     - (1) COLOR: AS SPECIFIED IN TABLE I.
   - C. INDICATOR-LIGHT HOUSING IS INTENDED TO ACCOMMODATE MIDGET-FLANGE-BASE, T-1-3/4, INCANDESCENT LAMPS.
   - D. TEMPERATURE RANGE: -55° TO +71°C.
   - E. MARKING: INDICATOR LIGHT HOUSING SHALL BE MARKED PER MIL-STD-130 WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, RATED VOLTAGE AND RATED CURRENT OR WATTAGE, AND TYPE NUMBER.
     - (1) UNIT PACKAGES, INTERMEDIATE PACKAGES, AND EXTERIOR SHIPPING CONTAINERS SHALL BE MARKED WITH THE NASA DRAWING, DASH NUMBER AND REVISION LETTER.
2. CONSTRUCTION REQUIREMENTS:
   - A. TERMINALS: TWO (2) SOLDERABLE TERMINALS.
     - (1) STRENGTH: 2 POUNDS.
   - B. CONTACT-SPRING PRESSURE: 12 TO 36 OUNCES.
3. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01131 DATE 5-1-63

TABLE I

DASH NO.	LENS COLOR
-1	RED
-2	GREEN
-3	YELLOW(AMBER)
-4	BLUE
-5	WHITE(TRANSLUCENT)
-6	YELLOW
-7	CLEAR


.027/.017 X .703/.672 O.D. INTERNAL TOOTH LOCKWASHER
.109/.078 X .641/.609 ACROSS FLATS HEX. NUT
CRIMPED IN 3 EVENLY SPACED PLACES TO HOLD LAMP
.039/.029
17/32 -32 UNS-2A MOUNTING BUSHING
5/16 -32 UNEF-2A
.516/.484 DIA
.624/.604 DIA
.062/.031 X .109/.078 SLOTS
(2) TERMINALS
.266/.234
.703 MAX
.078/.047 PANEL
.750 MAX.

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO. LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN R. Kone DATE 12 APR. 63
CHECKED A.Y 16 APR 63
APPROVAL 4/25/63
APPROVAL C 4/25/63
APPROVAL
NASA APPROVAL 5-1-63 4/30/63
MIT APPROVAL Eldon C Hall 5/1/63
MIT APPROVAL May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

LIGHT, INDICATOR, INCANDESCENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. SIZE C NASA DRAWING NO. 1006919
SCALE NONE WT SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1006919

INCHES 0 1 2
PHOTOGRAPHIC SCALE ONLY

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REVISIONS

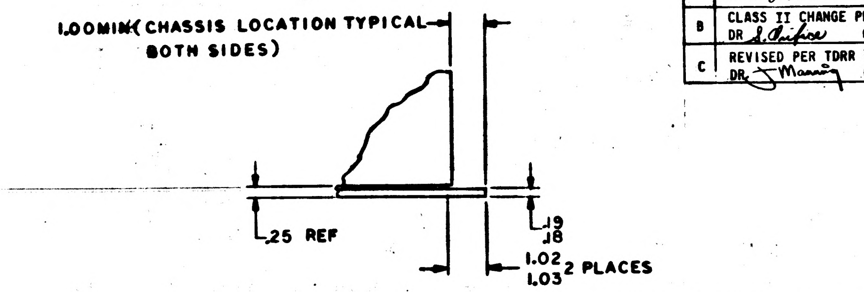
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR 01856	7/2/63	
A	CLASS II CHANGE PER RD-R5311 DR Bay Wheeler CHK J. Ruggeri APPD A. Maynard	9/11/63	JJS
B	CLASS II CHANGE PER RD-R5498 DR S. Orifice CHK J. Ruggeri APPD A. Maynard		JJS
C	REVISED PER TDRR 06342 DR J Manning CHK A. Caggiano APPD A. Maynard	3/10/64	WK

NOTES:

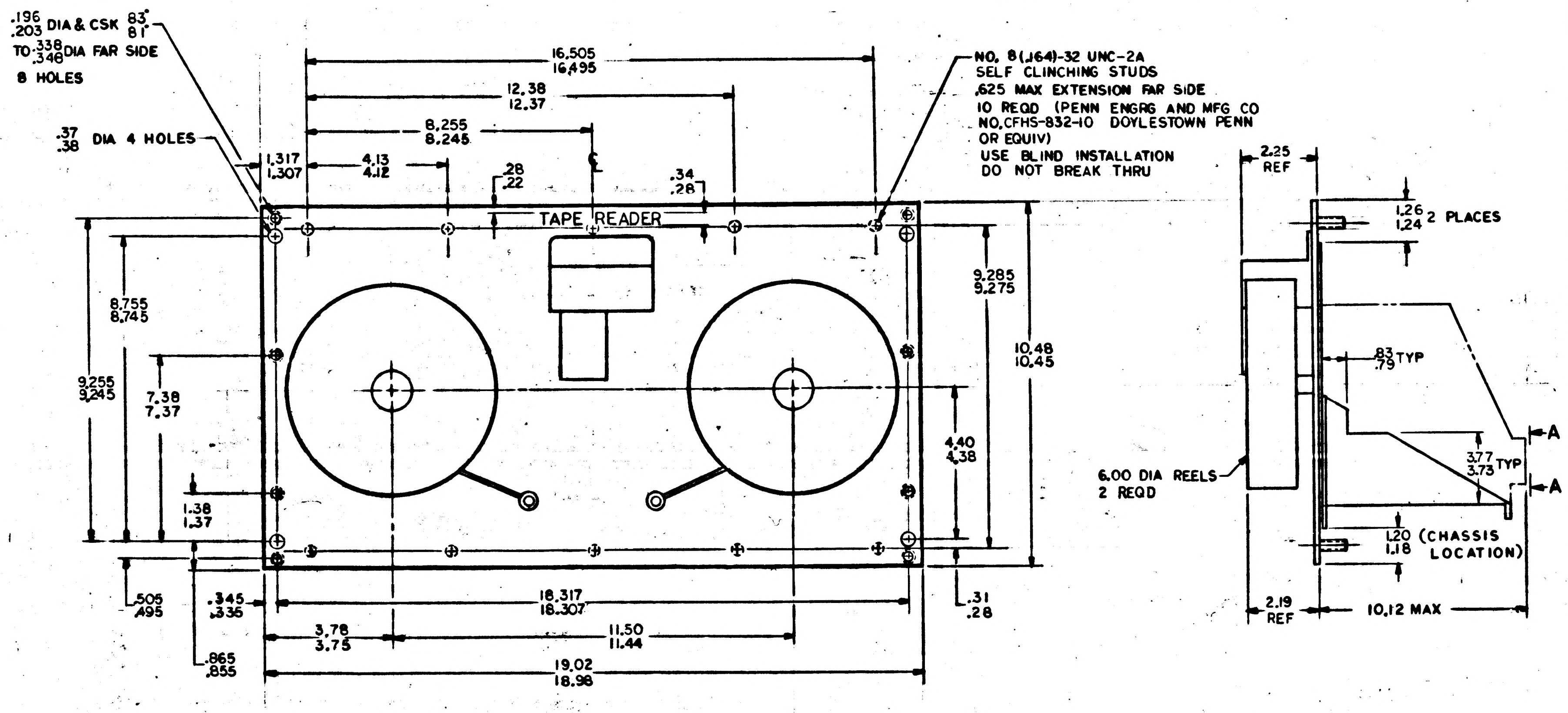
1. GENERAL REQUIREMENTS:
   - A. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.
   - B. MANUFACTURER'S NAMEPLATE, IDENTIFICATION OF UNIT, ADDRESS, TRADEMARK ETC, TO APPEAR ON REAR OF UNIT TOGETHER WITH THE NASA DRAWING NUMBER, AND REVISION LETTER.

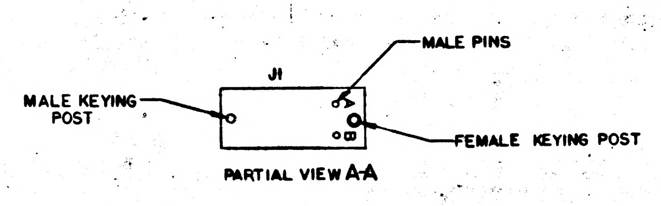
     (THIS INFORMATION NOT TO APPEAR ON FRONT PANEL).

2. DESIGN REQUIREMENTS:
   - A. CONSTRUCTION: SPECIAL WIDTH PANEL SHALL BE FINISHED BY PAINTING FRONT AND EDGES WITH ONE COAT OF SEMIGLOSS ENAMEL TT-E-529, CLASS B, COLOR NO. 26440 OF FED-STD-595, PER MIL-F-14072, P515, TYPE I EXCEPT CHROMATE FILM SHALL BE ELECTRICALLY CONDUCTIVE.
   - B. CODE CHANNEL AND TAPE CAPACITY: 1 INCH TAPE FOR 8 STANDARD CODE CHANNELS.
   - C. FRONT PANEL HARDWARE TO BE MS 35200 (CROSS RECESSED, FLAT HEAD) WHERE POSSIBLE. PAN HEAD HARDWARE TO BE MS 35216.
   - D. FRONT PANEL MARKING: SILK SCREEN .31 HIGH BLACK CHARACTERS PER ND 1002019.
   - E. EACH UNIT SHALL BE SUPPLIED TOGETHER WITH 2 COPIES OF AN OPERATING INSTRUCTION AND MAINTENANCE MANUAL.


1.00MIN (CHASSIS LOCATION TYPICAL BOTH SIDES)
.25 REF
.19
.18
1.02
1.03 2 PLACES

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01856 DATE 7/2/63


.196
.203 DIA & CSK 83°
81°
TO .338
.348 DIA FAR SIDE
8 HOLES
.37
.38 DIA 4 HOLES
16.505
16.495
12.38
12.37
8.255
8.245
4.13
4.12
1.317
1.307
.28
.22
.34
.28
℄
TAPE READER
NO. 8 (.164)-32 UNC-2A
SELF CLINCHING STUDS
.625 MAX EXTENSION FAR SIDE
10 REQD (PENN ENGRG AND MFG CO
NO. CFHS-832-10 DOYLESTOWN PENN
OR EQUIV)
USE BLIND INSTALLATION
DO NOT BREAK THRU
8.755
8.745
9.255
9.245
7.38
7.37
1.38
1.37
9.285
9.275
10.48
10.45
4.40
4.38
.505
.495
.345
.335
18.317
18.307
.31
.28
3.78
3.75
11.50
11.44
.865
.855
19.02
18.98
2.25
REF
1.26
1.24 2 PLACES
.83
.79 TYP
A
A
3.77
3.73 TYP
6.00 DIA REELS
2 REQD
1.20
1.18 (CHASSIS LOCATION)
2.19
REF
10.12 MAX


J1
MALE PINS
MALE KEYING POST
FEMALE KEYING POST

PARTIAL VIEW A-A

ORIGINAL SOURCE OF SUPPLY:
TALLY REGISTER CORPORATION
SEATTLE 9, WASHINGTON
CODE IDENT NO.
MODEL NO. 424PR-48-6 (AS MODIFIED ABOVE) WITH DRIVE UNIT NO. 1440A AS
DELINEATED IN CATALOGUE NO. 1-63-57939.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMAL ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN H. Pinsman DATE 10 JUNE 63
CHECKED J. Ruggeri 11 JUNE 63 A. Maynard
APPROVAL June 11, 63
APPROVAL
APPROVAL
NASA APPROVAL 7/2/63
MIT APPROVAL 7/2/63
MIT APPROVAL 7/2/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TAPE READER

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. | SIZE D | NASA DRAWING NO. 1006924
SCALE NONE | WT | SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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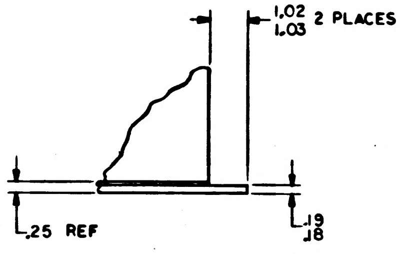
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR 01856	7/2/63	

NOTES:

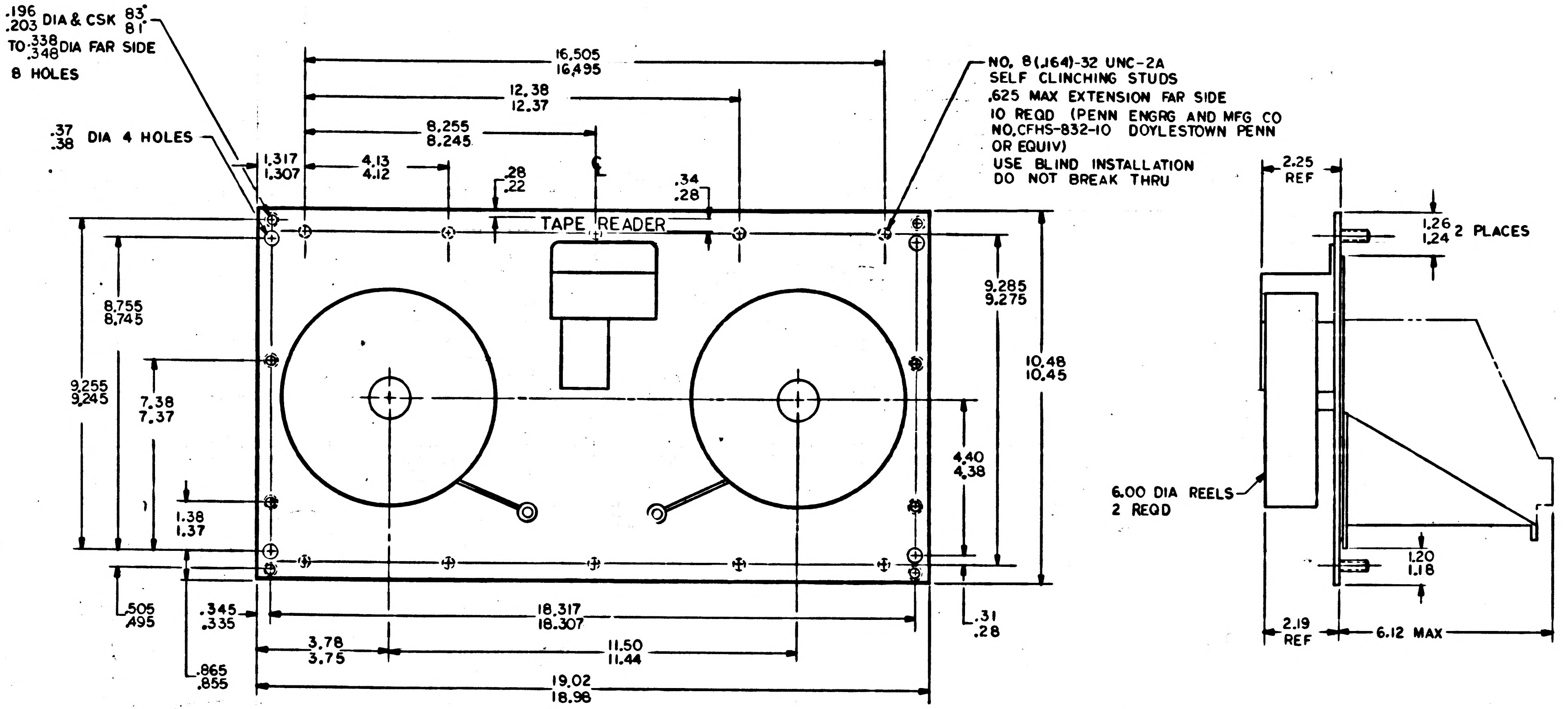
1. GENERAL REQUIREMENTS:
   - A. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.
   - B. MANUFACTURER'S NAMEPLATE, IDENTIFICATION OF UNIT, ADDRESS, TRADEMARK ETC, TO APPEAR ON REAR OF UNIT TOGETHER WITH THE NASA DRAWING NUMBER, AND REVISION LETTER.

     (THIS INFORMATION NOT TO APPEAR ON FRONT PANEL).

2. DESIGN REQUIREMENTS:
   - A. CONSTRUCTION: SPECIAL WIDTH PANEL SHALL BE FINISHED BY PAINTING FRONT AND EDGES WITH ONE COAT OF SEMIGLOSS ENAMEL TT-E-529, CLASS B, COLOR NO. 26440 OF FED-STD-595, PER MIL-F-14072, P513, TYPE I EXCEPT CHROMATE FILM SHALL BE ELECTRICALLY CONDUCTIVE.
   - B. CODE CHANNEL AND TAPE CAPACITY: 1 INCH TAPE FOR 8 STANDARD CODE CHANNELS.
   - C. FRONT PANEL HARDWARE TO BE MS 35200 (CROSS RECESSED, FLAT HEAD) WHERE POSSIBLE. PAN HEAD HARDWARE TO BE MS 35216.
   - D. FRONT PANEL MARKING: SILK SCREEN .31 HIGH BLACK CHARACTERS PER ND 1002019.
   - E. EACH UNIT SHALL BE SUPPLIED TOGETHER WITH 2 COPIES OF AN OPERATING INSTRUCTION AND MAINTENANCE MANUAL.


1.02
1.03 2 PLACES
.25 REF
.19
.18

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01856 DATE 7/2/63


.196
.203 DIA & CSK 83°
81°
TO .338
.348 DIA FAR SIDE
8 HOLES
.37
.38 DIA 4 HOLES
1.317
1.307
4.13
4.12
8.255
8.245
12.38
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16.495
.28
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.34
.28
TAPE READER
NO. 8(.164)-32 UNC-2A
SELF CLINCHING STUDS
.625 MAX EXTENSION FAR SIDE
10 REQD (PENN ENGRG AND MFG CO
NO. CFHS-832-10 DOYLESTOWN PENN
OR EQUIV)
USE BLIND INSTALLATION
DO NOT BREAK THRU
8.755
8.745
9.255
9.245
7.38
7.37
1.38
1.37
9.285
9.275
10.48
10.45
4.40
4.38
.505
.495
.345
.335
18.317
18.307
3.78
3.75
11.50
11.44
.865
.855
19.02
18.98
.31
.28
2.25
REF
1.26
1.24 2 PLACES
6.00 DIA REELS
2 REQD
1.20
1.18
2.19
REF
6.12 MAX

ORIGINAL SOURCE OF SUPPLY:
TALLY REGISTER CORPORATION
SEATTLE 9, WASHINGTON
CODE IDENT NO.
MODEL NO. 424PR-48-6 (AS MODIFIED ABOVE) WITH DRIVE UNIT NO. 1443 ALL DELINEATED IN CATALOGUE NO. 1-63-57939.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
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RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN H. Bruner DATE 10 JUNE 63
CHECKED 11 JUNE 63 W. Maynard
APPROVAL Jun 21, 63
APPROVAL 6/21/63
APPROVAL 6/21/63
NASA APPROVAL 7/2/63
MIT APPROVAL 7/2/63
MIT APPROVAL 7/2/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TAPE READER

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1006924
SCALE NONE
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SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

INCHES
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1006924

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

NOTES:

1. GENERAL REQUIREMENTS:
   - A. TOGGLE SWITCH SHALL BE CAPABLE OF MEETING THE APPLICABLE REQUIREMENTS OF MIL-S-3950, HOWEVER, THE TWO (2) SENSITIVE SWITCHES CONTAINED THEREIN SHALL BE IN ACCORDANCE WITH MS25085-1 AND MIL-S-6743.
   - B. ELECTRICAL RATINGS: PER TABLE I, AND MIL-S-6743.
     - (1) CONTACT VOLTAGE DROP: 1 MILLIVOLT MAXIMUM AT 100 MILLIAMPERES (MIL-S-3950).
     - (2) DIELECTRIC WITHSTANDING VOLTAGE: (SEA LEVEL) 1000 VOLTS RMS (MIL-S-6743).
   - C. MARKING: UNITS SHALL BE MARKED PER MIL-STD-130 WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, TERMINAL IDENTIFICATION, SWITCH NUMBER "1" AND "2" AND THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
2. CONSTRUCTION REQUIREMENTS:
   - A. MECHANICAL CHARACTERISTICS PER TABLE II.
   - B. ACTIVATOR (TOGGLE): THREE (3) POSITION.
     - (1) FORCE: 1/2 POUND TO 5 POUNDS.
   - C. CONTACT ARRANGEMENT: TWO (2) SINGLE POLE DOUBLE THROW SWITCHES.
3. THE SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS AS CONTAINED IN ND 1015404, CLASS 2.
4. UNITS SHALL MEET THE QUALIFICATION REQUIREMENTS OF ND 1002055.

TABLE I

CONTACT RATINGS

		IN RUSH AMPS.		AMPERES (SEA LEVEL)				AMPERES (50,000 FEET)				MINIMUM OPERATING CYCLES	
VOLTS	CYCLES	NC	NO	RES	IND	MOTOR	LAMP	RES	IND	MOTOR	LAMP	MECH	ELECT
28	DC	24	24	5	3	4	2.4	5	2.5	4	2.4	50,000	25,000
125	60	20	20	5	5	3.3	2	5	5	3.3	2	50,000	40,000
250	60	20	20	5	5	3.3	2	5	5	3.3	2	50,000	40,000

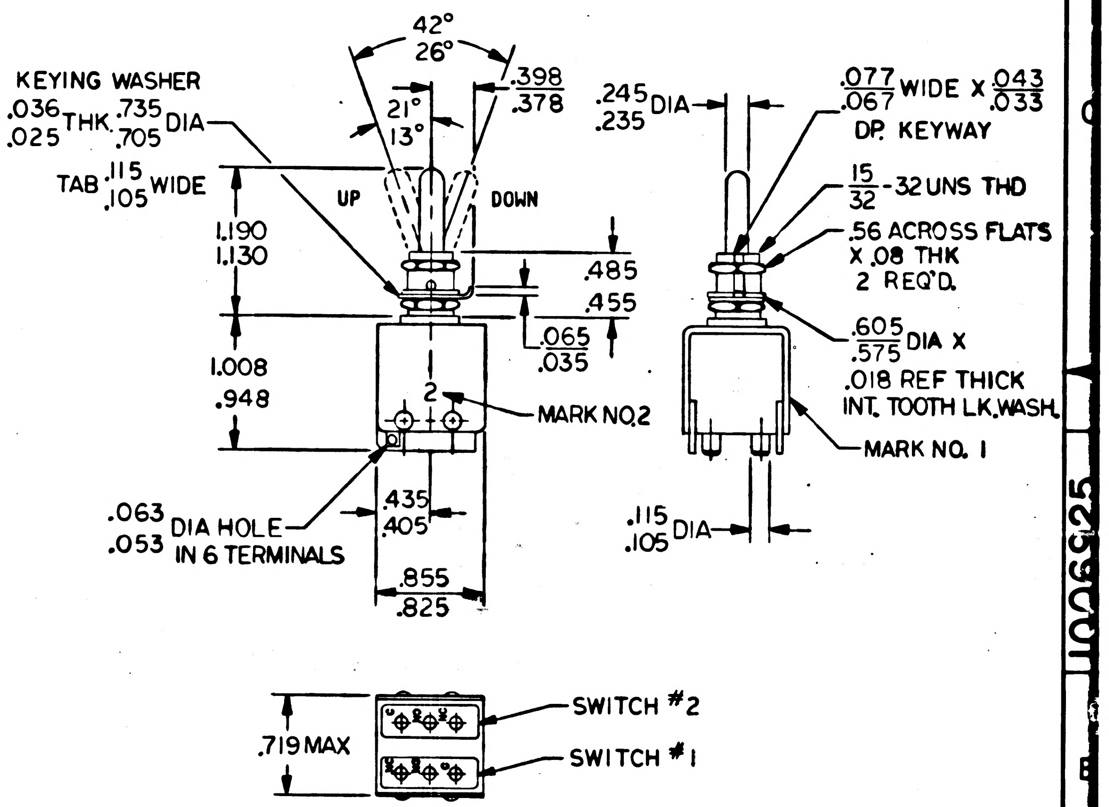
TABLE II

MECHANICAL (SWITCHING) CHARACTERISTICS

DASH NO.	SWITCH NO.	TOGGLE POSITION (SEE FIG 1)					
		UP		MIDDLE		DOWN	
		MAKE CIRCUIT	POSITION	MAKE CIRCUIT	POSITION	MAKE CIRCUIT	POSITION
-1	SWITCH #2	NO-C	MOMENTARY	NC-C	MAINTAINED	NC-C	MOMENTARY
	SWITCH #1	NC-C		NC-C		NO-C	
-2	SWITCH #2	NO-C	MAINTAINED	NC-C	MAINTAINED	NC-C	MAINTAINED
	SWITCH #1	NC-C		NC-C		NO-C	
-3	SWITCH #2	NO-C	MOMENTARY	NC-C	MAINTAINED	NC-C	MAINTAINED
	SWITCH #1	NC-C		NC-C		NO-C	

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 00943 DATE 24 Apr 63



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MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
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LEXINGTON, MASS.
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DRAWN R. Kone DATE 22 MAR. 63
CHECKED A. Eggers A. Yelany 27 MAR 63
APPROVAL C. Savlin 16 APR 63
APPROVAL J. Schmock 13 APR 63
11 Apr 63
NASA APPROVAL 4/24/63
Dennis Pavlonnis 4/24/63
EC Hall 4/24/63
MIT APPROVAL W Kopp for 24 Apr 63

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SWITCH, TOGGLE

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	C	1006925

SCALE NONE WT SHEET 1 OF 1

INCHES
0 1 2
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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR 00943		
A	CLASS 2 CHANGE PER RD-R5206A CHK	8/19/63	JJS
B	REVISED PER TDRR 08567 DR Kendall CHK Wolkowicz APPD J Maynard	6/1/64	NEB

M

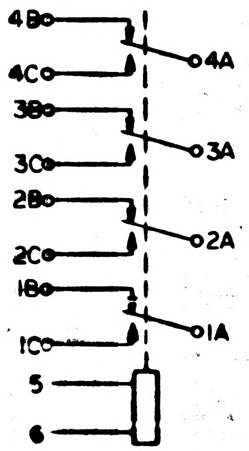
NOTES:

1. GENERAL REQUIREMENTS:
   - A. UNITS SHALL BE CAPABLE OF MEETING THE APPLICABLE REQUIREMENTS OF MIL-R-6106, AND AS SPECIFIED HEREIN.
   - B. COIL RATINGS
     - (1) RATED VOLTAGE: 115 [illegible] VOLTS RMS, 60 CYCLES.
     - (2) RATED CURRENT: 120 MILLIAMPERES.
     - (3) PICKUP VOLTAGE: 90 VOLTS RMS, MAXIMUM; 100 VOLTS RMS MAXIMUM AT +85°C.
     - (4) DROPOUT VOLTAGE: 5 VOLTS RMS MINIMUM – 85 VOLTS RMS MAXIMUM.
     - (5) POWER: 14 VOLT-AMPERES AT RATED VOLTAGE; 12 VA AT +25°C.
     - (6) RESISTANCE, DC: 120 ± 20% OHMS.
   - C. CONTACT RATING AT RATED INPUT:
     - (1) RESISTIVE LOAD: 115/230 VOLTS, RMS, 60 CYCLES; 25 AMPERES.
   - D. CONTACT VOLTAGE DROP: 175 MILLIVOLTS MAXIMUM, WITH THE CONTACTS CARRYING RATED LOAD.
   - E. OPERATE TIME: 40 MILLISECONDS, MAXIMUM.
   - F. RELEASE TIME: 30 MILLISECONDS, MAXIMUM.
   - G. CONTACT BOUNCE: 30 MILLISECONDS, MAXIMUM.
   - H. DIELECTRIC WITHSTANDING VOLTAGE (SEA LEVEL): 2000 VOLTS RMS, MINIMUM.
   - I. INSULATION RESISTANCE: 100 MEGOHMS MINIMUM AT 500 VOLTS DC.
   - J. MARKING: UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, PART NUMBER, ELECTRICAL RATINGS AND THE NASA DRAWING NUMBER AND REVISION LETTER. [illegible] DRAWING NUMBER AND REVISION LETTER.

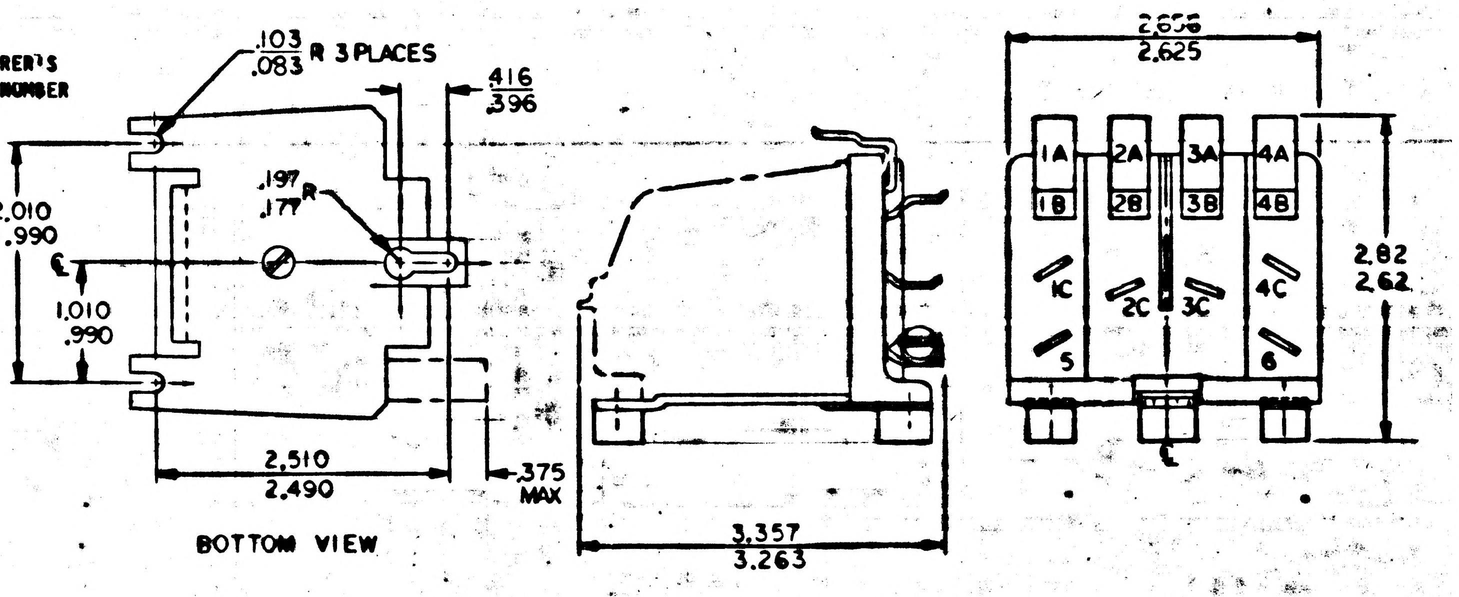
2. CONSTRUCTION REQUIREMENTS:
   - A. TEMPERATURE RANGE: -55° TO +85°C.
   - B. CONTACT ARRANGEMENT: FOUR POLE DOUBLE THROW (4 PDT).
   - C. TERMINALS: 14 #8-32 BY 5/32 LONG MINIMUM.
     - (1) FORCE: 30 POUNDS.
     - (2) TORQUE: 18 INCH – POUNDS.
   - D. ENDURANCE: 100,000 CYCLES, MINIMUM, WITH NO MISSES AT RATED LOAD, 14 CYCLES PER MINUTE, 50% DUTY CYCLE, AND +25°C.

3. UNIT [illegible] MEET THE QUALIFICATION [illegible] NO [illegible]2046.

3. THE SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS PRESCRIBED BY NASA DOCUMENT NO 1015404, CLASS 3.



FOR INFORMATION ONLY
CLASS B RELEASE PER TDRR NO. 00943 DATE 24 Apr 63



BOTTOM VIEW

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LIST OF MATERIALS

NEXT ASSY	USED ON
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DO NOT SCALE THIS DRAWING
MATERIAL: SEE NOTES
HEAT TREATMENT: NONE
FINAL FINISH: NONE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN R. Kane DATE 25 Apr 63
CHECKED A. Pember A. Young
APPROVAL C Spenley 12 Apr 63
APPROVAL JJS 12 Apr 63
APPROVAL W. J. Rushton 12 Apr 63
NASA APPROVAL 4/24/63
MIT APPROVAL E C Hall 24 April 63
MIT APPROVAL 24 Apr 63

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RELAY, ARMATURE

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006926
SCALE NONE
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SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1006926

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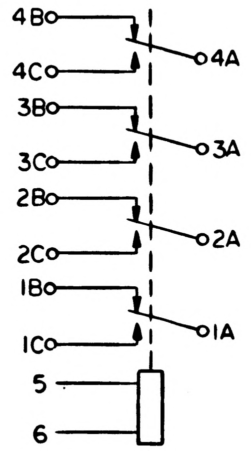
REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		

NOTES:

1. GENERAL REQUIREMENTS:
   - A. UNITS SHALL BE CAPABLE OF MEETING THE APPLICABLE REQUIREMENTS OF MIL-R-6106, AND AS SPECIFIED HEREIN.
   - B. COIL RATINGS
     - (1) RATED VOLTAGE: 115/200 VOLTS RMS, 60 CYCLES.
     - (2) RATED CURRENT: 128 MILLIAMPERES.
     - (3) PICKUP VOLTAGE: 80 VOLTS RMS, MAXIMUM; 95 VOLTS RMS MAXIMUM AT +85°C.
     - (4) DROPOUT VOLTAGE: 5 VOLTS RMS MINIMUM - 70 VOLTS RMS MAXIMUM.
     - (5) POWER: 14 VOLT-AMPERES AT RATED VOLTAGE; 12 VA AT +85°C.
     - (6) RESISTANCE, DC: 120 ± 24 OHMS.
   - C. CONTACT RATING AT RATED INPUT:
     - (1) RESISTIVE LOAD: 115/230 VOLTS, RMS, 60 CYCLES; 25 AMPERES.
   - D. CONTACT VOLTAGE DROP: 175 MILLIVOLTS MAXIMUM, WITH THE CONTACTS CARRYING RATED LOAD.
   - E. OPERATE TIME: 10 MILLISECONDS, MAXIMUM.
   - F. RELEASE TIME: 10 MILLISECONDS, MAXIMUM.
   - G. CONTACT BOUNCE: 10 MILLISECONDS, MAXIMUM.
   - H. DIELECTRIC WITHSTANDING VOLTAGE (SEA LEVEL): 2000 VOLTS RMS, MINIMUM.
   - I. INSULATION RESISTANCE: 100 MEGOHMS MINIMUM AT 500 VOLTS DC.
   - J. MARKING: UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, PART NUMBER, ELECTRICAL RATINGS, TERMINAL IDENTIFICATION, SCHEMATIC DIAGRAM AND THE NASA DRAWING NUMBER AND REVISION LETTER.
2. CONSTRUCTION REQUIREMENTS:
   - A. TEMPERATURE RANGE: -55° TO +85°C.
   - B. CONTACT ARRANGEMENT: FOUR POLE DOUBLE THROW (4 PDT).
   - C. TERMINALS: 14 #8-32 BY 1/4 LONG MINIMUM.
     - (1) FORCE: 30 POUNDS.
     - (2) TORQUE: 18 INCH - POUNDS.
   - D. ENDURANCE: 100,000 CYCLES, MINIMUM, WITH NO MISSES AT RATED LOAD, 14 CYCLES PER MINUTE, 50% DUTY CYCLE, AND +85°C.
3. UNIT SHALL MEET THE QUALIFICATION REQUIREMENTS OF ND 1002046.
4. THE SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS PRESCRIBED BY NASA DOCUMENT ND 1015404, CLASS 2.



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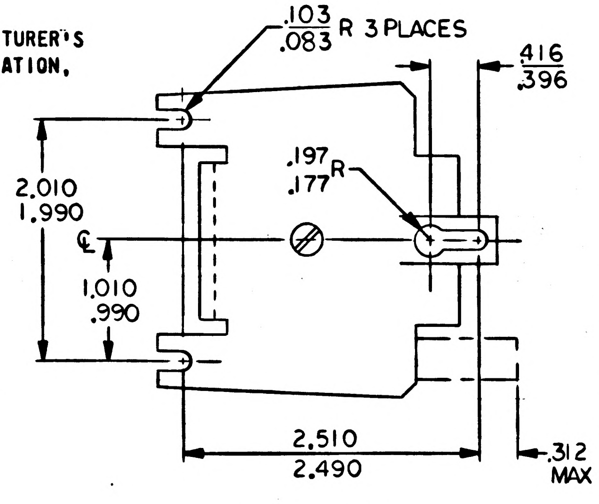
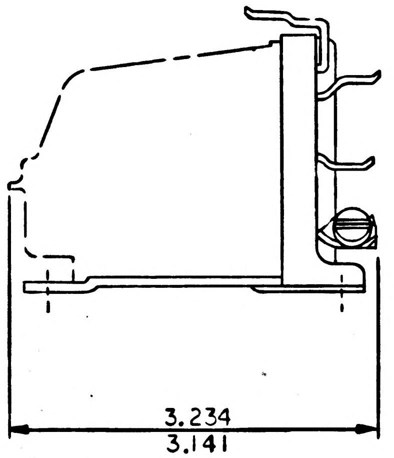
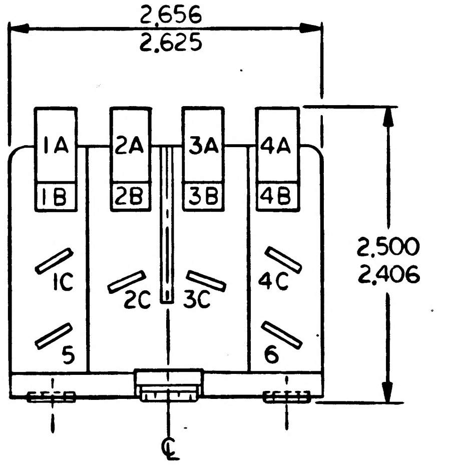


BOTTOM VIEW





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FINAL FINISH NONE

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LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN R. Kane DATE 25 Mar. 63
CHECKED A. Pember A. Yelsey
APPROVAL C Sperling 12 Apr 63
APPROVAL 12 Apr 63
APPROVAL 12 Apr 63
NASA APPROVAL 4/24/63
24 Apr 63
MIT APPROVAL E C Hall 24 April 63
MIT APPROVAL 24 Apr 63

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RELAY, ARMATURE

SPECIFICATION CONTROL DRAWING

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SCALE NONE
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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		
A	CHANGE PER TDRR 02527 DR C. Carlopi CHK J Russini APPD H Haymond		WR

NOTES:

1. GENERAL REQUIREMENTS:
   - A. UNITS SHALL BE IN ACCORDANCE WITH MIL-M-7793 (AER) AND THE REQUIREMENTS SPECIFIED HEREIN.
   - B. MARKING: UNITS SHALL BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH THE MANUFACTURER'S NAME OR SYMBOL; VOLTAGE, FREQUENCY, AND POWER RATING.
2. ELECTRICAL REQUIREMENTS:
   - A. DIELECTRIC: SHALL WITHSTAND 500 VOLTS RMS, 60 CPS FROM WINDING TERMINALS TO CASE FOR 5 SECONDS WITHOUT BREAKDOWN (CURRENT SENSITIVITY OF 0.001 AMP).
   - B. INSULATION RESISTANCE: 100 MEGOHMS MINIMUM FROM TERMINALS TO CASE.
   - C. MOTOR CONTROL: 115 VOLTS 60 CYCLES.
   - D. VOLTAGE RANGE: 115 VOLTS ± 10%.
   - E. FREQUENCY RANGE: 60 ± 3 CYCLES.
   - F. POWER DISSIPATION: 2.5 WATTS NOMINAL.
   - G. ACCURACY: ±10% UNDER CONDITIONS OF NOTES 2.C., 2.D., AND 2.E.
3. MECHANICAL REQUIREMENTS:
   - A. ENCLOSURE: HERMETICALLY SEALED.
   - B. TERMINALS: HOT SOLDER DIPPED (40% TO 70% TIN CONTENT).
   - C. TOTAL TIME INDICATION: 9,999.9 HOURS IN 1/10 HOUR STEPS.
4. ENVIRONMENTAL REQUIREMENTS:
   - A. AMBIENT TEMPERATURE RANGE: -55°C TO +85°C.
   - B. HUMIDITY: THE UNIT SHALL OPERATE SATISFACTORILY AFTER BEING SUBJECTED TO METHOD 106 OF MIL-STD-202.
   - C. VIBRATION: THE UNIT SHALL OPERATE SATISFACTORILY WHEN IT IS SUBJECTED TO SIMPLE HARMONIC VIBRATION OR FREQUENCIES VARYING FROM 10 TO 55 CYCLES AND RETURN IN APPROXIMATELY ONE MINUTE WITH AN AMPLITUDE OF 0.03 INCH (0.06 INCH TOTAL EXCURSION) IN EACH OF THE THREE PRINCIPAL PLANES FOR A PERIOD OF 90 MINUTES. NO DAMAGE SHALL EXIST AT THE COMPLETION OF THIS TEST.
   - D. SHOCK: THE UNIT SHALL NOT SUFFER DAMAGE WHEN SUBJECTED TO 5 SHOCKS OF 15G IN EACH DIRECTION ALONG THE 3 PRINCIPAL AXES (30 TOTAL).
   - E. CORROSION RESISTANCE: THERE SHALL BE NO DESTRUCTIVE CORROSION OF THE BASE METAL OF THE ENCLOSURE, NOR SHALL ANY CORROSION PRODUCTS OF THE PLATING (OR FINISH) HINDER SATISFACTORY ELECTRICAL OR MECHANICAL OPERATION AFTER 50 HOURS OF SALT SPRAY PER SPECIFICATION QQ-M-151A. THERE SHALL BE NO INTERNAL CORROSION AT THE COMPLETION OF THIS TEST.
5. QUALITY ASSURANCE REQUIREMENTS:
   - A. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS PER NASA DOCUMENT 1015404, CLASS 3.

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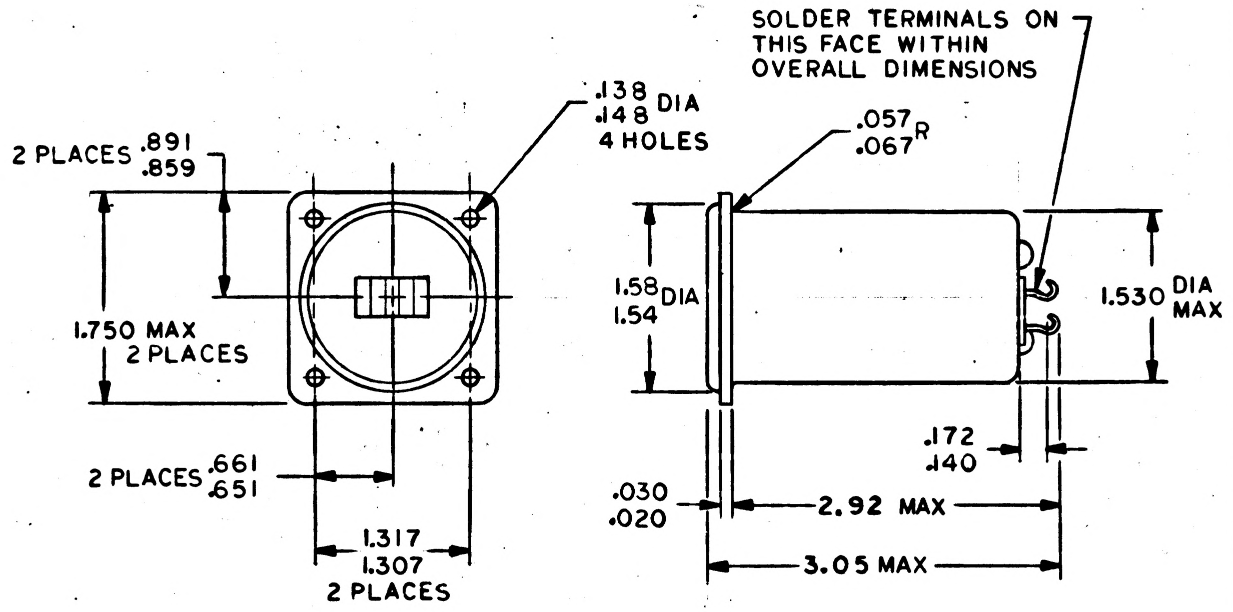

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FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN J.A. Zaffin DATE 9MAR63
CHECKED A. Bozzi 25MAR63
APPROVAL C Sperling 28MAR63
APPROVAL 28MAR
APPROVAL 28Mar63 J Pomerantz
NASA APPROVAL
J. M. Jeckonius Apr 63
E G Hall 1 April 63
MIT APPROVAL 3 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INDICATOR, TOTAL TIME
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006927
SCALE NONE
WT
SHEET 1 OF 1

INCHES
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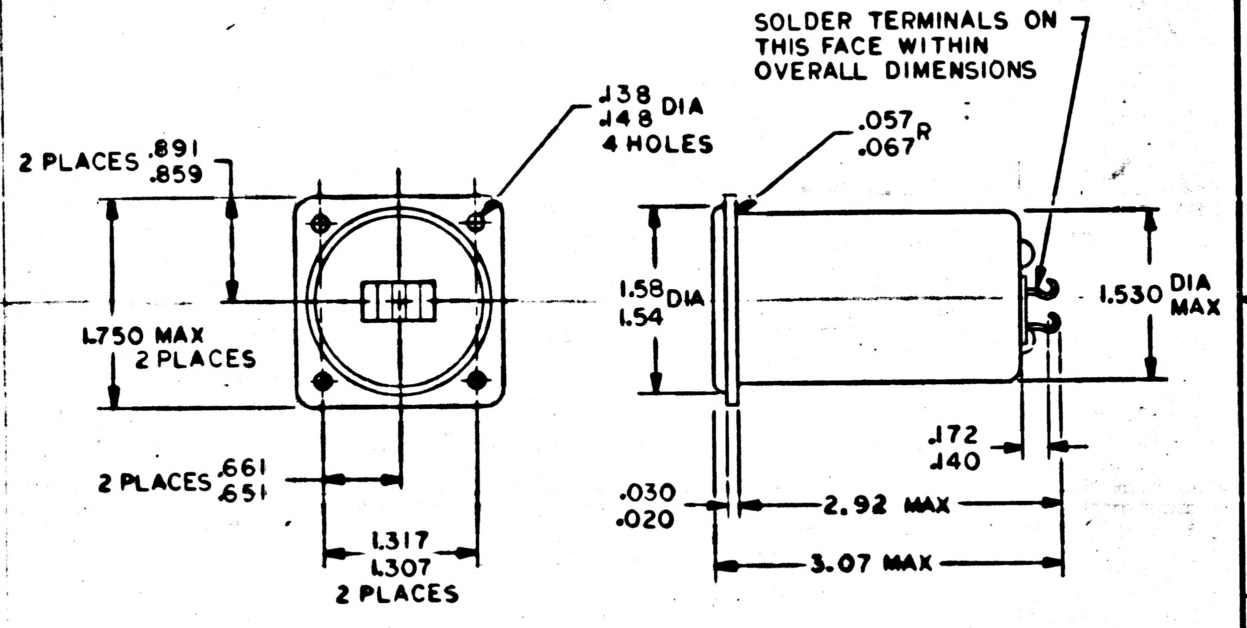
REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		
A	CHANGE PER TDRR 02527 DR C. Crespin CHK J. Ruggsi APPD A. Maynard		WR
B	CLASS II CHANGE PER RD-R5503A DR S. Dufree CHK J. Ruggsi APPD A. Maynard		JJB
C	CHANGED PER TDRR 10607 DR Ken Bull CHK APPD D. Sleeper		

NOTES:

1. GENERAL REQUIREMENTS:
   - A. UNITS SHALL BE IN ACCORDANCE WITH MIL-M-7793 (AER) AND THE REQUIREMENTS SPECIFIED HEREIN.
   - B. MARKING: UNITS SHALL BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH THE MANUFACTURER'S NAME OR SYMBOL; VOLTAGE, FREQUENCY, AND POWER RATING.
2. ELECTRICAL REQUIREMENTS:
   - A. DIELECTRIC: SHALL WITHSTAND 500 VOLTS RMS, 60 CPS FROM WINDING TERMINALS TO CASE FOR 5 SECONDS WITHOUT BREAKDOWN (CURRENT SENSITIVITY OF 0.001 AMP).
   - B. INSULATION RESISTANCE: 100 MEGOHMS MINIMUM FROM TERMINALS TO CASE.
   - C. MOTOR CONTROL: 115 VOLTS 60 CYCLES.
   - D. VOLTAGE RANGE: 115 VOLTS ± 10%.
   - E. FREQUENCY RANGE: 60 ± 3 CYCLES.
   - F. POWER DISSIPATION: 2.5 WATTS NOMINAL.
   - G. ACCURACY: ±10% UNDER CONDITIONS OF NOTES 2.C., 2.D., AND 2.E.
3. MECHANICAL REQUIREMENTS:
   - A. ENCLOSURE: HERMETICALLY SEALED.
   - B. TERMINALS: HOT SOLDER DIPPED (40% TO 70% TIN CONTENT).
   - C. TOTAL TIME INDICATION: 9,999.9 HOURS IN 1/10 HOUR STEPS.
4. ENVIRONMENTAL REQUIREMENTS:
   - A. AMBIENT TEMPERATURE RANGE: -55°C TO +85°C.
   - B. HUMIDITY: THE UNIT SHALL OPERATE SATISFACTORILY AFTER BEING SUBJECTED TO METHOD 106 OF MIL-STD-202.
   - C. VIBRATION: THE UNIT SHALL OPERATE SATISFACTORILY WHEN IT IS SUBJECTED TO SIMPLE HARMONIC VIBRATION OR FREQUENCIES VARYING FROM 10 TO 55 CYCLES AND RETURN IN APPROXIMATELY ONE MINUTE WITH AN AMPLITUDE OF 0.03 INCH (0.06 INCH TOTAL EXCURSION) IN EACH OF THE THREE PRINCIPAL PLANES FOR A PERIOD OF 90 MINUTES. NO DAMAGE SHALL EXIST AT THE COMPLETION OF THIS TEST.
   - D. SHOCK: THE UNIT SHALL NOT SUFFER DAMAGE WHEN SUBJECTED TO 5 SHOCKS OF 15G IN EACH DIRECTION ALONG THE 3 PRINCIPAL AXES (30 TOTAL).
   - E. CORROSION RESISTANCE: THERE SHALL BE NO DESTRUCTIVE CORROSION OF THE BASE METAL OF THE ENCLOSURE, NOR SHALL ANY CORROSION PRODUCTS OF THE PLATING (OR FINISH) HINDER SATISFACTORY ELECTRICAL OR MECHANICAL OPERATION AFTER 50 HOURS OF SALT SPRAY PER SPECIFICATION QQ-M-151A. THERE SHALL BE NO INTERNAL CORROSION AT THE COMPLETION OF THIS TEST.
5. QUALITY ASSURANCE REQUIREMENTS:
   - A. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS PER NASA DOCUMENT 1015404, CLASS 3.

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00743 DATE 3 Apr 63



PROCURE ONLY FROM APPROVED SOURCES LISTED IN MD 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN J.A. Zaffin DATE 9 MAR 63
CHECKED A. Bogni 25 MAR 63
APPROVAL C Sperling 25 MAR 63
APPROVAL
APPROVAL
NASA APPROVAL
1 April 63
MIT APPROVAL 3 April 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INDICATOR, TOTAL TIME
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. SIZE C NASA DRAWING NO. 1006927
SCALE NONE WT SHEET 1 OF 1

1006927

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		
A	CHANGE PER TDRR 02527 DR C. Crespi CHK J. Ruggiu APPD H. Maynard		WR
B	CLASS II CHANGE PER RD-R5503A DR S. Onofree CHK J. Ruggiu APPD H. Maynard		[illegible]
C	CHANGED PER TDRR 10607 DR Ken Budd CHK [illegible] APPD D. Sleeper		[illegible]
D	REPLACED WITH CHANGE BY REV E PER TDRR 12826 DR E.G. Spinelli CHK [illegible] APPD	1 OCT 64	[illegible]

NOTES:

1. GENERAL REQUIREMENTS:
   - A. UNITS SHALL BE IN ACCORDANCE WITH MIL-M-7793 (AER) AND THE REQUIREMENTS SPECIFIED HEREIN.
   - B. MARKING: UNITS SHALL BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH THE MANUFACTURER'S NAME OR SYMBOL; VOLTAGE, FREQUENCY, AND POWER RATING.
2. ELECTRICAL REQUIREMENTS:
   - A. DIELECTRIC: SHALL WITHSTAND 500 VOLTS RMS, 60 CPS FROM WINDING TERMINALS TO CASE FOR 5 SECONDS WITHOUT BREAKDOWN (CURRENT SENSITIVITY OF 0.001 AMP).
   - B. INSULATION RESISTANCE: 100 MEGOHMS MINIMUM FROM TERMINALS TO CASE.
   - C. MOTOR CONTROL: 115 VOLTS 60 CYCLES.
   - D. VOLTAGE RANGE: 115 VOLTS ± 10%.
   - E. FREQUENCY RANGE: 60 ± 3 CYCLES.
   - F. POWER DISSIPATION: 2.5 WATTS NOMINAL.
   - G. ACCURACY: ±10% UNDER CONDITIONS OF NOTES 2.C., 2.D., AND 2.E.
3. MECHANICAL REQUIREMENTS:
   - A. ENCLOSURE: HERMETICALLY SEALED.
   - B. TERMINALS: HOT SOLDER DIPPED (40% TO 70% TIN CONTENT).
   - C. TOTAL TIME INDICATION: 9,999.9 HOURS IN 1/10 HOUR STEPS.
4. ENVIRONMENTAL REQUIREMENTS:
   - A. AMBIENT TEMPERATURE RANGE: -55°C TO +85°C.
   - B. HUMIDITY: THE UNIT SHALL OPERATE SATISFACTORILY AFTER BEING SUBJECTED TO METHOD 106 OF MIL-STD-202.
   - C. VIBRATION: THE UNIT SHALL OPERATE SATISFACTORILY WHEN IT IS SUBJECTED TO SIMPLE HARMONIC VIBRATION OR FREQUENCIES VARYING FROM 10 TO 55 CYCLES AND RETURN IN APPROXIMATELY ONE MINUTE WITH AN AMPLITUDE OF 0.03 INCH (0.06 INCH TOTAL EXCURSION) IN EACH OF THE THREE PRINCIPAL PLANES FOR A PERIOD OF 90 MINUTES. NO DAMAGE SHALL EXIST AT THE COMPLETION OF THIS TEST.
   - D. SHOCK: THE UNIT SHALL NOT SUFFER DAMAGE WHEN SUBJECTED TO 5 SHOCKS OF 15G IN EACH DIRECTION ALONG THE 3 PRINCIPAL AXES (30 TOTAL).
   - E. CORROSION RESISTANCE: THERE SHALL BE NO DESTRUCTIVE CORROSION OF THE BASE METAL OF THE ENCLOSURE, NOR SHALL ANY CORROSION PRODUCTS OF THE PLATING (OR FINISH) HINDER SATISFACTORY ELECTRICAL OR MECHANICAL OPERATION AFTER 50 HOURS OF SALT SPRAY PER SPECIFICATION QQ-M-151A. THERE SHALL BE NO INTERNAL CORROSION AT THE COMPLETION OF THIS TEST.
5. QUALITY ASSURANCE REQUIREMENTS:
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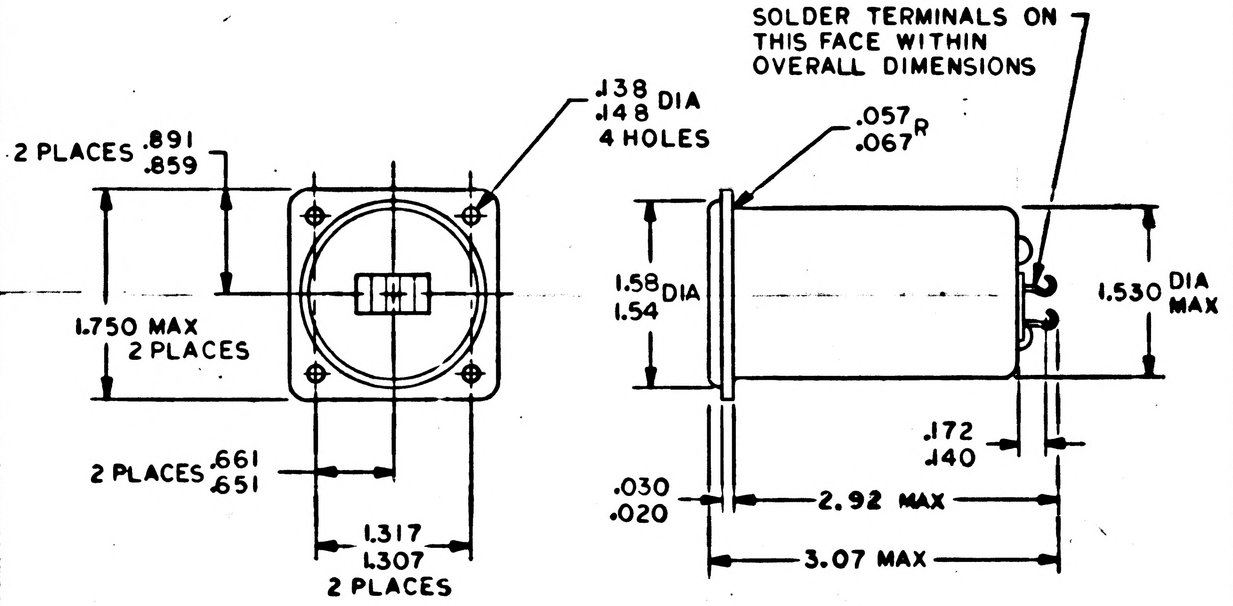
FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00743 DATE 3 Apr 63



Ⓓ REPLACED WITH CHANGE BY REV E

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN J.A. Zaffini DATE 9 MAR 63
CHECKED A. Bogni 25 MAR 63
APPROVAL C. Sparling 25 MAR 63
APPROVAL [illegible] 29 MAR
APPROVAL [illegible]
NASA APPROVAL Jack Barnard
D. M. Jenkins Apr 63
E. G. Hall 1 April 63
MIT APPROVAL W. Kupfer 3 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INDICATOR, TOTAL TIME

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. SIZE C NASA DRAWING NO. 1006927
SCALE NONE WT SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1006927

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
-	CLASS B RELEASE PER TDRR		

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NOTES:

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3. MECHANICAL REQUIREMENTS:
   - A. ENCLOSURE: HERMETICALLY SEALED.
   - B. TERMINALS: HOT SOLDER DIPPED (40% TO 70% TIN CONTENT).
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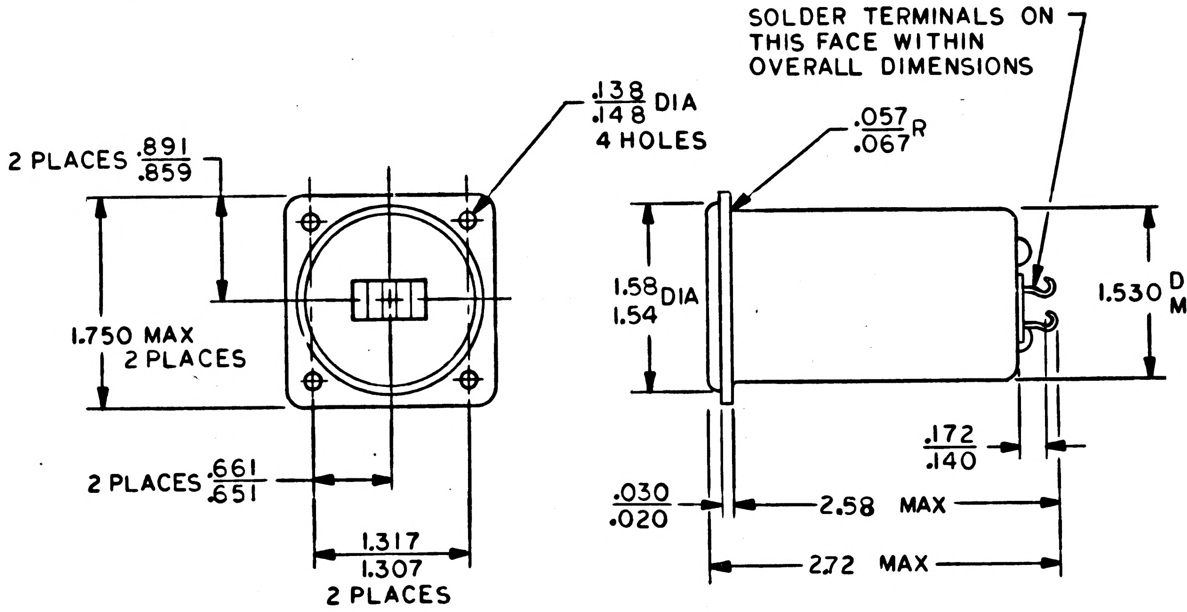
FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00743 DATE 3 Apr 63



PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

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TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH NONE

RAYTHEON
RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN J.A. Zaffin DATE 9 MAR 63
CHECKED A. Bogni 25 MAR 63
APPROVAL C Sperling 28 MAR 63
APPROVAL 28 MAR
APPROVAL 28 Mar 63
NASA APPROVAL
D.M. Jeckmier 1 Apr 63
E G Hall 1 April 63
MIT APPROVAL 3 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INDICATOR, TOTAL TIME

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006927
SCALE NONE
WT
SHEET 1 OF 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

[illegible] DRAWINGS, SPECIFICATIONS, OR OTHER DATA [illegible] PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY [illegible] PROCUREMENT OPERATION THE UNITED STATES GOVERN[illegible] NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER [illegible] THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR [illegible] THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS [illegible] BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING [illegible] OR ANY OTHER PERSON OR CORPORATION, OR CONVEY[illegible] PERMISSION TO MANUFACTURE, USE, OR SELL ANY [illegible] THAT MAY IN ANY WAY BE RELATED THERETO.

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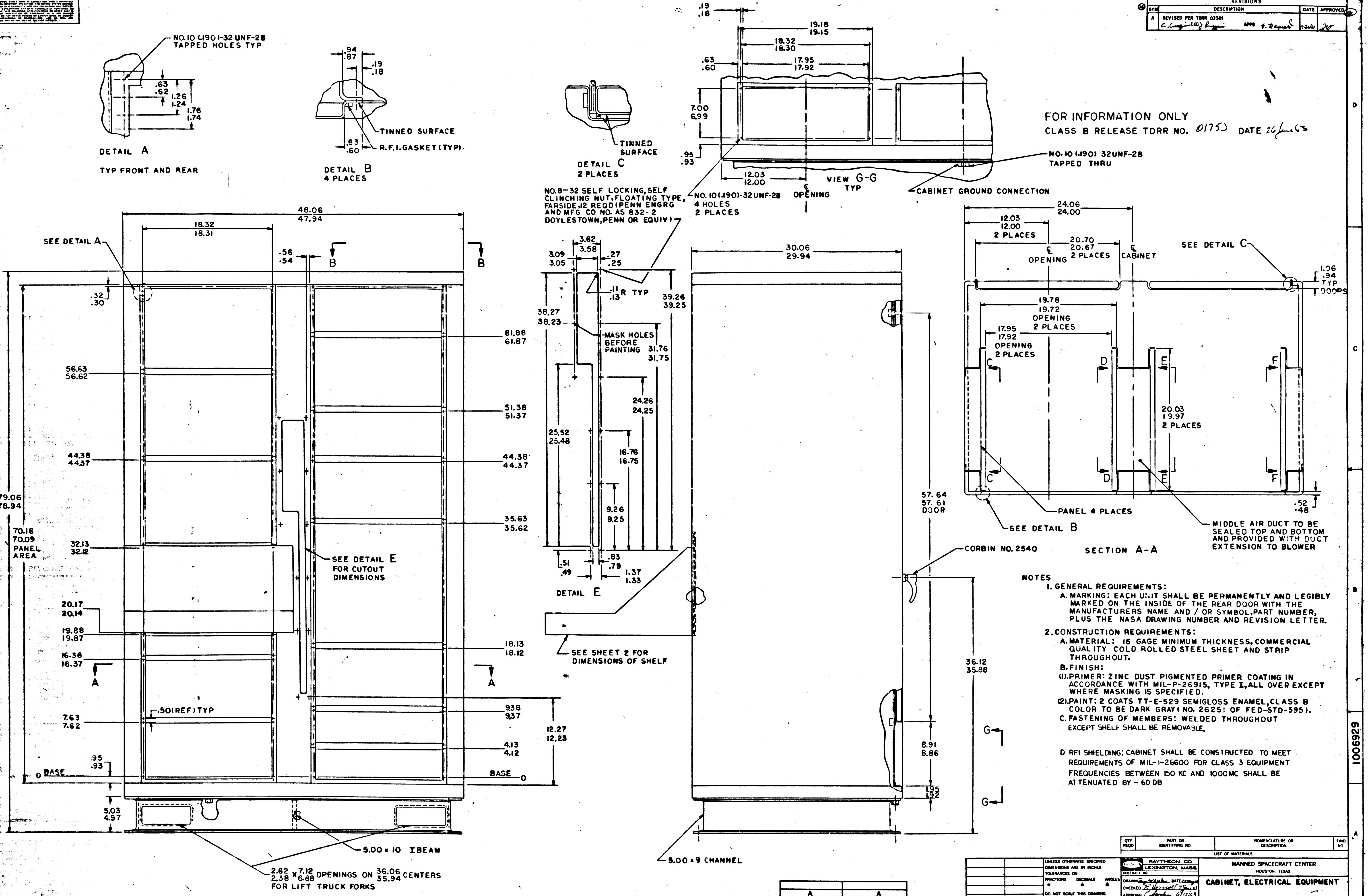
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 02381 C. Cangi CKD J. Ruggi APPD G. Maynard	9/20/63	

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01753 DATE 26 June 63


NO.10 (.190)-32 UNF-2B TAPPED HOLES TYP
.63 .62
1.26 1.24
1.76 1.74
DETAIL A
TYP FRONT AND REAR
.94 .87
.19 .18
TINNED SURFACE
.63 .60
R.F.I. GASKET (TYP)
DETAIL B
4 PLACES
TINNED SURFACE
DETAIL C
2 PLACES
.19 .18
19.18 19.15
18.32 18.30
17.95 17.92
.63 .60
7.00 6.99
.95 .93
12.03 12.00
℄ OPENING
VIEW G-G TYP
NO.10 (.190) 32UNF-2B TAPPED THRU
CABINET GROUND CONNECTION
NO.8-32 SELF LOCKING, SELF CLINCHING NUT, FLOATING TYPE, FARSIDE, 12 REQD (PENN ENGRG AND MFG CO NO. AS 832-2 DOYLESTOWN, PENN OR EQUIV)
NO. 10 (.190)-32 UNF-2B 4 HOLES 2 PLACES
48.06 47.94
18.32 18.31
SEE DETAIL A
.56 .54
B
B
.32 .30
79.06 78.94
70.16 70.09 PANEL AREA
56.63 56.62
44.38 44.37
32.13 32.12
20.17 20.14
19.88 19.87
16.38 16.37
A
A
.50 (REF) TYP
7.63 7.62
.95 .93
BASE 0
BASE 0
5.03 4.97
61.88 61.87
51.38 51.37
44.38 44.37
35.63 35.62
SEE DETAIL E FOR CUTOUT DIMENSIONS
18.13 18.12
9.38 9.37
12.27 12.23
4.13 4.12
5.00 x 10 IBEAM
2.62 2.38 x 7.12 6.88 OPENINGS ON 36.06 35.94 CENTERS FOR LIFT TRUCK FORKS
3.62 3.58
3.09 3.05
.27 .25
.11 .13 R TYP
38.27 38.23
39.26 39.25
MASK HOLES BEFORE PAINTING
31.76 31.75
24.26 24.25
25.52 25.48
16.76 16.75
9.26 9.25
.51 .49
.83 .79
1.37 1.33
DETAIL E
SEE SHEET 2 FOR DIMENSIONS OF SHELF
30.06 29.94
57.64 57.61 DOOR
CORBIN NO. 2540
36.12 35.88
8.91 8.86
1.95 1.92
G
G
5.00 x 9 CHANNEL
24.06 24.00
12.03 12.00 2 PLACES
20.70 20.67 2 PLACES
℄ OPENING
℄ CABINET
SEE DETAIL C
1.06 .94 TYP DOORS
19.78 19.72 OPENING 2 PLACES
17.95 17.92 OPENING 2 PLACES
C D E F
20.03 19.97 2 PLACES
C D E F
.52 .48
PANEL 4 PLACES
SEE DETAIL B
MIDDLE AIR DUCT TO BE SEALED TOP AND BOTTOM AND PROVIDED WITH DUCT EXTENSION TO BLOWER
SECTION A-A

NOTES

1. GENERAL REQUIREMENTS:
   - A. MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE INSIDE OF THE REAR DOOR WITH THE MANUFACTURERS NAME AND / OR SYMBOL, PART NUMBER, PLUS THE NASA DRAWING NUMBER AND REVISION LETTER.
2. CONSTRUCTION REQUIREMENTS:
   - A. MATERIAL: 16 GAGE MINIMUM THICKNESS, COMMERCIAL QUALITY COLD ROLLED STEEL SHEET AND STRIP THROUGHOUT.
   - B. FINISH:
     - (1). PRIMER: ZINC DUST PIGMENTED PRIMER COATING IN ACCORDANCE WITH MIL-P-26915, TYPE I, ALL OVER EXCEPT WHERE MASKING IS SPECIFIED.
     - (2). PAINT: 2 COATS TT-E-529 SEMIGLOSS ENAMEL, CLASS B COLOR TO BE DARK GRAY (NO. 26251 OF FED-STD-595).
   - C. FASTENING OF MEMBERS: WELDED THROUGHOUT EXCEPT SHELF SHALL BE REMOVABLE.
   - D RFI SHIELDING: CABINET SHALL BE CONSTRUCTED TO MEET REQUIREMENTS OF MIL-I-26600 FOR CLASS 3 EQUIPMENT FREQUENCIES BETWEEN 150 KC AND 1000MC SHALL BE ATTENUATED BY - 60 DB

A	A
SHEET 1	SHEET 2

REVISION STATUS OF SHEETS

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH SEE NOTES

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.
DRAWN Roy Wheeler DATE 22 May 63
CHECKED R. Wessel 7 June 63
APPROVAL C. Gordon 6/17/63
APPROVAL 6/14/63
APPROVAL J.P. 6/17/63
NASA APPROVAL 6-26-63
MIT APPROVAL 26 June
MIT APPROVAL L. Goldman 6/26/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1006929
SCALE NONE
WT
SHEET 1 OF 2

1006929

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

F-2

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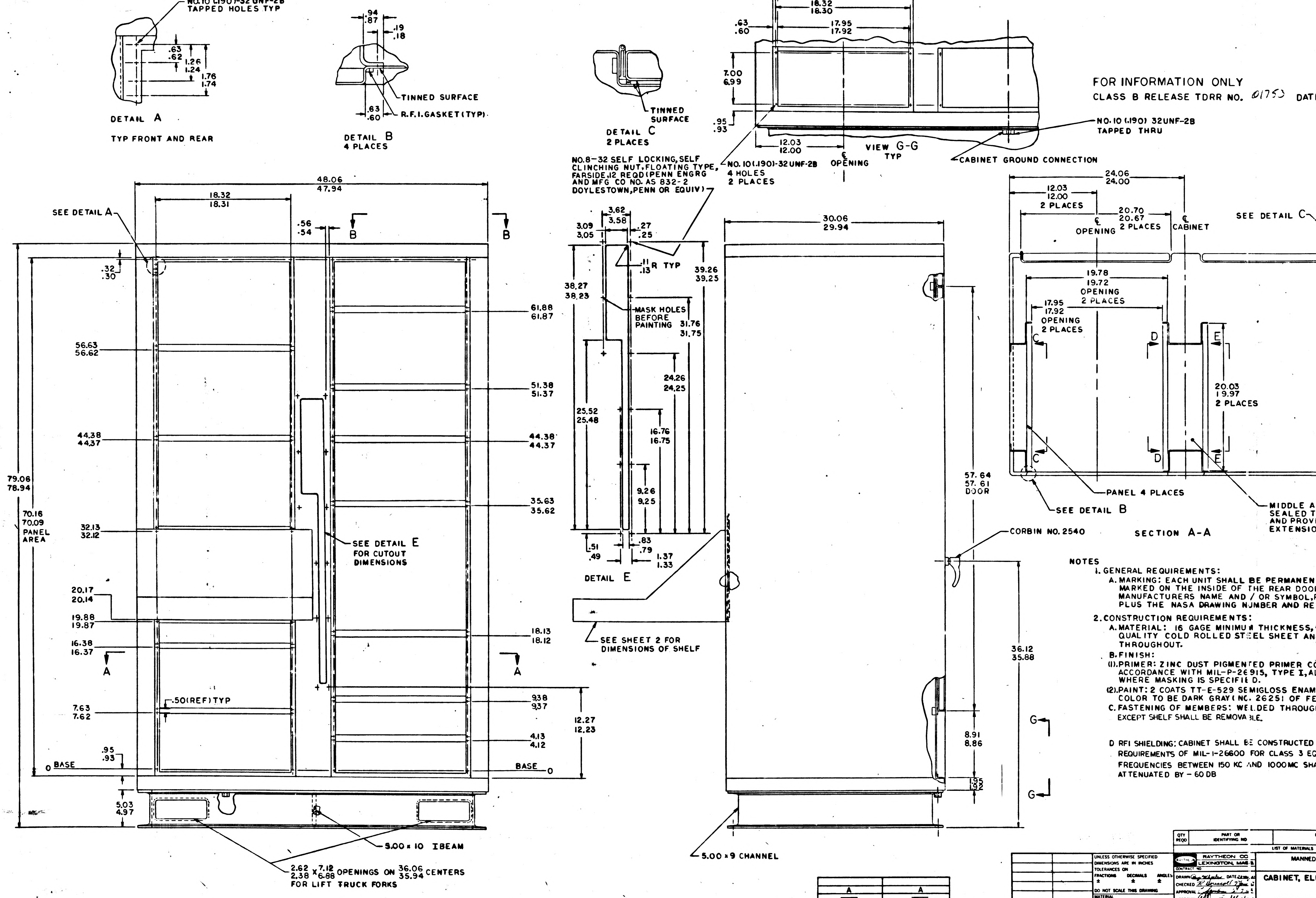
SYM	DESCRIPTION
A	REVISED PER TDRR 02301 C. Caragi (KD) J. Ruggeri

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01753 DAT


NO.10 (.190)-32 UNF-2B TAPPED HOLES TYP
.63 .62
1.26 1.24
1.76 1.74
DETAIL A
TYP FRONT AND REAR
.94 .87
.19 .18
TINNED SURFACE
R.F.I. GASKET (TYP)
.63 .60
DETAIL B
4 PLACES
TINNED SURFACE
DETAIL C
2 PLACES
.19 .18
19.18 19.15
18.32 18.30
.63 .60
17.95 17.92
7.00 6.99
.95 .93
12.03 12.00
VIEW G-G TYP
℄ OPENING
NO.10 (.190) 32UNF-2B TAPPED THRU
CABINET GROUND CONNECTION
NO.8-32 SELF LOCKING, SELF CLINCHING NUT, FLOATING TYPE, FARSIDE, 12 REQD (PENN ENGRG AND MFG CO NO. AS 832-2 DOYLESTOWN, PENN OR EQUIV)
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61.88 61.87
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44.38 44.37
35.63 35.62
79.06 78.94
70.16 70.09 PANEL AREA
32.13 32.12
SEE DETAIL E FOR CUTOUT DIMENSIONS
20.17 20.14
19.88 19.87
18.13 18.12
16.38 16.37
A
A
.50 (REF) TYP
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12.27 12.23
4.13 4.12
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BASE 0
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25.52 25.48
16.76 16.75
9.26 9.25
.83 .79
.51 .49
1.37 1.33
DETAIL E
SEE SHEET 2 FOR DIMENSIONS OF SHELF
30.06 29.94
57.64 57.61 DOOR
CORBIN NO. 2540
36.12 35.88
8.91 8.86
.95 .92
G
G
5.00 x 9 CHANNEL
24.06 24.00
12.03 12.00 2 PLACES
℄ OPENING
20.70 20.67 2 PLACES
℄ CABINET
SEE DETAIL C
19.78 19.72 OPENING 2 PLACES
17.95 17.92 OPENING 2 PLACES
C
C
D
D
E
E
20.03 19.97 2 PLACES
PANEL 4 PLACES
SEE DETAIL B
MIDDLE A SEALED T AND PROVI EXTENSIO
SECTION A-A

NOTES

1. GENERAL REQUIREMENTS:
   A. MARKING: EACH UNIT SHALL BE PERMANEN
   MARKED ON THE INSIDE OF THE REAR DOO
   MANUFACTURERS NAME AND / OR SYMBOL,
   PLUS THE NASA DRAWING NUMBER AND RE
2. CONSTRUCTION REQUIREMENTS:
   A. MATERIAL: 16 GAGE MINIMUM THICKNESS,
   QUALITY COLD ROLLED STEEL SHEET AN
   THROUGHOUT.
   B. FINISH:
   (1). PRIMER: ZINC DUST PIGMENTED PRIMER C
   ACCORDANCE WITH MIL-P-26915, TYPE I, A
   WHERE MASKING IS SPECIFIED.
   (2). PAINT: 2 COATS TT-E-529 SEMIGLOSS ENAM
   COLOR TO BE DARK GRAY (NO. 26251 OF FE
   C. FASTENING OF MEMBERS: WELDED THROUG
   EXCEPT SHELF SHALL BE REMOVABLE.
   D RFI SHIELDING: CABINET SHALL BE CONSTRUCTED
   REQUIREMENTS OF MIL-I-26600 FOR CLASS 3 EQ
   FREQUENCIES BETWEEN 150 KC AND 1000 MC SHA
   ATTENUATED BY - 60 DB

A	A
—	—
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH SEE NOTES

RAYTHEON CO
LEXINGTON, MAS
CONTRACT NO.
DRAWN Ray Wheeler DATE 28
CHECKED R Vreeland 7 June
APPROVAL
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED
CABINET, EL
SPECIFICAT

CODE IDENT NO	SIZE
—	J

SCALE NONE WT

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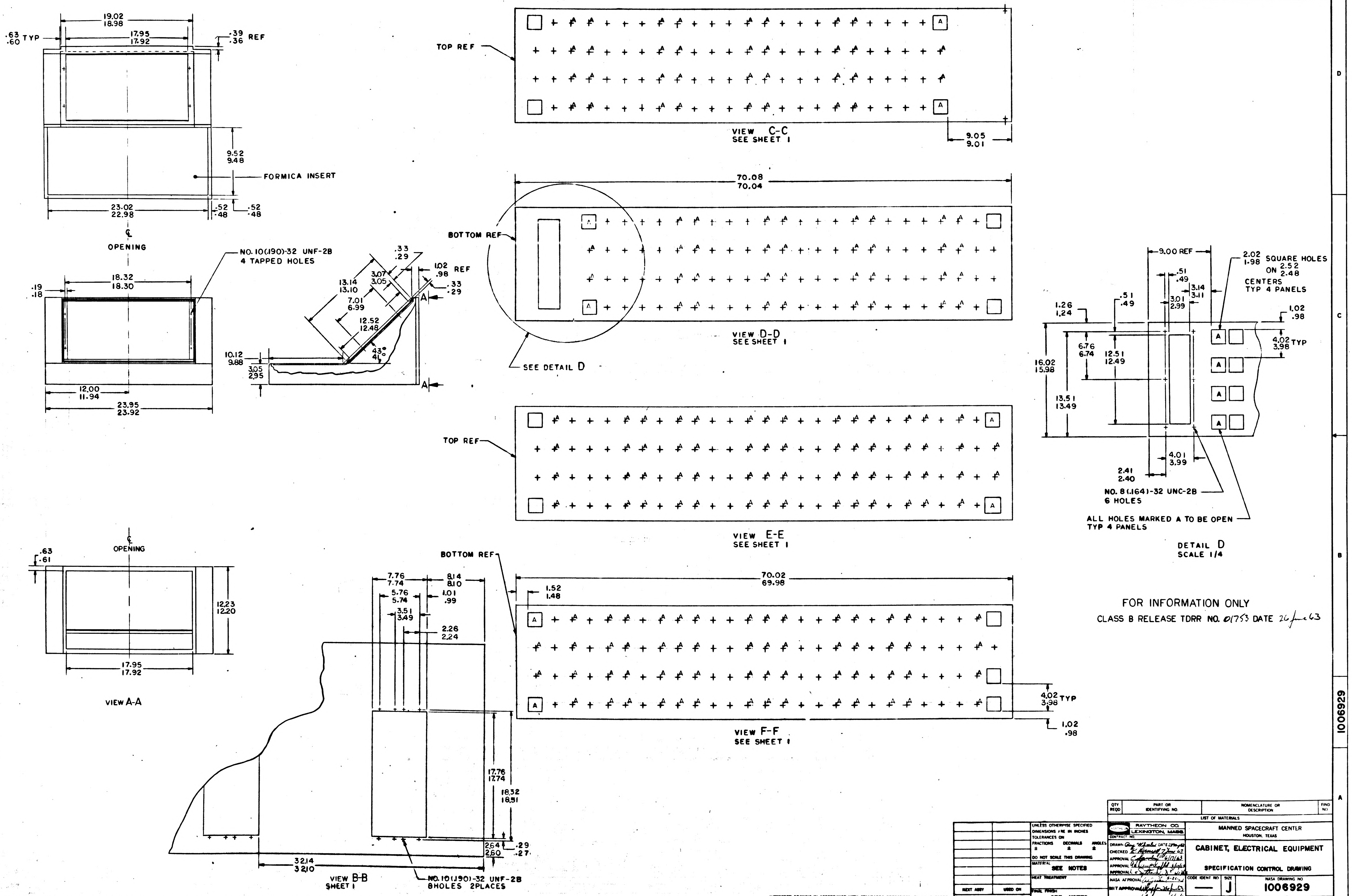
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 02381 Ray Wheeler CKD J Ruggeri APPD A. Maynard	9.26.63	



VIEW C-C
SEE SHEET 1
TOP REF
9.05
9.01
VIEW D-D
SEE SHEET 1
BOTTOM REF
70.08
70.04
SEE DETAIL D
VIEW E-E
SEE SHEET 1
TOP REF
VIEW F-F
SEE SHEET 1
BOTTOM REF
70.02
69.98
1.52
1.48
4.02
3.98 TYP
1.02
.98
19.02
18.98
17.95
17.92
.63
.60 TYP
.39
.36 REF
9.52
9.48
FORMICA INSERT
23.02
22.98
.52
.48
℄
OPENING
18.32
18.30
.19
.18
12.00
11.94
23.95
23.92
NO. 10(.190)-32 UNF-2B
4 TAPPED HOLES
13.14
13.10
3.07
3.05
7.01
6.99
12.52
12.48
.33
.29
1.02
.98 REF
43°
41°
10.12
9.88
3.05
2.95
A
℄
OPENING
.63
.61
12.23
12.20
17.95
17.92
VIEW A-A
7.76
7.74
5.76
5.74
3.51
3.49
8.14
8.10
1.01
.99
2.26
2.24
17.76
17.74
18.32
18.31
2.64
2.60
.29
.27
32.14
32.10
VIEW B-B
SHEET 1
NO. 10(.190)-32 UNF-2B
8 HOLES 2 PLACES
9.00 REF
.51
.49
3.14
3.11
3.01
2.99
2.02
1.98 SQUARE HOLES
ON 2.52
2.48
CENTERS
TYP 4 PANELS
1.26
1.24
.51
.49
1.02
.98
4.02
3.98 TYP
16.02
15.98
6.76
6.74
12.51
12.49
13.51
13.49
4.01
3.99
2.41
2.40
NO. 8 (.164)-32 UNC-2B
6 HOLES
ALL HOLES MARKED A TO BE OPEN
TYP 4 PANELS
DETAIL D
SCALE 1/4

FOR INFORMATION ONLY

CLASS B RELEASE TDRR NO. 01753 DATE 26 June 63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

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DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH SEE NOTES

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.
DRAWN Ray Wheeler DATE 28 May 63
CHECKED K. Maynard 7 June 63
APPROVAL 6/17/63
APPROVAL 6/17/63
APPROVAL
NASA APPROVAL 6-26-63
MIT APPROVAL 26 June 63
MIT APPROVAL 6/5/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. — SIZE J NASA DRAWING NO 1006929
SCALE NONE WT SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

1006929

INCHES
PHOTOGRAPHIC SCALE ONLY

1006e3a

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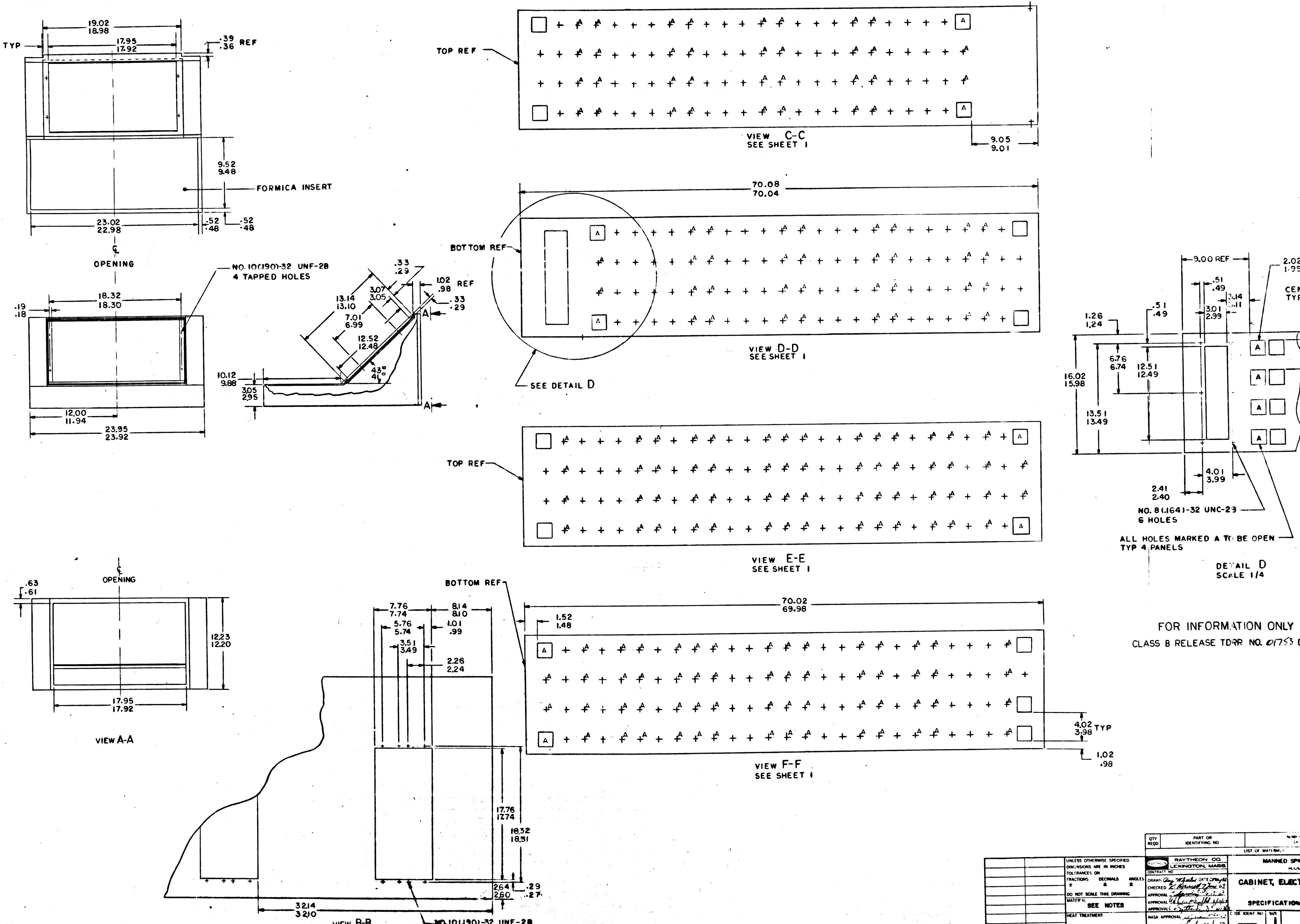
SYM	REVISIONS DESCRIPTION
A	REVISED PER TDRR 02381 Ray W Wheeler CKD Ruggere APPD



.63 .60 TYP
19.02 18.98
17.95 17.92
.39 .36 REF
9.52 9.48
FORMICA INSERT
23.02 22.98
.52 .48
.52 .48
℄ OPENING
NO. 10(.190)-32 UNF-2B 4 TAPPED HOLES
.19 .18
18.32 18.30
12.00 11.94
23.95 23.92
13.14 13.10
7.01 6.99
3.07 3.05
.33 .29
1.02 .98 REF
.33 .29
12.52 12.48
43° 41°
10.12 9.88
3.05 2.95
A
A
TOP REF
VIEW C-C SEE SHEET I
9.05 9.01
70.08 70.04
BOTTOM REF
VIEW D-D SEE SHEET I
SEE DETAIL D
TOP REF
VIEW E-E SEE SHEET I
BOTTOM REF
70.02 69.98
1.52 1.48
VIEW F-F SEE SHEET I
4.02 3.98 TYP
1.02 .98
.63 .61
℄ OPENING
12.23 12.20
17.95 17.92
VIEW A-A
7.76 7.74
5.76 5.74
3.51 3.49
8.14 8.10
1.01 .99
2.26 2.24
17.76 17.74
18.32 18.31
2.64 2.60
.29 .27
32.14 32.10
VIEW B-B SHEET I
NO. 10(.190)-32 UNF-2B 8 HOLES 2 PLACES
9.00 REF
.51 .49
3.14 3.11
3.01 2.99
2.02 1.9
CEN TYP
1.26 1.24
.51 .49
16.02 15.98
6.76 6.74
12.51 12.49
13.51 13.49
4.01 3.99
2.41 2.40
NO. 8 (.164)-32 UNC-2B 6 HOLES
ALL HOLES MARKED A TO BE OPEN TYP 4 PANELS
DETAIL D SCALE 1/4

FOR INFORMATION ONLY

CLASS B RELEASE TDRR NO. 01753

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

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LIST OF MATERIALS

NEXT ASSY	USED ON
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TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTES

HEAT TREATMENT

FINAL FINISH
SEE NOTES

RAYTHEON CO.
LEXINGTON, MASS.

CONTRACT NO.

DRAWN Ray Wheeler DATE 29 May 63
CHECKED R. Russell 7 June 63
APPROVAL 6-7-63
APPROVAL 6/17/63
APPROVAL
NASA APPROVAL
MIT APPROVAL 26 63
MIT APPROVAL 6-25-63

MANNED SP

CABINET, ELECT

SPECIFICATION

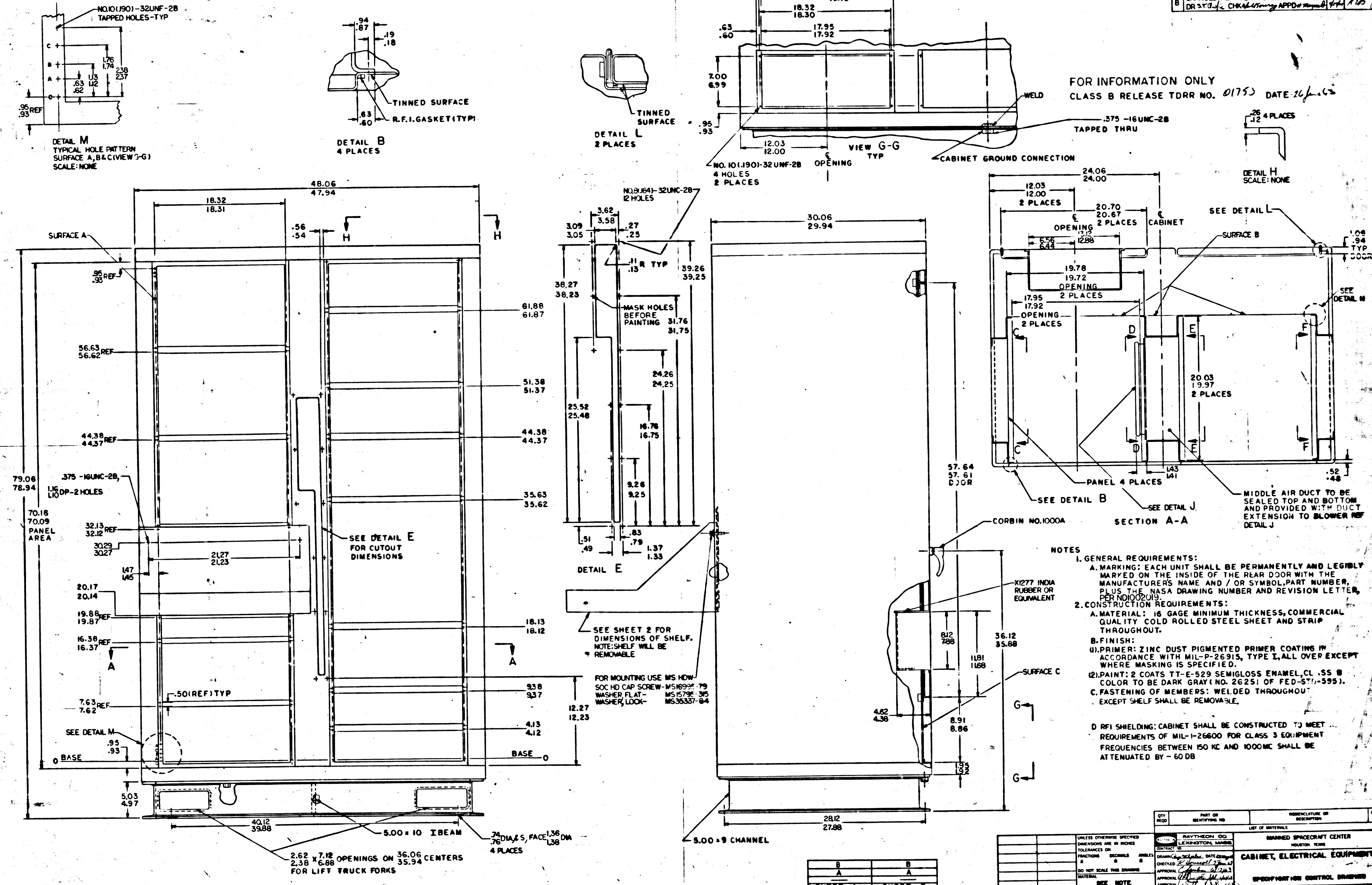
CODE IDENT NO —
SIZE J
SCALE NONE

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 02301 C. Cagi CKD J. Ruggi APPD G. Maynard		
B	CHANGED PER TDRR 07351 DR S.T. CHK APPD		

REVISIONS

FOR INFORMATION ONLY

CLASS B RELEASE TDRR NO. 01753 DATE 26 Jun 63



NO.10(.190)-32UNF-2B TAPPED HOLES-TYP
DETAIL M
TYPICAL HOLE PATTERN
SURFACE A,B&C(VIEW G-G)
SCALE: NONE
TINNED SURFACE
R.F.I. GASKET(TYP)
DETAIL B
4 PLACES
TINNED SURFACE
DETAIL L
2 PLACES
VIEW G-G
TYP
OPENING
WELD
.375 -16UNC-2B
TAPPED THRU
CABINET GROUND CONNECTION
NO. 10(.190)-32 UNF-2B
4 HOLES
2 PLACES
DETAIL H
SCALE: NONE
4 PLACES
NO.8(.164)-32UNC-2B
12 HOLES
R TYP
MASK HOLES BEFORE PAINTING
DETAIL E
SEE SHEET 2 FOR DIMENSIONS OF SHELF.
NOTE: SHELF WILL BE REMOVABLE
FOR MOUNTING USE MS HDW
SOC HD CAP SCREW- MS16995-79
WASHER, FLAT- MS15795-315
WASHER, LOCK- MS35337-84
SURFACE A
.375 -16UNC-2B, 1.16 1.10 DP-2 HOLES
79.06 78.94
70.16 70.09 PANEL AREA
SEE DETAIL E FOR CUTOUT DIMENSIONS
.50(REF)TYP
SEE DETAIL M
BASE
5.00 x 10 I BEAM
.74 .76 DIA,&S, FACE 1.36 1.38 DIA 4 PLACES
2.62 2.38 x 7.12 6.88 OPENINGS ON 36.06 35.94 CENTERS FOR LIFT TRUCK FORKS
40.12 39.88
48.06 47.94
CORBIN NO.1000A
X1277 INDIA RUBBER OR EQUIVALENT
SURFACE C
57.64 57.61 DOOR
5.00 x 9 CHANNEL
30.06 29.94
28.12 27.88
SEE DETAIL L
SURFACE B
OPENING 2 PLACES
CABINET
SEE DETAIL N
PANEL 4 PLACES
SEE DETAIL B
SEE DETAIL J
SECTION A-A
MIDDLE AIR DUCT TO BE SEALED TOP AND BOTTOM AND PROVIDED WITH DUCT EXTENSION TO BLOWER REF DETAIL J

NOTES

1. GENERAL REQUIREMENTS:
   A. MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE INSIDE OF THE REAR DOOR WITH THE MANUFACTURER'S NAME AND / OR SYMBOL, PART NUMBER, PLUS THE NASA DRAWING NUMBER AND REVISION LETTER, PER ND1002019.
2. CONSTRUCTION REQUIREMENTS:
   A. MATERIAL: 16 GAGE MINIMUM THICKNESS, COMMERCIAL QUALITY COLD ROLLED STEEL SHEET AND STRIP THROUGHOUT.
   B. FINISH:
   (1). PRIMER: ZINC DUST PIGMENTED PRIMER COATING IN ACCORDANCE WITH MIL-P-26915, TYPE I, ALL OVER EXCEPT WHERE MASKING IS SPECIFIED.
   (2). PAINT: 2 COATS TT-E-529 SEMIGLOSS ENAMEL, CLASS B COLOR TO BE DARK GRAY (NO. 26251 OF FED-STD-595).
   C. FASTENING OF MEMBERS: WELDED THROUGHOUT EXCEPT SHELF SHALL BE REMOVABLE.
   D RFI SHIELDING: CABINET SHALL BE CONSTRUCTED TO MEET REQUIREMENTS OF MIL-I-26600 FOR CLASS 3 EQUIPMENT FREQUENCIES BETWEEN 150 KC AND 1000 MC SHALL BE ATTENUATED BY - 60 DB

B	B
A	A
SHEET 1	SHEET 2

REVISION STATUS OF SHEETS

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

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TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE
HEAT TREATMENT
FINAL FINISH SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.
DRAWN DATE
CHECKED
APPROVAL 6/17/63
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1006929
SCALE NONE
WT
SHEET 1 OF 2

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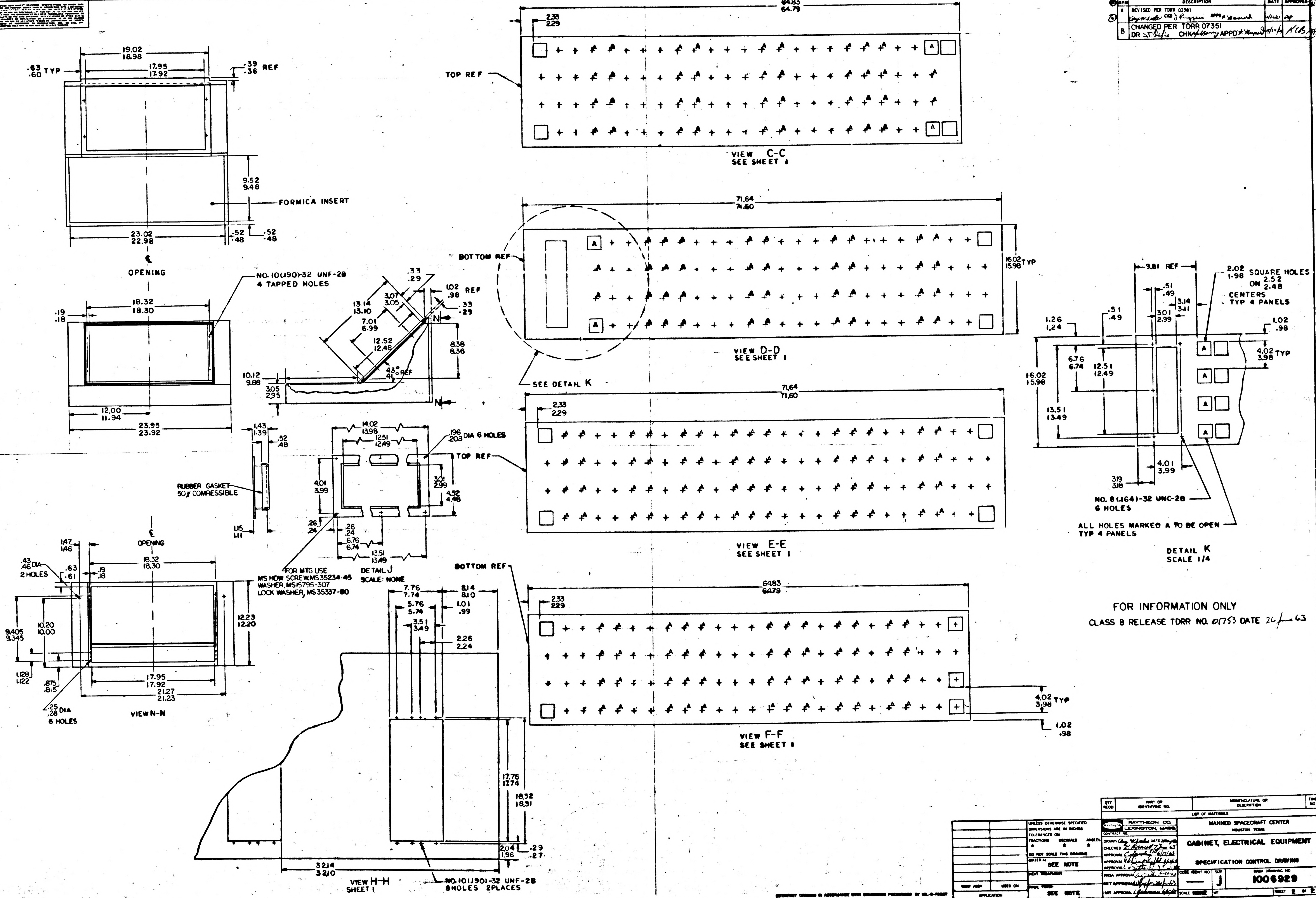
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 02381 Ray W Wheeler CKD J Ruggeri APPD A Maynard	9/26/63	
B	CHANGED PER TDRR 07351 DR S.T. Orifice CHK APPD A Maynard		KEB


19.02
18.98
17.95
17.92
.63
.60 TYP
.39
.36 REF
9.52
9.48
FORMICA INSERT
23.02
22.98
.52
.48
℄
OPENING
18.32
18.30
.19
.18
12.00
11.94
23.95
23.92
NO. 10(.190)-32 UNF-2B
4 TAPPED HOLES
.33
.29
13.14
13.10
3.07
3.05
7.01
6.99
12.52
12.48
1.02
.98 REF
.33
.29
8.38
8.36
43°
41° REF
10.12
9.88
3.05
2.95
N
1.43
1.39
.52
.48
RUBBER GASKET
50% COMPRESSIBLE
1.15
1.11
14.02
13.98
12.51
12.49
.196
.203 DIA 6 HOLES
TOP REF
4.01
3.99
3.01
2.99
4.52
4.48
.26
.24
6.76
6.74
13.51
13.49
DETAIL J
SCALE: NONE
FOR MTG USE
MS HOW SCREW, MS35234-45
WASHER, MS15795-307
LOCK WASHER, MS35337-80
1.47
1.46
.43
.46 DIA
2 HOLES
.63
.61
.19
.18
9.405
9.345
10.20
10.00
12.23
12.20
1.128
1.122
.875
.815
17.95
17.92
21.27
21.23
.25
.28 DIA
6 HOLES
VIEW N-N
7.76
7.74
5.76
5.74
3.51
3.49
8.14
8.10
1.01
.99
2.26
2.24
17.76
17.74
18.32
18.31
2.04
1.96
.29
.27
32.14
32.10
VIEW H-H
SHEET 1
NO. 10(.190)-32 UNF-2B
8 HOLES 2 PLACES
64.83
64.79
2.33
2.29
TOP REF
A
VIEW C-C
SEE SHEET 1
71.64
71.60
BOTTOM REF
16.02
15.98 TYP
VIEW D-D
SEE SHEET 1
SEE DETAIL K
VIEW E-E
SEE SHEET 1
BOTTOM REF
4.02
3.98 TYP
1.02
.98
VIEW F-F
SEE SHEET 1
9.81 REF
2.02
1.98 SQUARE HOLES
ON 2.52
2.48
CENTERS
TYP 4 PANELS
.51
.49
3.14
3.11
3.01
2.99
1.26
1.24
1.02
.98
4.02
3.98 TYP
16.02
15.98
6.76
6.74
12.51
12.49
13.51
13.49
4.01
3.99
3.19
3.18
NO. 8 (.164)-32 UNC-2B
6 HOLES
ALL HOLES MARKED A TO BE OPEN
TYP 4 PANELS
DETAIL K
SCALE 1/4
1006929

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01753 DATE 26 June 63

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LIST OF MATERIALS

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APPLICATION	

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HEAT TREATMENT
FINAL FINISH SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.
DRAWN Ray W Wheeler DATE 29 May 63
CHECKED R. Russell 7 June 63
APPROVAL 6/17/63
APPROVAL
APPROVAL
NASA APPROVAL 6-26-63
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

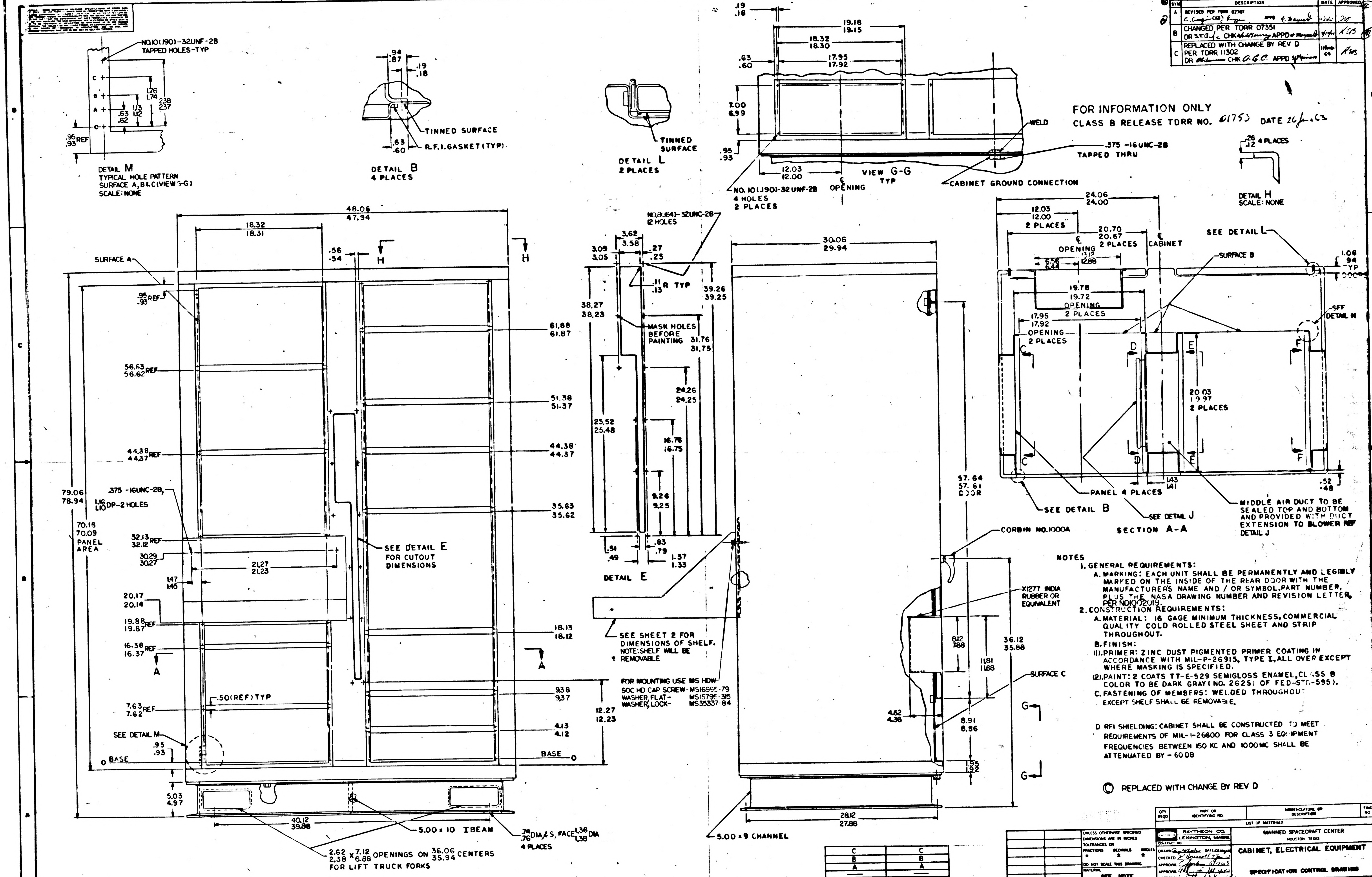
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE J
NASA DRAWING NO 1006929
SCALE NONE
WT
SHEET 2 OF 2

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 02301 C. Cooper CKD J. Rogers APPD J. Maynard	9/20/63	
B	CHANGED PER TDRR 07351 DR S.T. CHK APPD		KEB
C	REPLACED WITH CHANGE BY REV D PER TDRR 11302 DR CHK O.G.C. APPD	11 Aug 64	KEB

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01753 DATE 26 Jun 63



NO.10(.190)-32UNF-2B TAPPED HOLES-TYP
DETAIL M
TYPICAL HOLE PATTERN SURFACE A, B & C (VIEW G-G)
SCALE: NONE
TINNED SURFACE
R.F.I. GASKET (TYP)
DETAIL B
4 PLACES
TINNED SURFACE
DETAIL L
2 PLACES
VIEW G-G
TYP
WELD
.375 -16UNC-2B TAPPED THRU
CABINET GROUND CONNECTION
NO. 10(.190)-32 UNF-2B 4 HOLES 2 PLACES
℄ OPENING
DETAIL H
SCALE: NONE
SURFACE A
SURFACE B
SURFACE C
SEE DETAIL M
BASE
SEE DETAIL E FOR CUTOUT DIMENSIONS
NO.8(.164)-32UNC-2B 12 HOLES
MASK HOLES BEFORE PAINTING
DETAIL E
SEE SHEET 2 FOR DIMENSIONS OF SHELF. NOTE: SHELF WILL BE REMOVABLE
FOR MOUNTING USE MS HDW-
SOC HD CAP SCREW- MS16995-79
WASHER, FLAT- MS15795-315
WASHER, LOCK- MS35337-84
CORBIN NO.1000A
X1277 INDIA RUBBER OR EQUIVALENT
5.00 x 10 I BEAM
5.00 x 9 CHANNEL
2.62/2.38 x 7.12/6.88 OPENINGS ON 36.06/35.94 CENTERS FOR LIFT TRUCK FORKS
.74/.76 DIA, F.S, FACE 1.36/1.38 DIA 4 PLACES
SEE DETAIL L
SEE DETAIL H
SEE DETAIL B
SEE DETAIL J
PANEL 4 PLACES
SECTION A-A
MIDDLE AIR DUCT TO BE SEALED TOP AND BOTTOM AND PROVIDED WITH DUCT EXTENSION TO BLOWER REF DETAIL J
OPENING 2 PLACES
DOOR
CABINET
79.06/78.94
70.16/70.09 PANEL AREA
48.06/47.94
30.06/29.94
24.06/24.00
57.64/57.61 DOOR

C	C
B	B
A	A
SHEET 1	SHEET 2

REVISION STATUS OF SHEETS

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   B. FINISH:
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   (2). PAINT: 2 COATS TT-E-529 SEMIGLOSS ENAMEL, CLASS B COLOR TO BE DARK GRAY (NO. 26251 OF FED-STD-595).
   C. FASTENING OF MEMBERS: WELDED THROUGHOUT EXCEPT SHELF SHALL BE REMOVABLE.

   D RFI SHIELDING: CABINET SHALL BE CONSTRUCTED TO MEET REQUIREMENTS OF MIL-I-26600 FOR CLASS 3 EQUIPMENT FREQUENCIES BETWEEN 150 KC AND 1000 MC SHALL BE ATTENUATED BY - 60 DB

Ⓒ REPLACED WITH CHANGE BY REV D

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

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FINAL FINISH SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO
DRAWN Guy Wheeler DATE
CHECKED K. Russell 7 Jun 63
APPROVAL 6/12/63
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 26 Jun 63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO —
SIZE J
NASA DRAWING NO 1006929
SCALE NONE
WT
SHEET 1 OF 2

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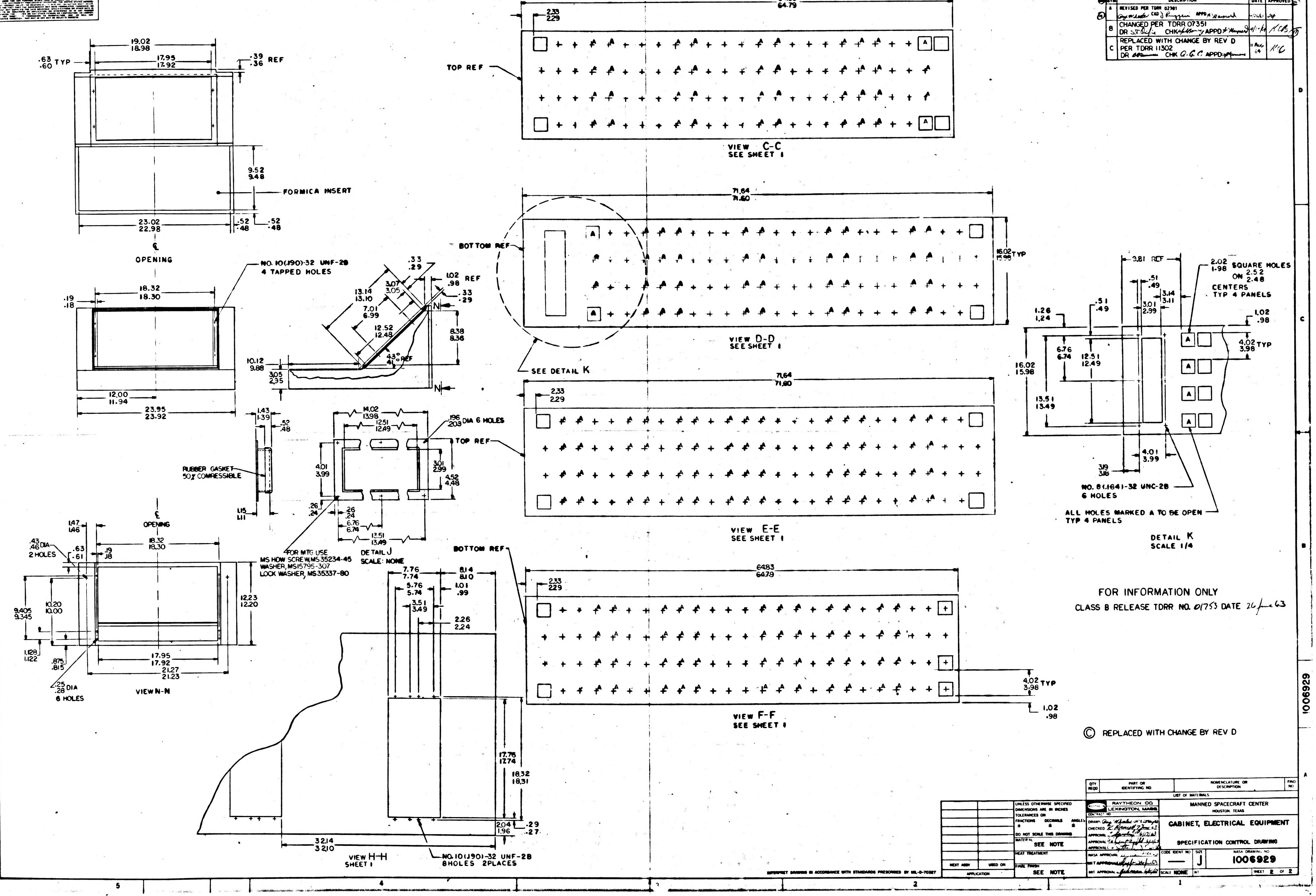
REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 02301 CKD J Ruggeri APPD A. Maynard	2/26/63	
B	CHANGED PER TDRR 07351 DR S.T. Quinlie CHK APPD A. Maynard	9/1/64	KCB
C	REPLACED WITH CHANGE BY REV D PER TDRR 11302 DR CHK G.G.C. APPD	11 AUG 64	KC


.63 .60 TYP
19.02 18.98
17.95 17.92
.39 .36 REF
9.52 9.48
FORMICA INSERT
23.02 22.98
.52 .48
℄ OPENING
18.32 18.30
.19 .18
12.00 11.94
23.95 23.92
NO. 10(.190)-32 UNF-2B 4 TAPPED HOLES
.33 .29
13.14 13.10
3.07 3.05
7.01 6.99
12.52 12.48
1.02 .98 REF
8.38 8.36
43° 41° REF
10.12 9.88
3.05 2.35
N
1.43 1.39
RUBBER GASKET 50% COMPRESSIBLE
1.15 1.11
14.02 13.98
12.51 12.49
.196 .203 DIA 6 HOLES
TOP REF
4.01 3.99
3.01 2.99
4.52 4.48
.26 .24
6.76 6.74
13.51 13.49
FOR MTG USE MS HOW SCREW, MS 35234-45 WASHER, MS15795-307 LOCK WASHER, MS 35337-80
DETAIL J SCALE: NONE
1.47 1.46
.43 .46 DIA 2 HOLES
.63 .61
9.405 9.345
10.20 10.00
12.23 12.20
1.128 1.122
.875 .815
21.27 21.23
.25 .28 DIA 6 HOLES
VIEW N-N
64.83 64.79
2.33 2.29
VIEW C-C SEE SHEET 1
71.64 71.60
BOTTOM REF
16.02 15.98 TYP
VIEW D-D SEE SHEET 1
SEE DETAIL K
VIEW E-E SEE SHEET 1
VIEW F-F SEE SHEET 1
4.02 3.98 TYP
3.81 REF
2.02 1.98 SQUARE HOLES ON 2.52 2.48 CENTERS TYP 4 PANELS
.51 .49
3.14 3.11
1.26 1.24
6.76 6.74
12.51 12.49
13.51 13.49
3.19 3.18
NO. 8(.164)-32 UNC-2B 6 HOLES
ALL HOLES MARKED A TO BE OPEN TYP 4 PANELS
DETAIL K SCALE 1/4
A
7.76 7.74
8.14 8.10
5.76 5.74
1.01 .99
3.51 3.49
2.26 2.24
17.76 17.74
18.32 18.31
2.04 1.96
.29 .27
32.14 32.10
VIEW H-H SHEET 1
NO. 10(.190)-32 UNF-2B 8 HOLES 2 PLACES

FOR INFORMATION ONLY

CLASS B RELEASE TDRR NO. 01753 DATE 26 June 63

Ⓒ REPLACED WITH CHANGE BY REV D

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE
HEAT TREATMENT
FINAL FINISH SEE NOTE

NEXT ASSY | USED ON
APPLICATION

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO
DRAWN Guy Wheeler DATE 28 May 63
CHECKED R. Russell 7 June 63
APPROVAL 6/17/63
APPROVAL
APPROVAL
NASA APPROVAL 6-26-63
MIT APPROVAL 26 June 63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO — SIZE J NASA DRAWING NO 1006929
SCALE NONE WT SHEET 2 OF 2

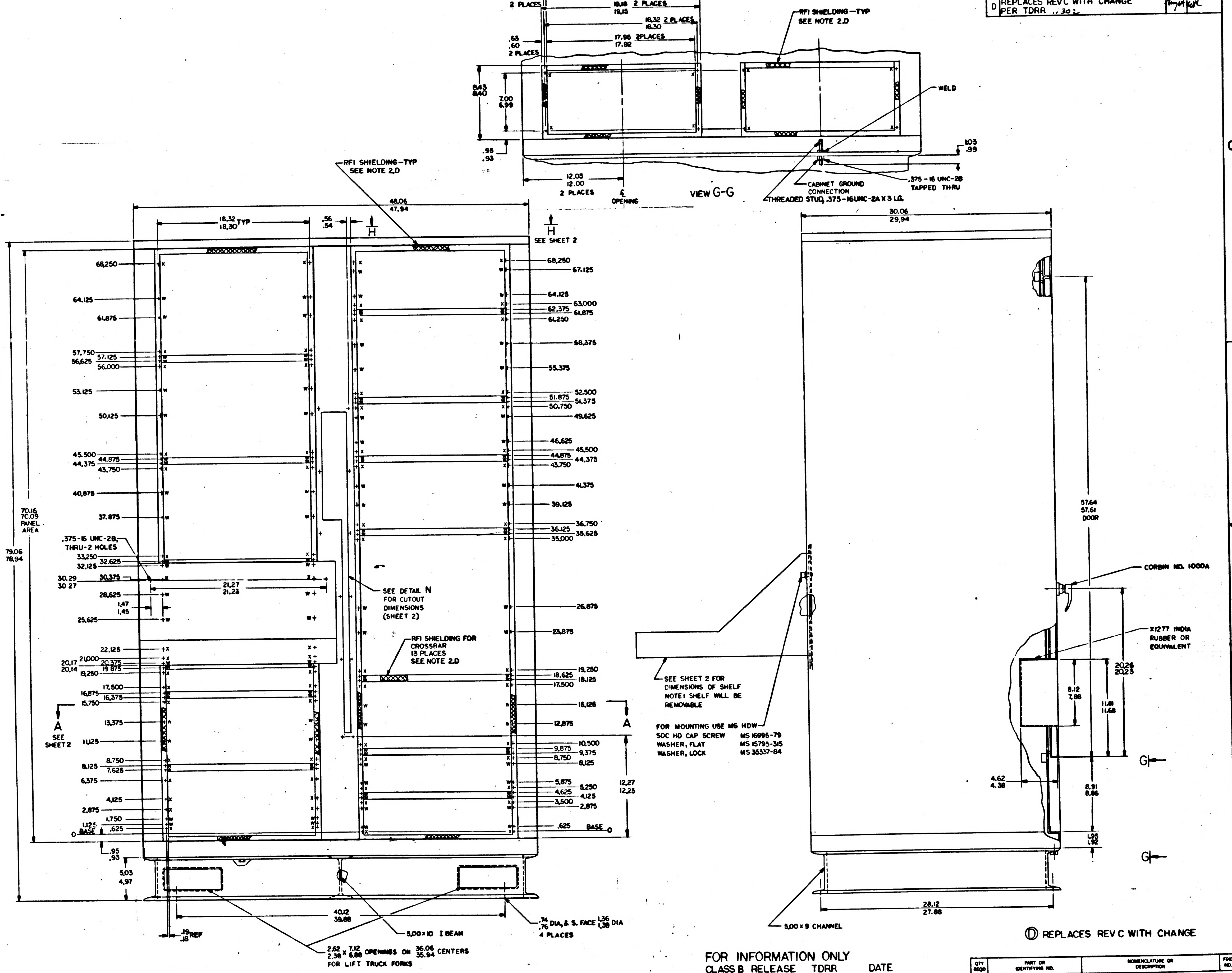
INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
D	REPLACES REV C WITH CHANGE PER TDRR 302		

NOTES

1. GENERAL REQUIREMENTS:
   MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE INSIDE OF THE RIGHT HAND WALL (AS VIEWED FROM THE REAR OF CABINET) APPROX 6 INCHES BELOW THE CEILING WITH THE MANUFACTURERS NAME AND/OR SYMBOL, PART NUMBER, PLUS THE NASA DRAWING NUMBER AND REVISION LETTER, PER ND1002019

2. CONSTRUCTION REQUIREMENTS:
   - A. MATERIAL: 16 GAGE MINIMUM THICKNESS, COMMERCIAL QUALITY COLD ROLLED STEEL SHEET AND STRIP THROUGHOUT.
   - B. FINISH:
     - (1). PRIMER: ZINK DUST PIGMENTED PRIMER COATING IN ACCORDANCE WITH MIL-P-26915, TYPE I, ALL OVER EXCEPT WHERE MASKING IS SPECIFIED.
     - (2). PAINT: 2 COATS TT-E-529 SEMIGLOSS ENAMEL, CLASS B COLOR TO BE DARK GRAY (NO. 26251 OF FED-STD-595)
   - C. FASTENING OF MEMBERS: WELDED THROUGHOUT EXCEPT SHELF SHALL BE REMOVABLE
   - D. RFI SHIELDING: CABINET SHALL BE CONSTRUCTED TO MEET REQUIREMENTS OF MIL-I-26600 FOR CLASS 3 EQUIPMENT FREQUENCIES BETWEEN 150KC AND 1000MC SHALL BE ATTENUATED BY -60 DB


VIEW G-G
RFI SHIELDING—TYP SEE NOTE 2.D
WELD
CABINET GROUND CONNECTION
THREADED STUD .375-16UNC-2A X 3 LG.
.375-16 UNC-2B TAPPED THRU
℄ OPENING
2 PLACES
SEE SHEET 2
RFI SHIELDING—TYP SEE NOTE 2.D
48.06
47.94
18.32
18.30 TYP
.375-16 UNC-2B, THRU-2 HOLES
70.16
70.09 PANEL AREA
79.06
78.94
21.27
21.23
SEE DETAIL N FOR CUTOUT DIMENSIONS (SHEET 2)
RFI SHIELDING FOR CROSSBAR 13 PLACES SEE NOTE 2.D
A SEE SHEET 2
BASE 0
40.12
39.88
.19
.18 REF
5.00 x 10 I BEAM
2.62
2.38 x 7.12
6.88 OPENINGS ON 36.06
35.94 CENTERS FOR LIFT TRUCK FORKS
.74
.76 DIA, & S. FACE 1.36
1.38 DIA 4 PLACES
SEE SHEET 2 FOR DIMENSIONS OF SHELF NOTE: SHELF WILL BE REMOVABLE
FOR MOUNTING USE MS HDW
SOC HD CAP SCREW MS 16995-79
WASHER, FLAT MS 15795-315
WASHER, LOCK MS 35337-84
30.06
29.94
57.64
57.61 DOOR
CORBIN NO. 1000A
X1277 INDIA RUBBER OR EQUIVALENT
5.00 x 9 CHANNEL
28.12
27.88

Ⓓ REPLACES REV C WITH CHANGE

HOLE DESIG	HOLE DESCRIPTION	QTY
W	NO. 10(.190) -32 UNF-2B IN FLANGE & LEAVE GASKET BLIND	108
X	NO. 10(.190)-32 UNF-2B IN FLANGE & A NO. 10-32 CLEARANCE IN GASKET	74

D	D	D
SHEET 1	SHEET 2	SHEET 3
REVISION STATUS OF SHEETS		

FOR INFORMATION ONLY
CLASS B RELEASE TDRR DATE

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.
DRAWN DATE
CHECKED
APPROVAL 27 July 64
APPROVAL
APPROVAL 7-27-64
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL 7/30/64

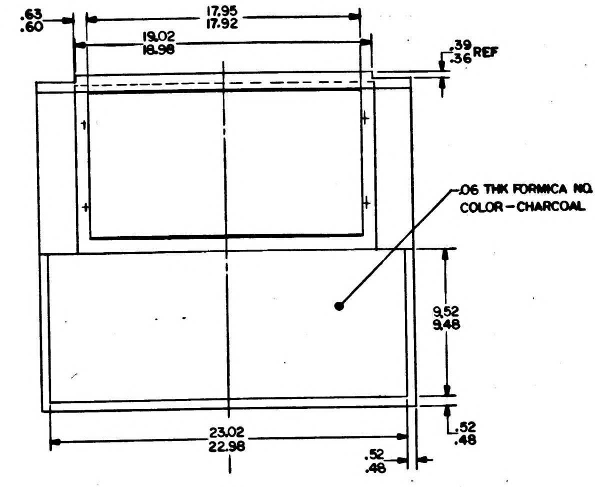
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

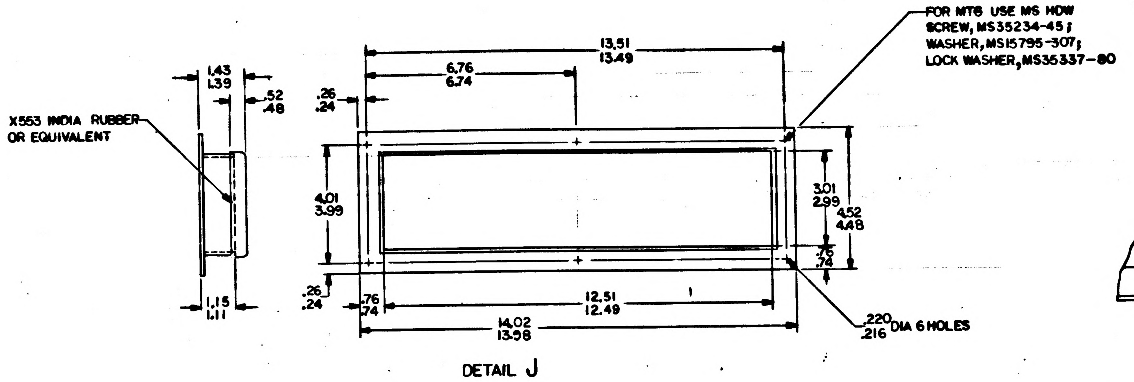
CABINET, ELECTRICAL EQUIPMENT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. — SIZE J NASA DRAWING NO. 1006929
SCALE NONE WT SHEET 1 OF 3

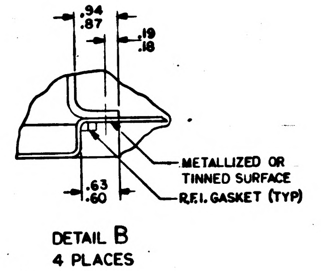
SYM	DESCRIPTION	DATE	APPROVED
D	REPLACES REV C WITH CHANGE-PER TDRR NO. 11302		

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

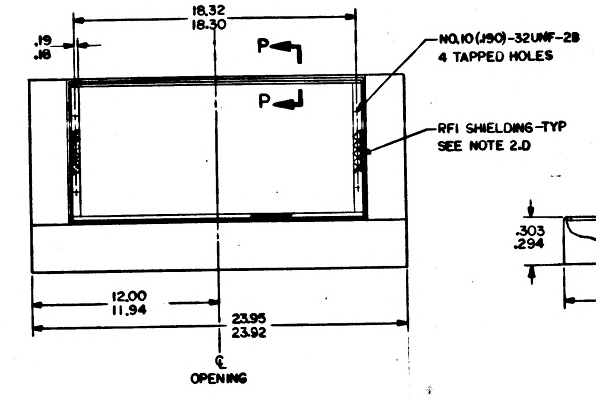

.63
.60
17.95
17.92
19.02
18.98
.39
.36 REF
.06 THK FORMICA NO. 963
COLOR – CHARCOAL
9.52
9.48
23.02
22.98
.52
.48
.52
.48

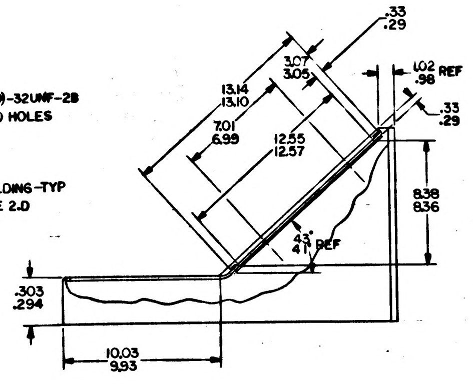

X553 INDIA RUBBER OR EQUIVALENT
1.43
1.39
.52
.48
1.15
1.11
13.51
13.49
6.76
6.74
.26
.24
4.01
3.99
3.01
2.99
4.52
4.48
.75
.74
.26
.24
.76
.74
12.51
12.49
14.02
13.98
FOR MT6 USE MS HDW SCREW, MS35234-45; WASHER, MS15795-307; LOCK WASHER, MS35337-80
.220
.216 DIA 6 HOLES

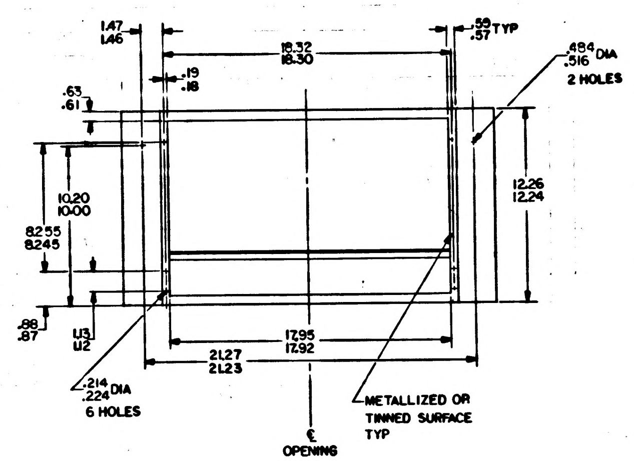
DETAIL J

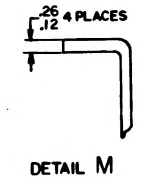

.94
.87
.19
.18
.63
.60
METALLIZED OR TINNED SURFACE
R.F.I. GASKET (TYP)

DETAIL B
4 PLACES

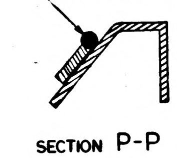

18.32
18.30
.19
.18
P
P
NO. 10 (.190)-32UNF-2B 4 TAPPED HOLES
RFI SHIELDING-TYP SEE NOTE 2.D
12.00
11.94
23.95
23.92
℄
OPENING


.33
.29
3.07
3.05
13.14
13.10
7.01
6.99
12.55
12.57
1.02
.98 REF
.33
.29
8.38
8.36
43°
41° REF
.303
.294
10.03
9.93


1.47
1.46
18.32
18.30
.59
.57 TYP
.484
.516 DIA 2 HOLES
.63
.61
.19
.18
10.20
10.00
8.255
8.245
12.26
12.24
.88
.87
1.13
1.12
17.95
17.92
21.27
21.23
.214
.224 DIA 6 HOLES
METALLIZED OR TINNED SURFACE TYP
℄
OPENING

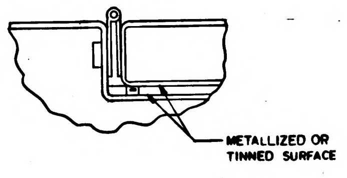

.26
.12 4 PLACES

DETAIL M

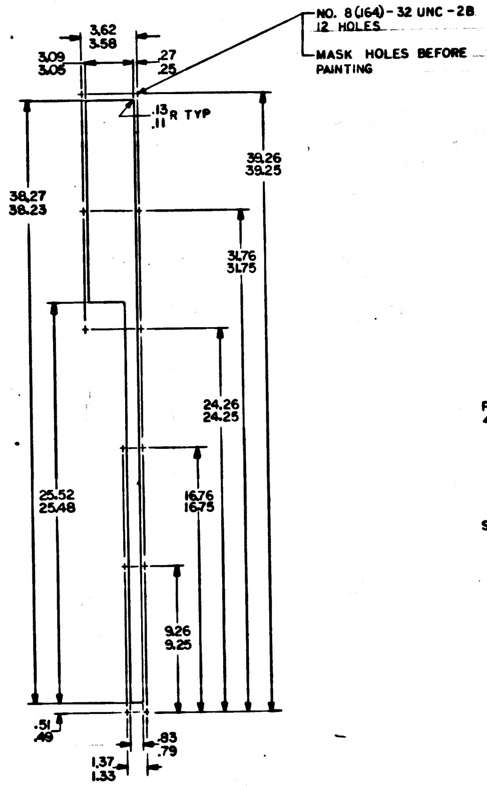

RFI SHIELDING SEE NOTE 2.D

SECTION P-P

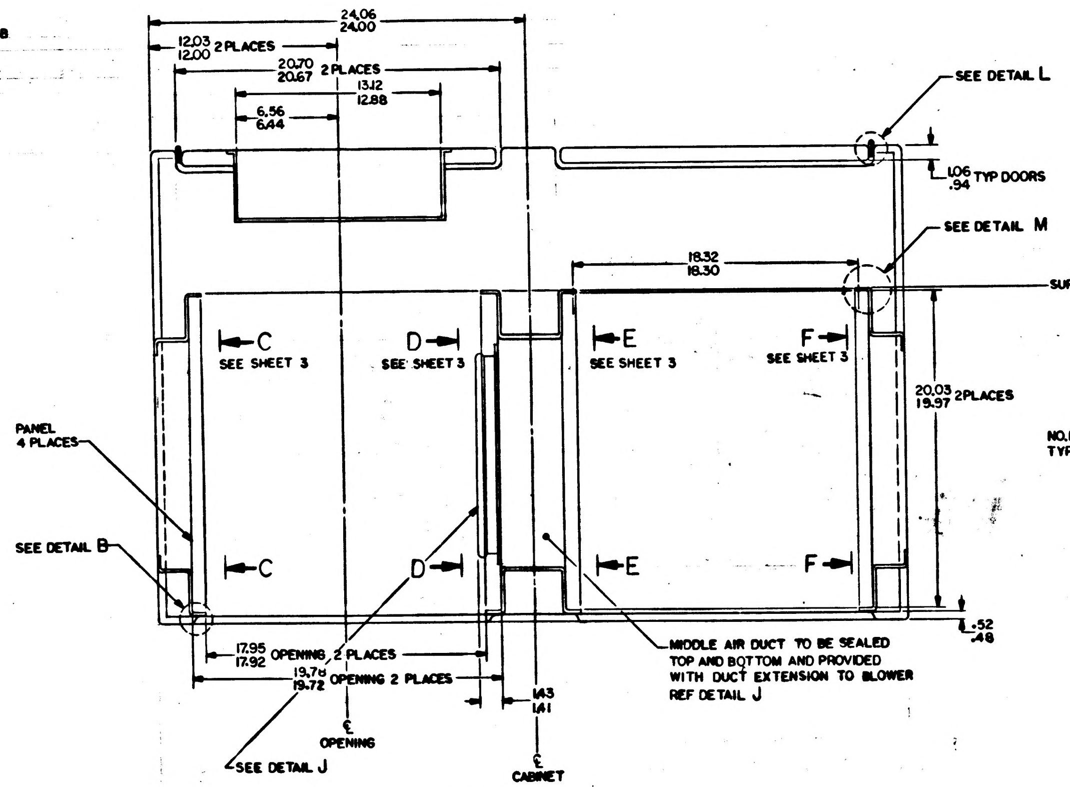
FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO 11302 DATE 8/4/64


METALLIZED OR TINNED SURFACE

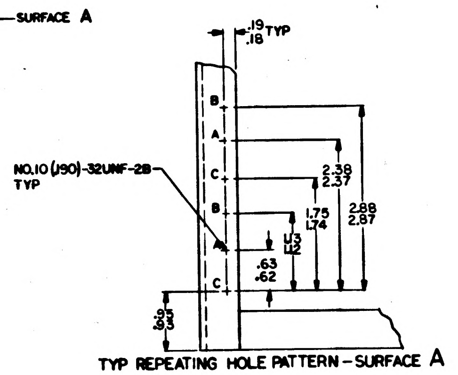
DETAIL L
2 PLACES


NO. 8(.164)-32 UNC-2B 12 HOLES
MASK HOLES BEFORE PAINTING
3.62
3.58
3.09
3.05
.27
.25
.13 R TYP
.11
38.27
38.23
39.26
39.25
31.76
31.75
24.26
24.25
25.52
25.48
16.76
16.75
9.26
9.25
.51
.49
.83
.79
1.37
1.33

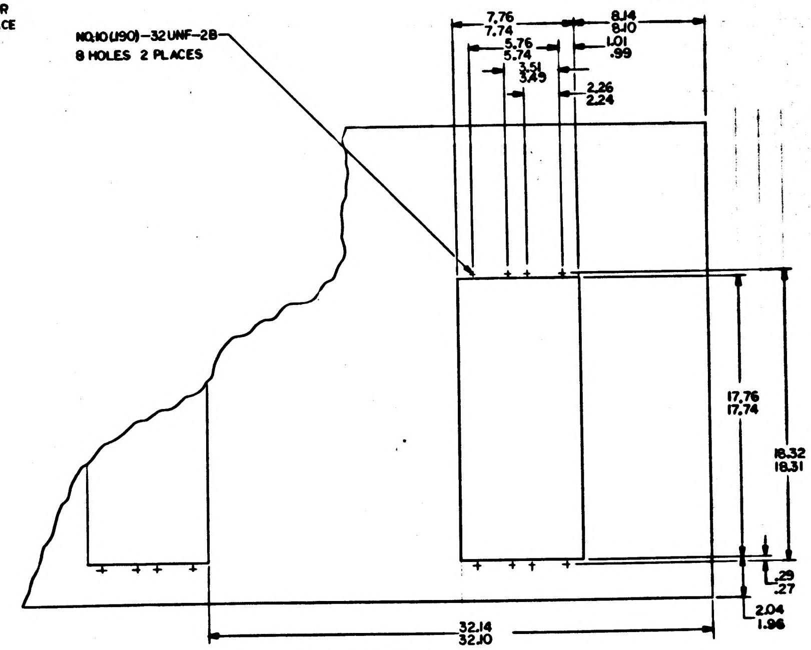
DETAIL N
SEE SHEET 1


24.06
24.00
12.03
12.00 2 PLACES
20.70
20.67 2 PLACES
13.12
12.88
6.56
6.44
SEE DETAIL L
1.06
.94 TYP DOORS
SEE DETAIL M
18.32
18.30
SURFACE A
C
SEE SHEET 3
D
SEE SHEET 3
E
SEE SHEET 3
F
SEE SHEET 3
20.03
19.97 2 PLACES
PANEL 4 PLACES
SEE DETAIL B
C
D
E
F
.52
.48
17.95
17.92 OPENING 2 PLACES
19.76
19.72 OPENING 2 PLACES
1.43
1.41
℄
OPENING
℄
CABINET
SEE DETAIL J
MIDDLE AIR DUCT TO BE SEALED TOP AND BOTTOM AND PROVIDED WITH DUCT EXTENSION TO BLOWER REF DETAIL J

SECTION A-A
SEE SHEET 1


.19
.18 TYP
NO. 10 (.190)-32UNF-2B TYP
B
A
C
B
A
C
2.38
2.37
2.88
2.87
1.75
1.74
1.13
1.12
.63
.62
.95
.93

TYP REPEATING HOLE PATTERN – SURFACE A


NO. 10 (.190)-32UNF-2B 8 HOLES 2 PLACES
7.76
7.74
5.76
5.74
3.51
3.49
8.14
8.10
1.01
.99
2.26
2.24
17.76
17.74
18.32
18.31
.29
.27
2.04
1.96
32.14
32.10

VIEW H-H SEE SHEET 1

Ⓓ REPLACES REV C WITH CHANGE

QTY REQD	PART OR IDENT'FYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±

DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.
DRAWN S.T. [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL D. O'Bryan [illegible] 27 July 64
APPROVAL H. Moyer KC 27 Jy 64
APPROVAL [illegible] 7.27.64
NASA APPROVAL [illegible] 8/6/64
MIT APPROVAL [illegible]
MIT APPROVAL C. Sperling 7/30/64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

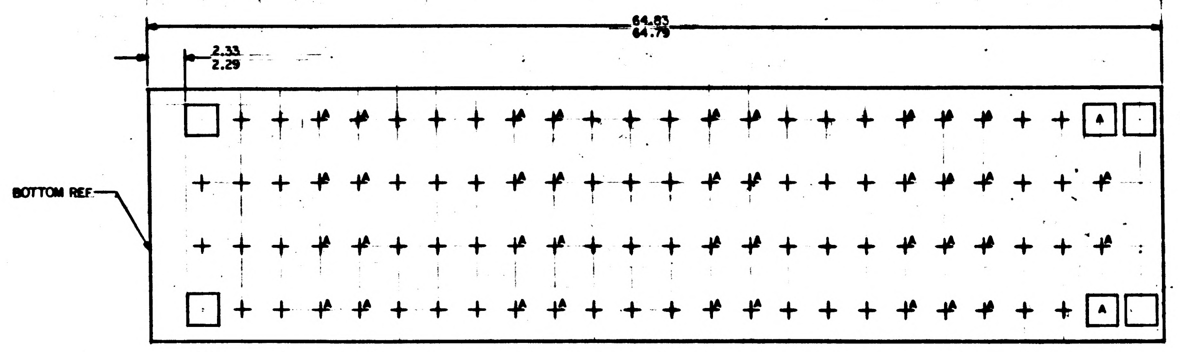
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE J
NASA DRAWING NO. 1006929
SCALE NONE
WT
SHEET 2 OF 3

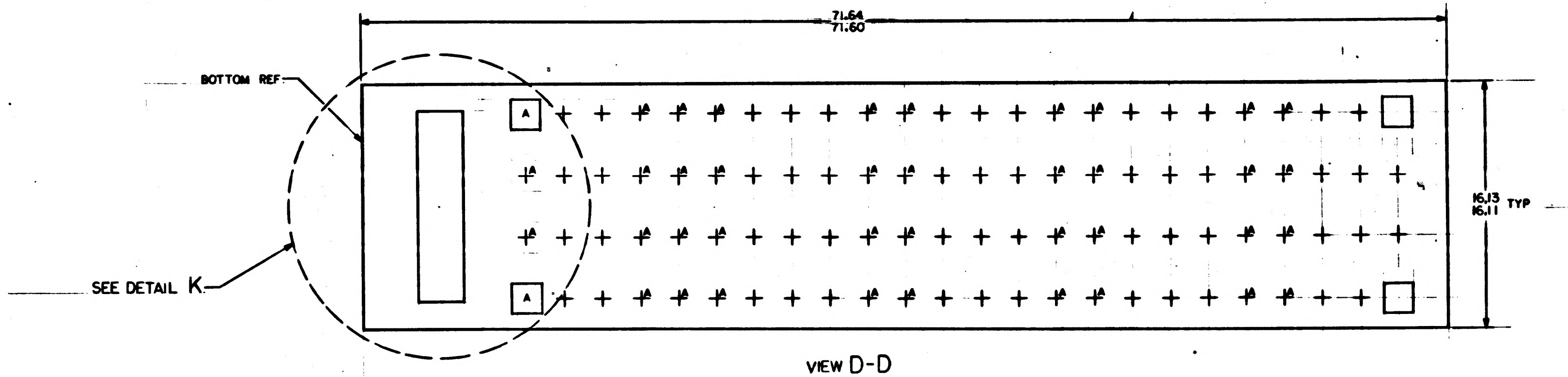
INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED
D	THIS SHEET ADDED PER TDRR NO. 11202		

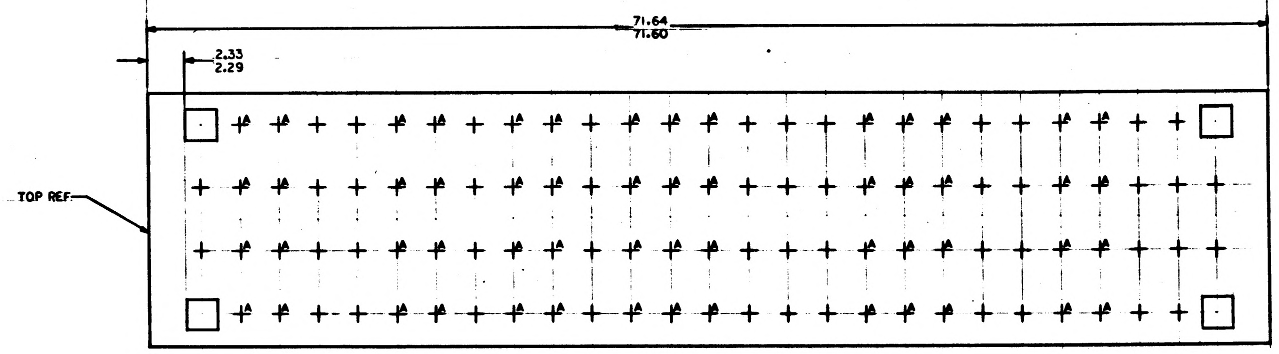

64.83
64.79
2.33
2.29
BOTTOM REF
A

VIEW C-C
SEE SHEET 2

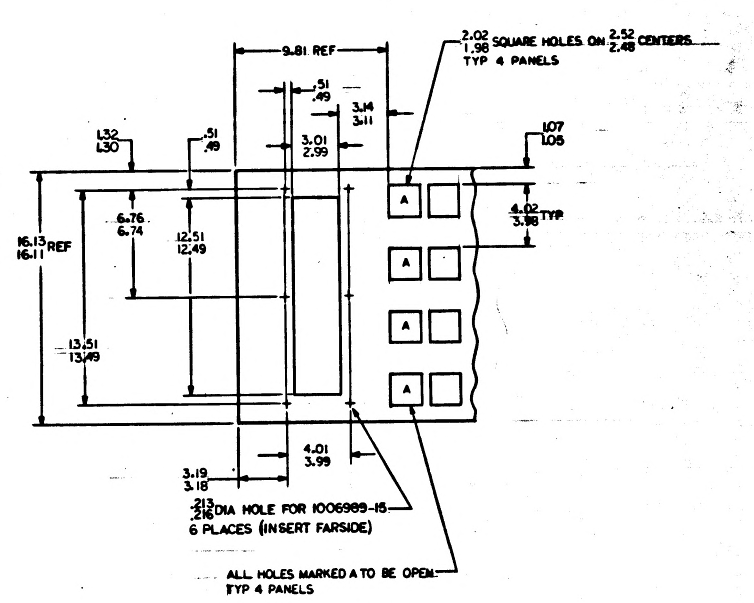

71.64
71.60
BOTTOM REF
SEE DETAIL K
16.13
16.11 TYP
A

VIEW D-D
SEE SHEET 2

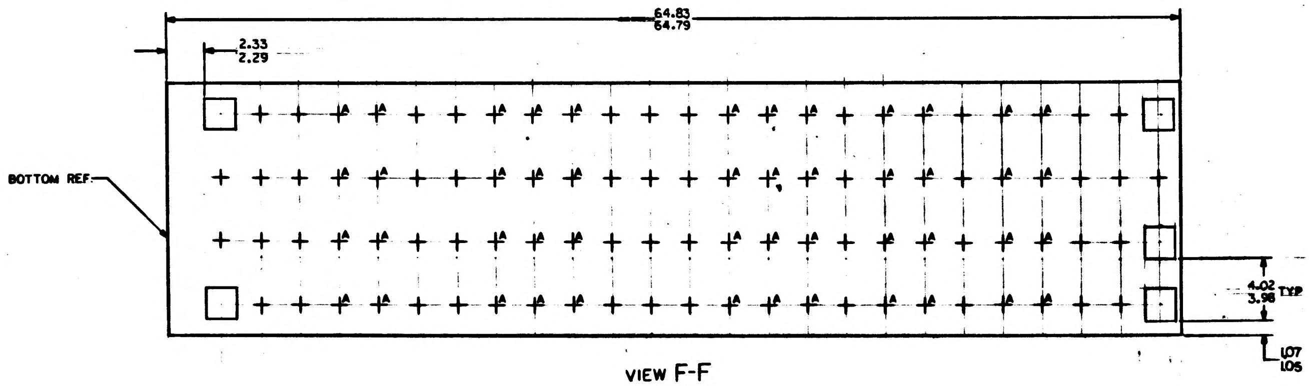
FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 11305 DATE 8/4/64


71.64
71.60
2.33
2.29
TOP REF
A

VIEW E-E
SEE SHEET 2


9.81 REF
2.02
1.98 SQUARE HOLES ON 2.52
2.48 CENTERS
TYP 4 PANELS
.51
.49
3.14
3.11
3.01
2.99
1.32
1.30
.51
.49
1.07
1.05
16.13
16.11 REF
6.76
6.74
12.51
12.49
4.02
3.98 TYP
13.51
13.49
A
4.01
3.99
3.19
3.18
.213
.216 DIA HOLE FOR 1006989-15
6 PLACES (INSERT FARSIDE)
ALL HOLES MARKED A TO BE OPEN
TYP 4 PANELS

DETAIL K
SCALE 1/4


64.83
64.79
2.33
2.29
BOTTOM REF
4.02
3.98 TYP
1.07
1.05
A

VIEW F-F
SEE SHEET 2

Ⓓ THIS SHEET ADDED

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.
DRAWN J.P. Leonard DATE 8 MAY 64
CHECKED T.P. Fazan 12 MAY 64
APPROVAL D. O'Brien 27 July 64
APPROVAL W. Mabry 27 July 64
APPROVAL 27 July 64
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL C. 7/24/64

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —— SIZE J NASA DRAWING NO. 1006929
SCALE NONE WT SHEET 3 OF 3

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

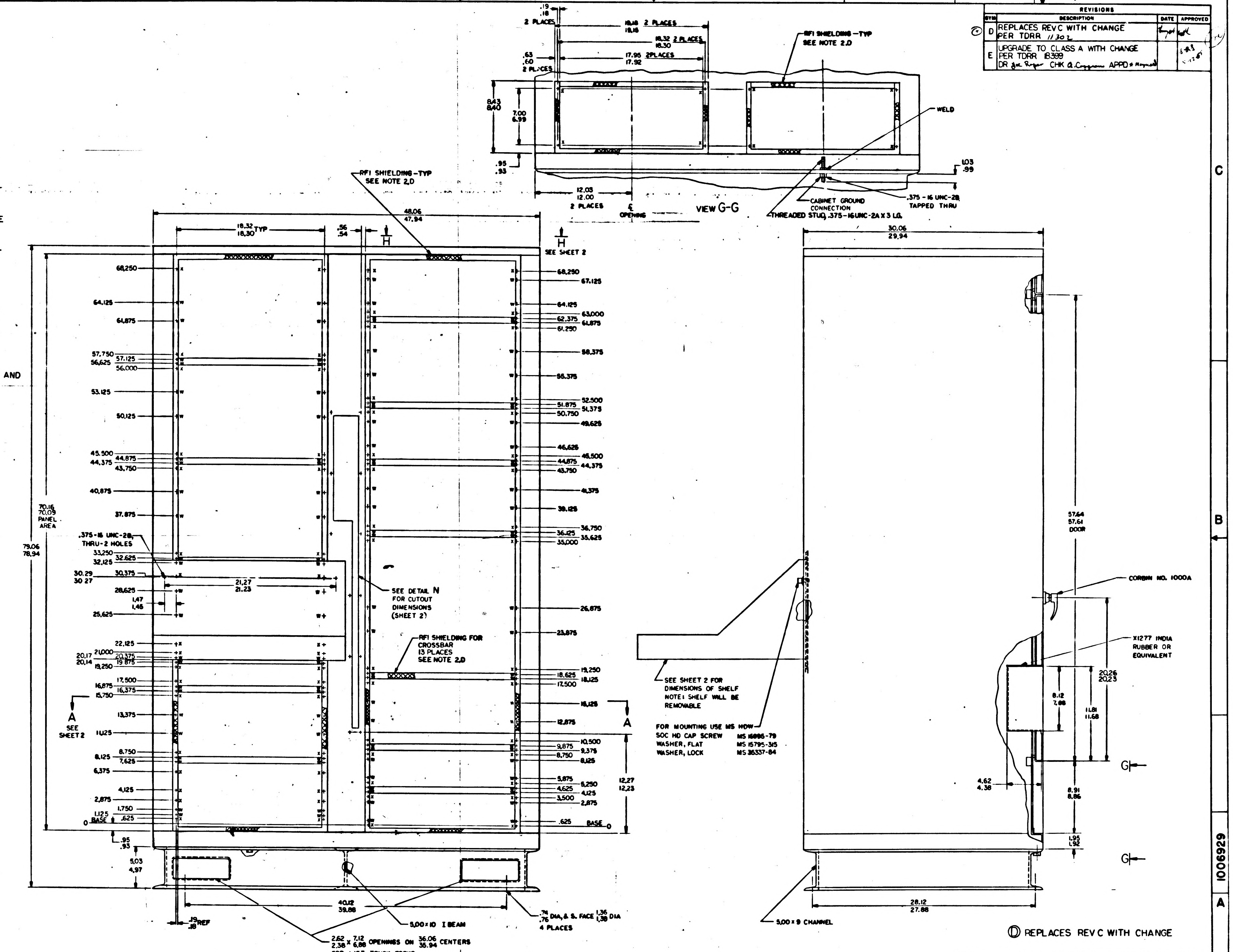
SYM	DESCRIPTION	DATE	APPROVED
D	REPLACES REV C WITH CHANGE PER TDRR 11302		
E	UPGRADE TO CLASS A WITH CHANGE PER TDRR 18399 DR Joe Roger CHK A. Coggins APPD		5-12-65

NOTES

1. GENERAL REQUIREMENTS:
   MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE INSIDE OF THE RIGHT HAND WALL (AS VIEWED FROM THE REAR OF CABINET) APPROX 6 INCHES BELOW THE CEILING WITH THE MANUFACTURERS NAME AND/OR SYMBOL, PART NUMBER, PLUS THE NASA DRAWING NUMBER AND REVISION LETTER, PER ND1002019 COLOR-WHITE

2. CONSTRUCTION REQUIREMENTS:
   A. MATERIAL: 16 GAGE MINIMUM THICKNESS, COMMERCIAL QUALITY COLD ROLLED STEEL SHEET AND STRIP THROUGHOUT.
   B. FINISH:
   (1). PRIMER: ZINC DUST PIGMENTED PRIMER COATING IN ACCORDANCE WITH MIL-P-26915, TYPE I, ALL OVER EXCEPT WHERE MASKING IS SPECIFIED.
   (2). PAINT: 2 COATS TT-E-529 SEMIGLOSS ENAMEL, CLASS B COLOR TO BE DARK GRAY (NO. 26251 OF FED-STD-595)
   C. FASTENING OF MEMBERS: WELDED THROUGHOUT EXCEPT SHELF SHALL BE REMOVABLE
   D. RFI SHIELDING: CABINET SHALL BE CONSTRUCTED TO MEET REQUIREMENTS OF MIL-I-26600 FOR CLASS 3 EQUIPMENT FREQUENCIES BETWEEN 150KC AND 1000MC SHALL BE ATTENUATED BY -60 DB MINIMUM

3. PREPARATION FOR DELIVERY PER ND1002215



.19 .18 2 PLACES
18.18 19.16 2 PLACES
18.32 18.30 2 PLACES
17.95 17.92 2 PLACES
.63 .60 2 PLACES
RFI SHIELDING—TYP SEE NOTE 2.D
8.43 8.40
7.00 6.99
.95 .93
WELD
1.03 .99
12.03 12.00 2 PLACES
℄ OPENING
VIEW G-G
CABINET GROUND CONNECTION
.375 - 16 UNC-2B TAPPED THRU
THREADED STUD, .375-16UNC-2A X 3 LG.
RFI SHIELDING—TYP SEE NOTE 2.D
48.06 47.94
18.32 18.30 TYP
.56 .54
H SEE SHEET 2
30.06 29.94
70.16 70.09 PANEL AREA
79.06 78.94
68,250
64,125
61,875
57,750
57,125
56,625
56,000
53,125
50,125
45,500
44,875
44,375
43,750
40,875
37,875
.375-16 UNC-2B THRU-2 HOLES
33,250
32,625
32,125
30.29 30 27
30,375
28,625
1.47 1.46
25,625
21.27 21.23
22,125
20.17 20.14
21,000
20,375
19,875
19,250
17,500
16,875
16,375
15,750
13,375
11,125
8,750
8,125
7,625
6,375
4,125
2,875
1,750
1.125 BASE
.625
0
A SEE SHEET 2
SEE DETAIL N FOR CUTOUT DIMENSIONS (SHEET 2)
RFI SHIELDING FOR CROSSBAR 13 PLACES SEE NOTE 2.D
68,250
67,125
64,125
62,375
63,000
61,875
61,250
58,375
55,375
51,875
52,500
51,375
50,750
49,625
46,625
44,875
45,500
44,375
43,750
41,375
38,125
36,125
36,750
35,625
35,000
26,875
23,875
19,250
18,625
18,125
17,500
16,125
12,875
9,875
10,500
9,375
8,750
8,125
5,875
5,250
4,625
4,125
3,500
2,875
.625
BASE 0
A
12.27 12.23
.95 .93
5.03 4.97
40.12 39.88
.19 .18 REF
5.00 x 10 I BEAM
.74 .76 DIA, & S. FACE 1.36 1.38 DIA 4 PLACES
2.62 2.38 x 7.12 6.88 OPENINGS ON 36.06 35.94 CENTERS FOR LIFT TRUCK FORKS
SEE SHEET 2 FOR DIMENSIONS OF SHELF NOTE: SHELF WILL BE REMOVABLE
FOR MOUNTING USE MS HDW
SOC HD CAP SCREW MS 16995-79
WASHER, FLAT MS 15795-315
WASHER, LOCK MS 35337-84
57.64 57.61 DOOR
CORBIN NO. 1000A
X1277 INDIA RUBBER OR EQUIVALENT
20.26 20.23
8.12 7.88
11.81 11.68
4.62 4.38
8.91 8.86
1.95 1.92
G
G
28.12 27.88
5.00 x 9 CHANNEL

Ⓓ REPLACES REV C WITH CHANGE

PROCURE ONLY FROM APPROVED SOURCES AS LISTED IN CONTRACTOR'S QUALIFIED VENDORS LIST

HOLE DESIG	HOLE DESCRIPTION	QTY
W	NO. 10(.190) -32 UNF-2B IN FLANGE & LEAVE GASKET BLIND	108
X	NO. 10(.190) -32 UNF-2B IN FLANGE & A NO. 10-32 CLEARANCE IN GASKET	74

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN DATE
CHECKED
APPROVAL 27 Jul 64
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

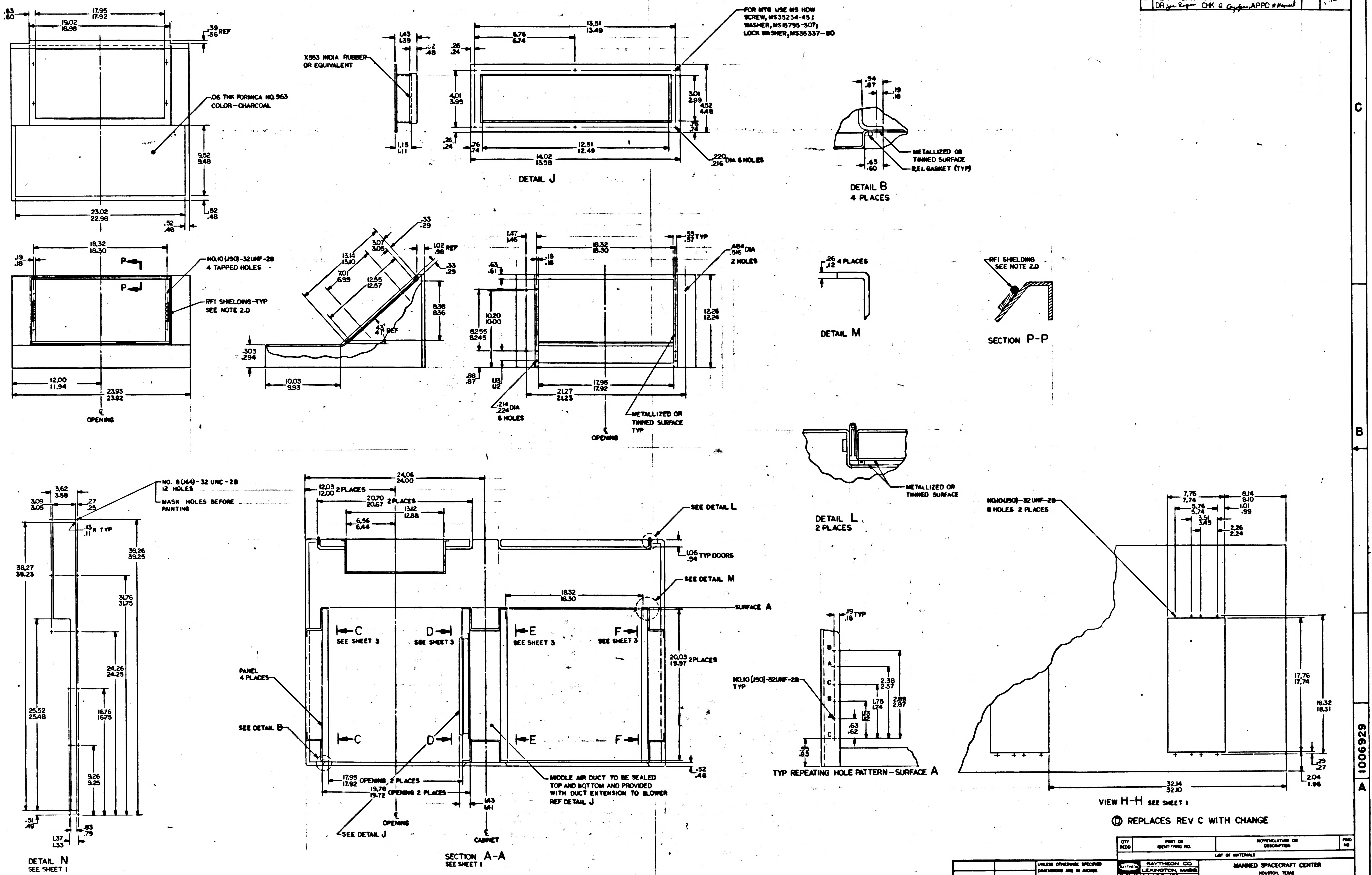
CODE IDENT NO. —— SIZE J NASA DRAWING NO 1006929
SCALE NONE WT SHEET 1 OF 3

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
D	REPLACES REV C WITH CHANGE-PER TDRR NO. 302		
E	UPGRADE TO CLASS A WITH CHANGE PER TDRR 18399 DR Joe Rogers CHK G. Coughlan APPD		5-14-65


.06 THK FORMICA NO. 963
COLOR - CHARCOAL
X553 INDIA RUBBER OR EQUIVALENT
FOR MTG USE MS HDW
SCREW, MS35234-45;
WASHER, MS15795-307;
LOCK WASHER, MS35337-80
.220/.216 DIA 6 HOLES
DETAIL J
METALLIZED OR TINNED SURFACE
R.F.I. GASKET (TYP)
DETAIL B
4 PLACES
NO.10 (.190)-32UNF-2B
4 TAPPED HOLES
RFI SHIELDING-TYP
SEE NOTE 2.0
P
43° REF
.484/.516 DIA
2 HOLES
.214/.224 DIA
6 HOLES
METALLIZED OR TINNED SURFACE TYP
℄ OPENING
.26/.12 4 PLACES
DETAIL M
RFI SHIELDING
SEE NOTE 2.0
SECTION P-P
DETAIL L
2 PLACES
NO. 8 (.164)-32 UNC-2B
12 HOLES
MASK HOLES BEFORE PAINTING
.13/.11 R TYP
DETAIL N
SEE SHEET 1
2 PLACES
SEE DETAIL L
1.06/.94 TYP DOORS
SEE DETAIL M
SURFACE A
C
D
E
F
SEE SHEET 3
PANEL
4 PLACES
SEE DETAIL B
20.03/19.97 2 PLACES
17.95/17.92 OPENING 2 PLACES
19.78/19.72 OPENING 2 PLACES
℄ OPENING
SEE DETAIL J
℄ CABINET
MIDDLE AIR DUCT TO BE SEALED TOP AND BOTTOM AND PROVIDED WITH DUCT EXTENSION TO BLOWER REF DETAIL J
SECTION A-A
SEE SHEET 1
NO.10 (.190)-32UNF-2B
TYP
TYP REPEATING HOLE PATTERN - SURFACE A
NO.10 (.190)-32UNF-2B
8 HOLES 2 PLACES
VIEW H-H SEE SHEET 1
32.14/32.10
18.32/18.30
23.02/22.98
23.95/23.92
24.06/24.00
13.51/13.49
14.02/13.98
12.51/12.49
39.26/39.25
38.27/38.23
25.52/25.48
17.76/17.74
18.32/18.31

Ⓓ REPLACES REV C WITH CHANGE

QTY REQD	PART OR IDENT'FYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±

DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN S.T. Quillin DATE
CHECKED
APPROVAL
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE J
NASA DRAWING NO 1006929
SCALE NONE
WT
SHEET 2 OF 3

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

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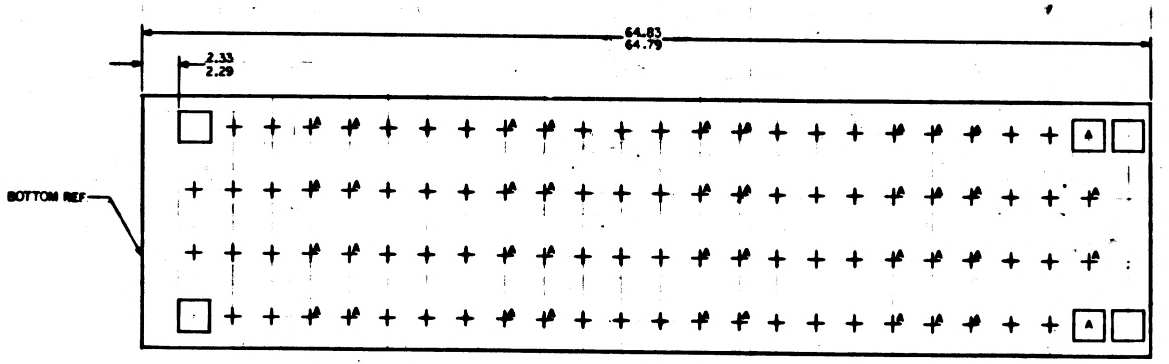
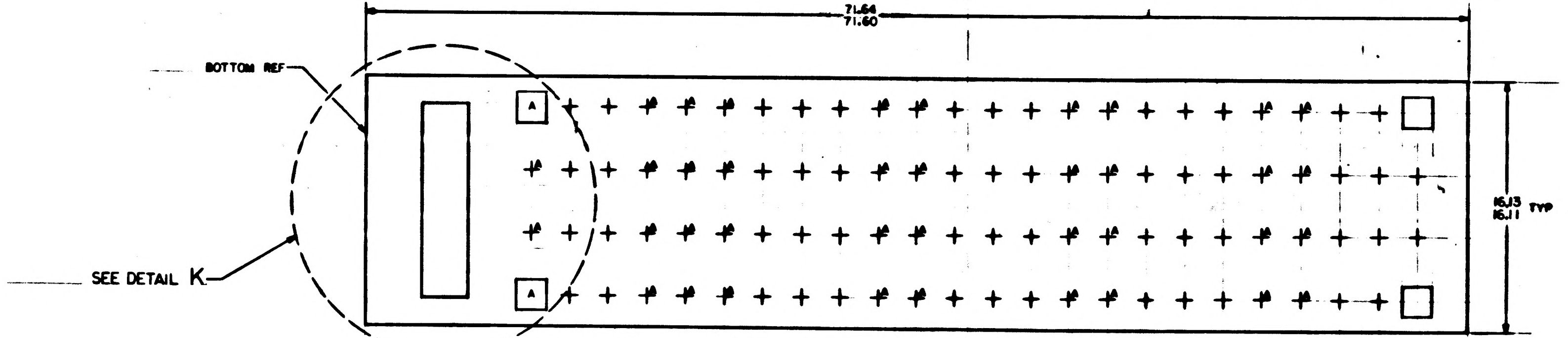
REVISIONS

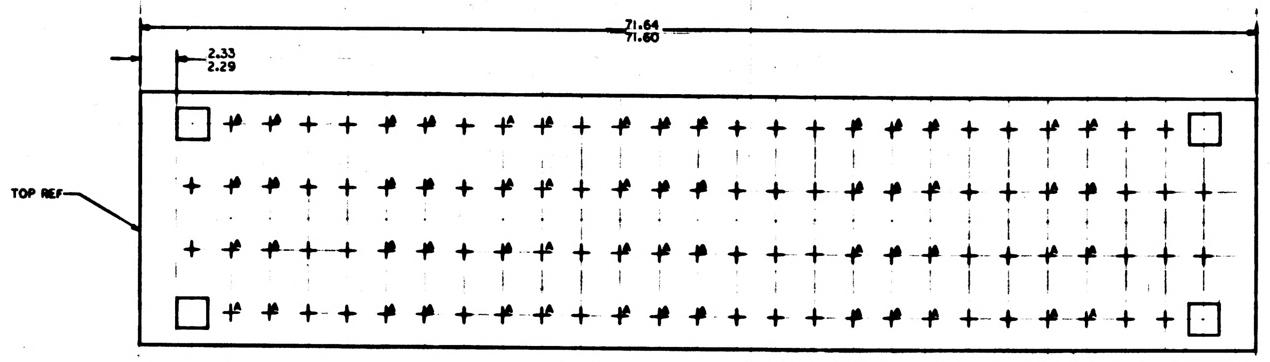
SYM	DESCRIPTION	DATE	APPROVED
D	THIS SHEET ADDED PER TDRR NO. 30		
E	UPGRADE TO CLASS A WITH CHANGE PER TDRR 18399 DR Joe Roper CHK G Coggin APPD		5-14-65


64.83
64.79
2.33
2.29
BOTTOM REF
A
A

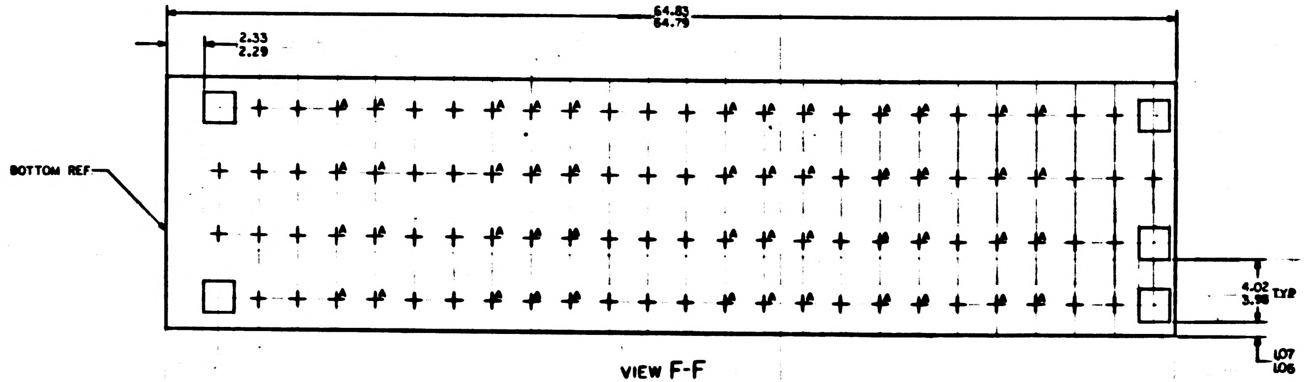
VIEW C-C
SEE SHEET 2


71.64
71.60
BOTTOM REF
SEE DETAIL K
A
A
16.13
16.11
TYP

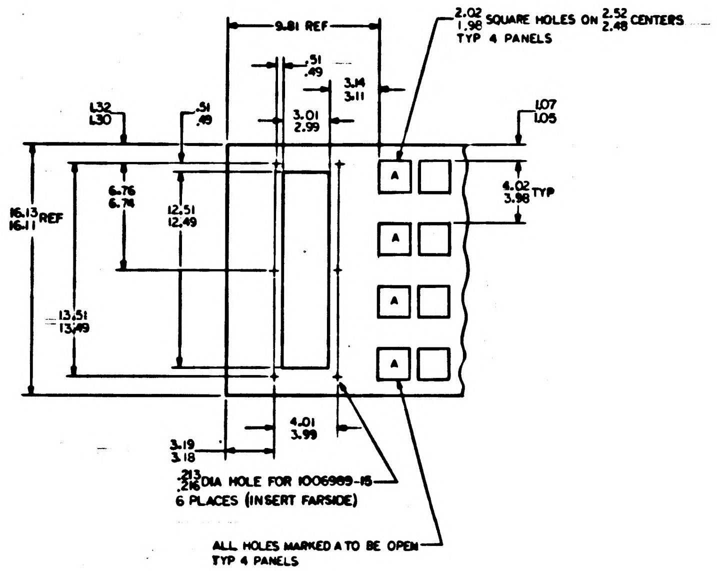
VIEW D-D
SEE SHEET 2


71.64
71.60
2.33
2.29
TOP REF

VIEW E-E
SEE SHEET 2


64.83
64.79
2.33
2.29
BOTTOM REF
4.02
3.98
TYP
1.07
1.05

VIEW F-F
SEE SHEET 2


9.81 REF
.51
.49
3.14
3.11
3.01
2.99
1.32
1.30
.51
.49
1.07
1.05
16.13
16.11
REF
6.76
6.74
12.51
12.49
13.51
13.49
4.02
3.98
TYP
A
A
A
A
4.01
3.99
3.19
3.18
2.02
1.98
SQUARE HOLES ON
2.52
2.48
CENTERS
TYP 4 PANELS
.213
.216
DIA HOLE FOR 1006989-15
6 PLACES (INSERT FARSIDE)
ALL HOLES MARKED A TO BE OPEN
TYP 4 PANELS

DETAIL K
SCALE 1/4

Ⓓ THIS SHEET ADDED

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±

DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE

NEXT ASSY | USED ON
APPLICATION

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498
DRAWN DATE 8 MAY 64
CHECKED
APPROVAL
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. ——
SIZE J
NASA DRAWING NO. 1006929
SCALE NONE
WT
SHEET 3 OF 3

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

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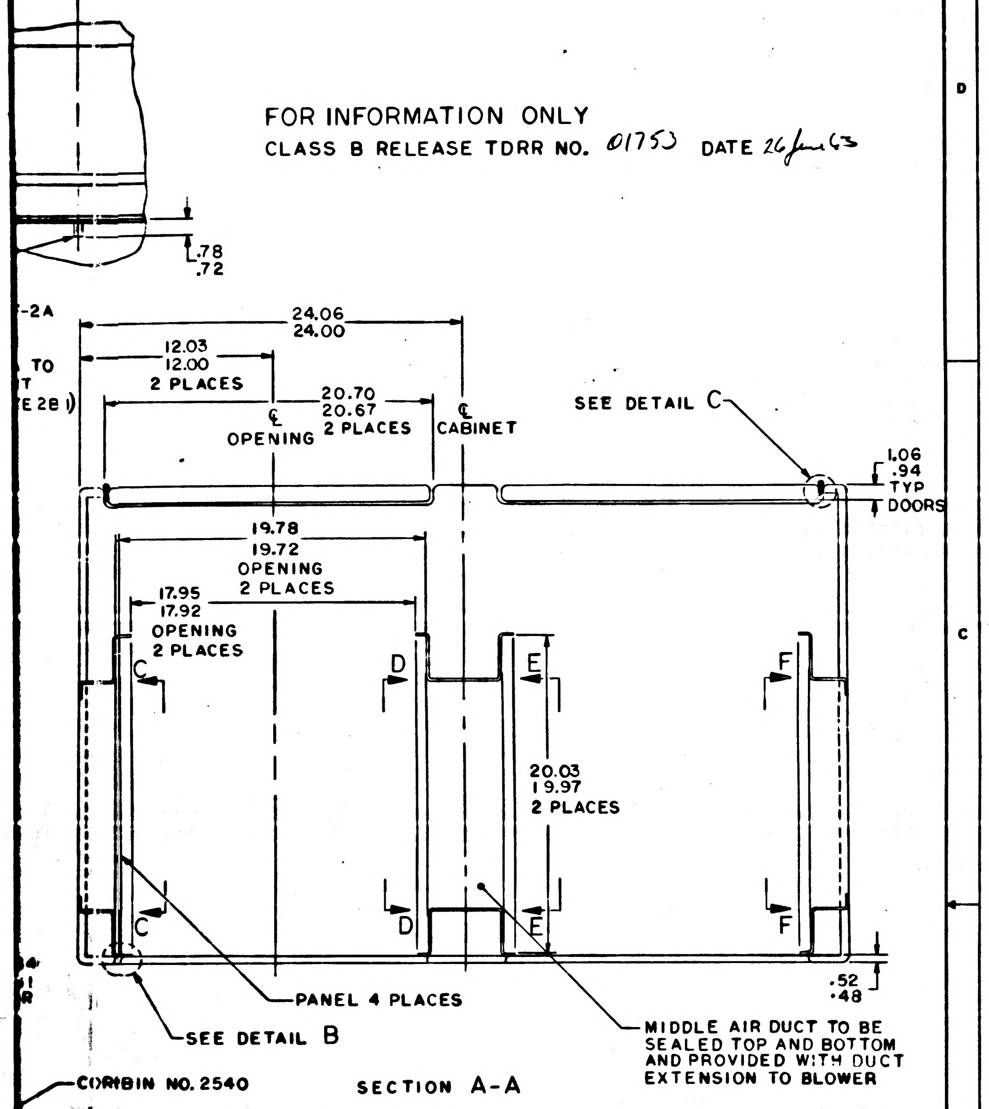
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01753 DATE 26 Jun 63


.78
.72
-2A
TO
T
E 28 I)
24.06
24.00
12.03
12.00
2 PLACES
20.70
20.67
2 PLACES
℄ OPENING
℄ CABINET
SEE DETAIL C
1.06
.94
TYP
DOORS
19.78
19.72
OPENING
2 PLACES
17.95
17.92
OPENING
2 PLACES
C
D
E
F
20.03
19.97
2 PLACES
.52
.48
PANEL 4 PLACES
SEE DETAIL B
MIDDLE AIR DUCT TO BE SEALED TOP AND BOTTOM AND PROVIDED WITH DUCT EXTENSION TO BLOWER
CORBIN NO. 2540

SECTION A-A

3.112
3.88

G
G

NOTES

1. GENERAL REQUIREMENTS:
   A. MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE INSIDE OF THE REAR DOOR WITH THE MANUFACTURERS NAME AND / OR SYMBOL, PART NUMBER, PLUS THE NASA DRAWING NUMBER AND REVISION LETTER.
2. CONSTRUCTION REQUIREMENTS:
   A. MATERIAL: 16 GAGE MINIMUM THICKNESS, COMMERCIAL QUALITY COLD ROLLED STEEL SHEET AND STRIP THROUGHOUT.
   B. FINISH:
   (1). PRIMER: ZINC DUST PIGMENTED PRIMER COATING IN ACCORDANCE WITH MIL-P-26915, TYPE I, ALL OVER EXCEPT WHERE MASKING IS SPECIFIED.
   (2) PAINT: 2 COATS TT-E-529 SEMIGLOSS ENAMEL, CLASS B COLOR TO BE DARK GRAY (NO. 26251 OF FED-STD-595).
   C. FASTENING OF MEMBERS: WELDED THROUGHOUT EXCEPT SHELF SHALL BE REMOVABLE.

   D RFI SHIELDING: CABINET SHALL BE CONSTRUCTED TO MEET REQUIREMENTS OF MIL-I-26600 FOR CLASS 3 EQUIPMENT FREQUENCIES BETWEEN 150 KC AND 1000 MC SHALL BE ATTENUATED BY - 60 DB

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ± DO NOT SCALE THIS DRAWING	RAYTHEON CO. LEXINGTON, MASS. CONTRACT NO.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
MATERIAL SEE NOTES	DRAWN Guy Wheeler DATE 28 May 63 CHECKED R. Wressell 7 June 63 APPROVAL C. Jordan 6/17/63 APPROVAL 6/17/63 APPROVAL L. C. Sutton J.P. 6/17/63	CABINET, ELECTRICAL EQUIPMENT SPECIFICATION CONTROL DRAWING
HEAT TREATMENT	NASA APPROVAL 6-26-63 MIT APPROVAL 26 June MIT APPROVAL Goldman 6/26/63	CODE IDENT NO. — SIZE J — NASA DRAWING NO. 1006929
FINAL FINISH		SCALE NONE — WT — SHEET 1 OF 2
NEXT ASSY — USED ON — APPLICATION		

1006929

1006929

F-2 1006929

INCHES
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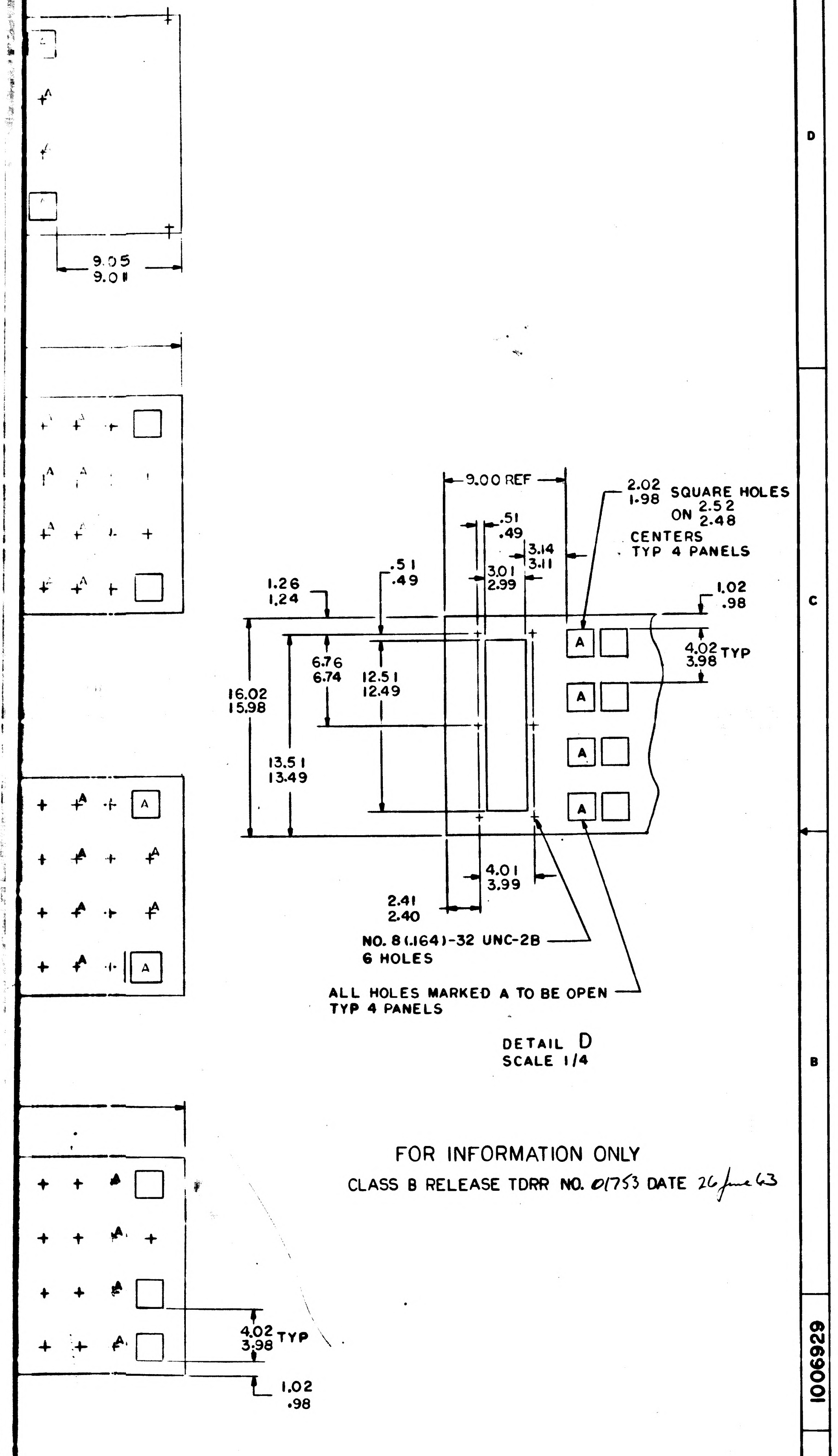
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVED



9.05
9.01
9.00 REF
2.02
1.98
SQUARE HOLES ON 2.52 2.48 CENTERS TYP 4 PANELS
.51
.49
3.14
3.11
3.01
2.99
1.26
1.24
.51
.49
1.02
.98
4.02
3.98
TYP
6.76
6.74
12.51
12.49
16.02
15.98
13.51
13.49
A
4.01
3.99
2.41
2.40
NO. 8 (.164)-32 UNC-2B
6 HOLES
ALL HOLES MARKED A TO BE OPEN
TYP 4 PANELS
4.02
3.98
TYP
1.02
.98
D
C
B
A

DETAIL D
SCALE 1/4

FOR INFORMATION ONLY

CLASS B RELEASE TDRR NO. 01753 DATE 26 June 63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.

DRAWN Roy Wheeler DATE 29 May 63
CHECKED R. Russell 7 June 63
APPROVAL C. Spaulding 6/17/63
APPROVAL 6/17/63
APPROVAL 6/17/63
NASA APPROVAL 6-26-63
MIT APPROVAL 26 June 63
MIT APPROVAL 6/5/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIPMENT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1006929
SCALE NONE
WT
SHEET 2 OF 2

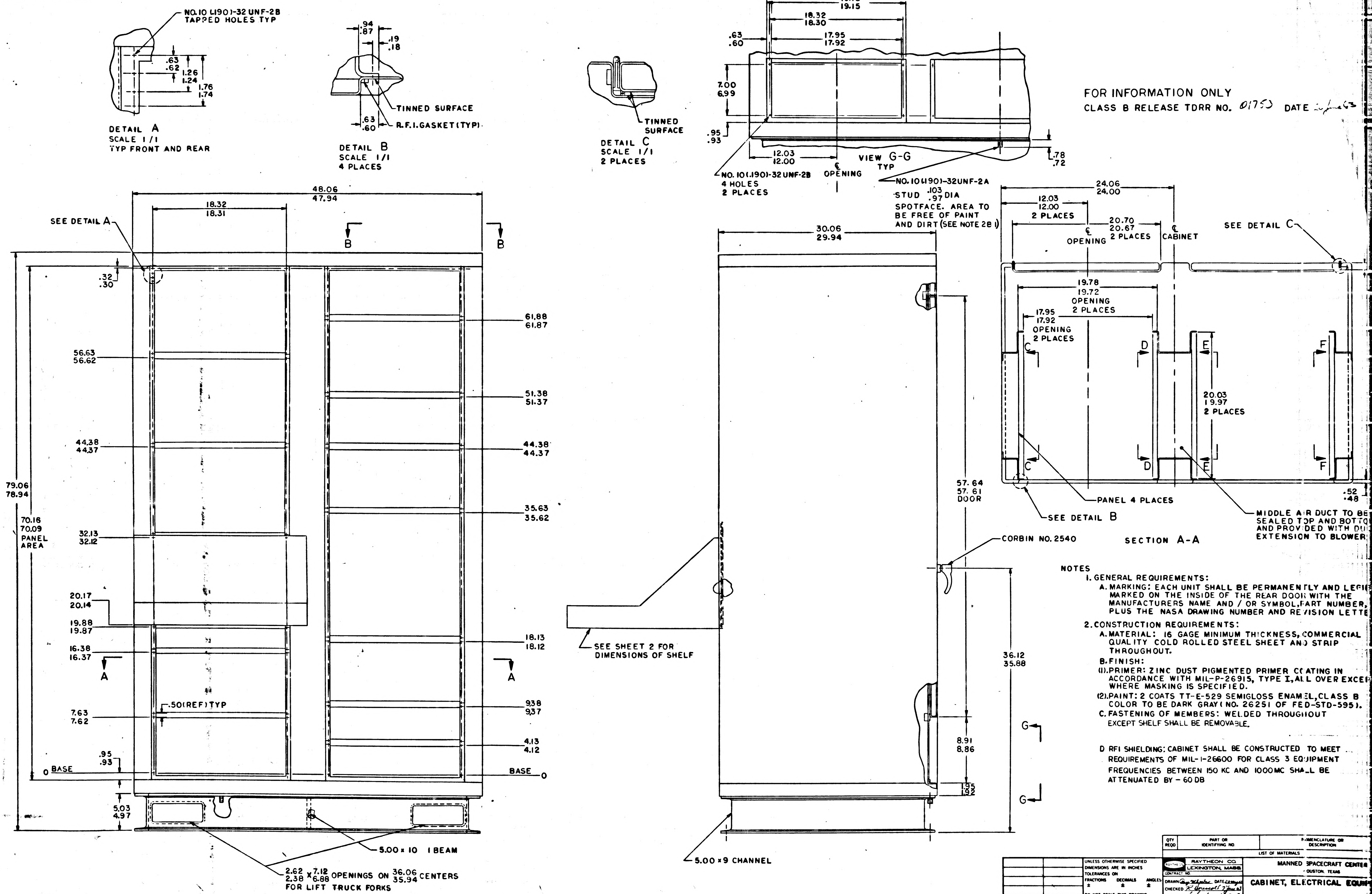
1006929

INCHES
PHOTOGRAPHIC SCALE ONLY

F-2

1006929

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01753 DATE 20 June 63


NO.10 (.190)-32 UNF-2B TAPPED HOLES TYP
.63 .62
1.26 1.24
1.76 1.74
DETAIL A
SCALE 1/1
TYP FRONT AND REAR
.94 .87
.19 .18
TINNED SURFACE
R.F.I. GASKET (TYP)
.63 .60
DETAIL B
SCALE 1/1
4 PLACES
TINNED SURFACE
DETAIL C
SCALE 1/1
2 PLACES
.19 .18
19.18 19.15
18.32 18.30
17.95 17.92
.63 .60
7.00 6.99
.95 .93
12.03 12.00
℄ OPENING
VIEW G-G
TYP
.78 .72
NO.10 (.190)-32 UNF-2B
4 HOLES
2 PLACES
NO.10 (.190)-32 UNF-2A
STUD .103 .97 DIA
SPOTFACE. AREA TO BE FREE OF PAINT AND DIRT (SEE NOTE 2B)
48.06 47.94
18.32 18.31
SEE DETAIL A
B
B
.32 .30
61.88 61.87
56.63 56.62
51.38 51.37
44.38 44.37
44.38 44.37
35.63 35.62
79.06 78.94
70.16 70.09 PANEL AREA
32.13 32.12
20.17 20.14
19.88 19.87
18.13 18.12
16.38 16.37
A
A
.50 (REF) TYP
9.38 9.37
7.63 7.62
4.13 4.12
.95 .93
0 BASE
BASE 0
5.03 4.97
5.00 × 10 I BEAM
2.62 2.38 × 7.12 6.88 OPENINGS ON 36.06 35.94 CENTERS FOR LIFT TRUCK FORKS
30.06 29.94
57.64 57.61 DOOR
CORBIN NO. 2540
SEE SHEET 2 FOR DIMENSIONS OF SHELF
36.12 35.88
8.91 8.86
1.95 1.92
G
G
5.00 × 9 CHANNEL
24.06 24.00
12.03 12.00 2 PLACES
20.70 20.67 2 PLACES
℄ OPENING
℄ CABINET
SEE DETAIL C
19.78 19.72 OPENING 2 PLACES
17.95 17.92 OPENING 2 PLACES
C
D
E
F
20.03 19.97 2 PLACES
C
D
E
F
.52 .48
PANEL 4 PLACES
SEE DETAIL B
MIDDLE AIR DUCT TO BE SEALED TOP AND BOTTO AND PROVIDED WITH DU EXTENSION TO BLOWER
SECTION A-A

NOTES

1. GENERAL REQUIREMENTS:
   A. MARKING: EACH UNIT SHALL BE PERMANENTLY AND LEGI MARKED ON THE INSIDE OF THE REAR DOOR WITH THE MANUFACTURERS NAME AND / OR SYMBOL, PART NUMBER, PLUS THE NASA DRAWING NUMBER AND REVISION LETTE
2. CONSTRUCTION REQUIREMENTS:
   A. MATERIAL: 16 GAGE MINIMUM THICKNESS, COMMERCIAL QUALITY COLD ROLLED STEEL SHEET AND STRIP THROUGHOUT.
   B. FINISH:
   (1). PRIMER: ZINC DUST PIGMENTED PRIMER COATING IN ACCORDANCE WITH MIL-P-26915, TYPE I, ALL OVER EXCE WHERE MASKING IS SPECIFIED.
   (2). PAINT: 2 COATS TT-E-529 SEMIGLOSS ENAMEL, CLASS B COLOR TO BE DARK GRAY (NO. 26251 OF FED-STD-595).
   C. FASTENING OF MEMBERS: WELDED THROUGHOUT EXCEPT SHELF SHALL BE REMOVABLE.

   D RFI SHIELDING: CABINET SHALL BE CONSTRUCTED TO MEET REQUIREMENTS OF MIL-I-26600 FOR CLASS 3 EQUIPMENT FREQUENCIES BETWEEN 150 KC AND 1000 MC SHALL BE ATTENUATED BY - 60 DB

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
LIST OF MATERIALS		

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO.
DRAWN Ray Wheeler DATE 28 May 63
CHECKED R. Driscoll 7 June 63
APPROVAL
APPROVAL
APPROVAL
NASA APPROVAL 6-20-63
MIT APPROVAL 26 June
MIT APPROVAL

MANNED SPACECRAFT CENTE
HOUSTON, TEXAS
CABINET, ELECTRICAL EQUI
SPECIFICATION CONTROL
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 100692
SCALE NONE
WT

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

REVISIONS
SYM DESCRIPTION

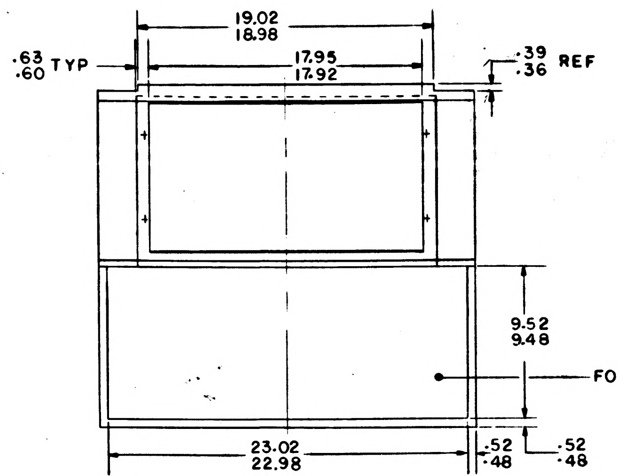
1006929

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN

REVISIONS		
SYM	DESCRIPTION	DATE

1006929



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22.98
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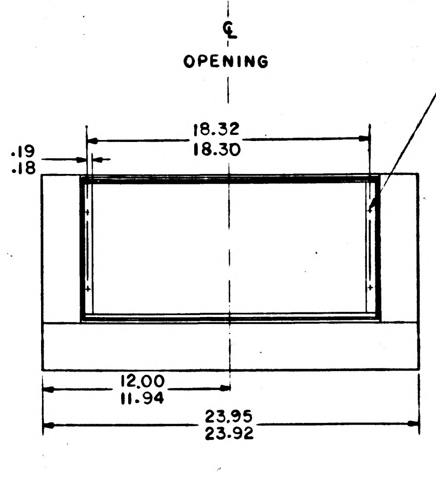

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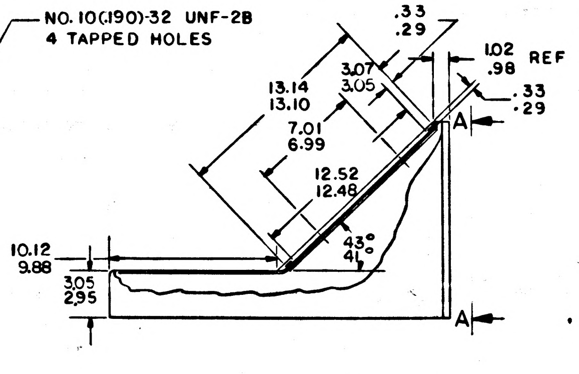

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1.02
.98 REF
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.29
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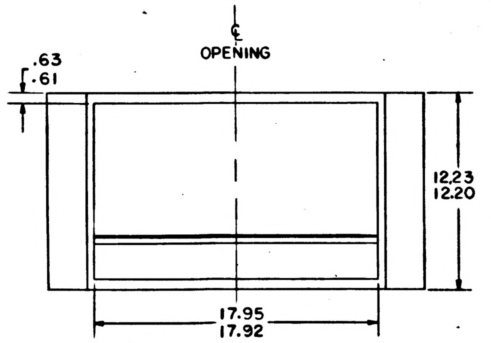

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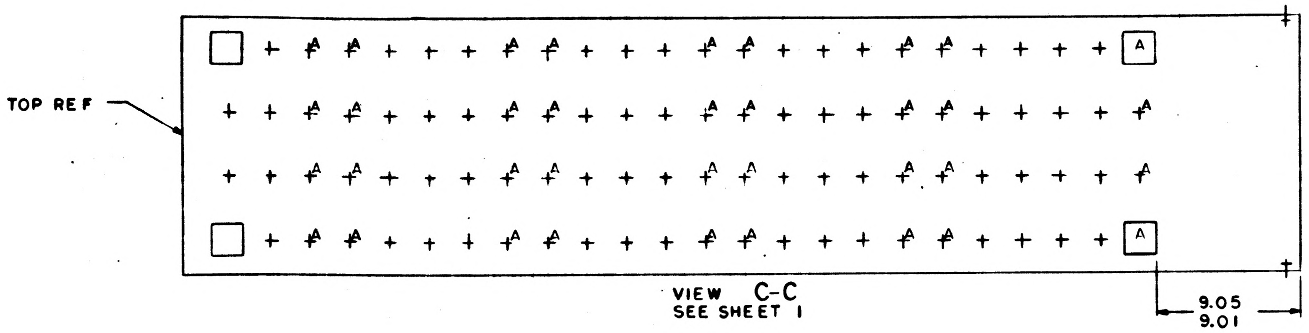
VIEW A-A



TOP REF
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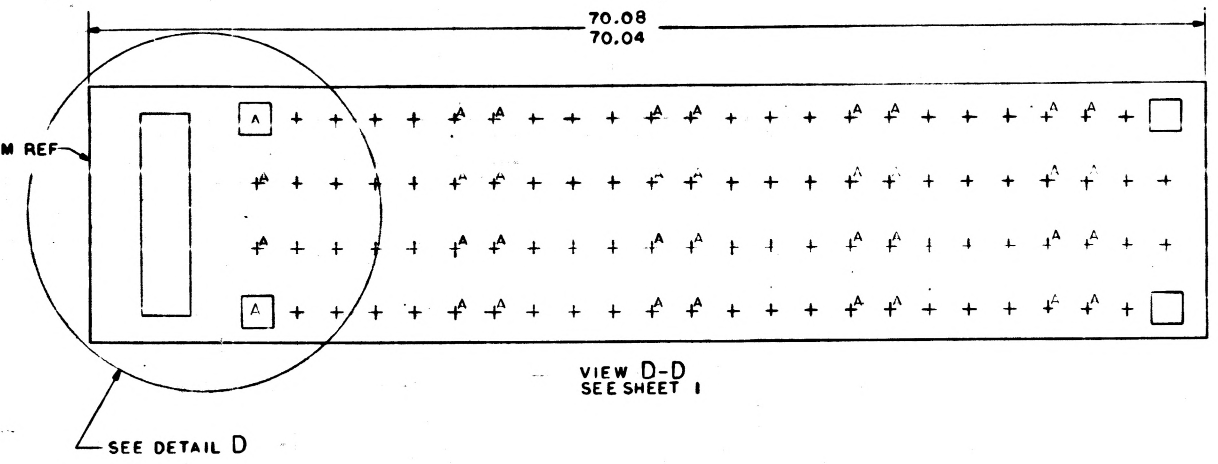
VIEW C-C
SEE SHEET 1

BOTTOM REF



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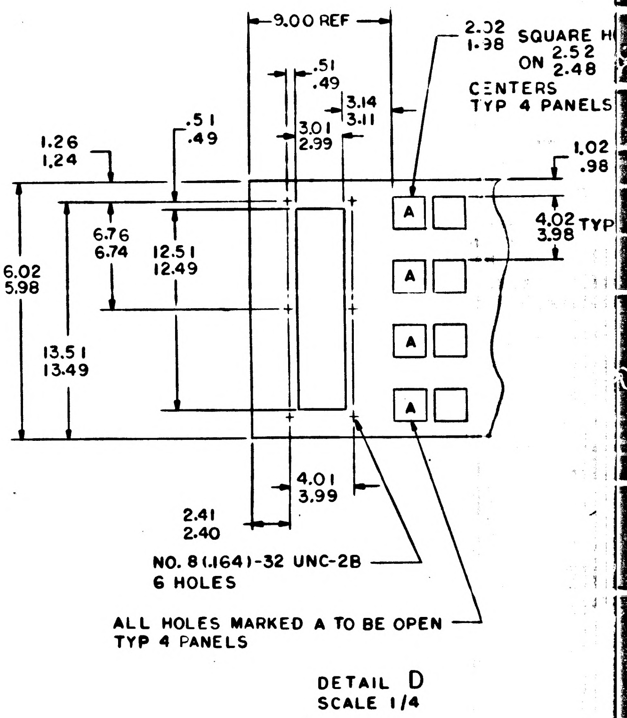
SEE DETAIL D

VIEW D-D
SEE SHEET 1



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3.11
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3.01
2.99
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.98
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12.51
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4.02
3.98 TYP
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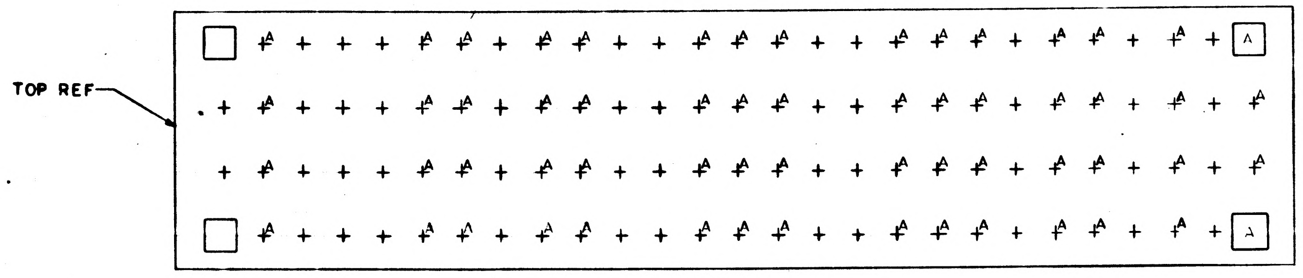
NO. 8(.164)-32 UNC-2B
6 HOLES
ALL HOLES MARKED A TO BE OPEN
TYP 4 PANELS

DETAIL D
SCALE 1/4



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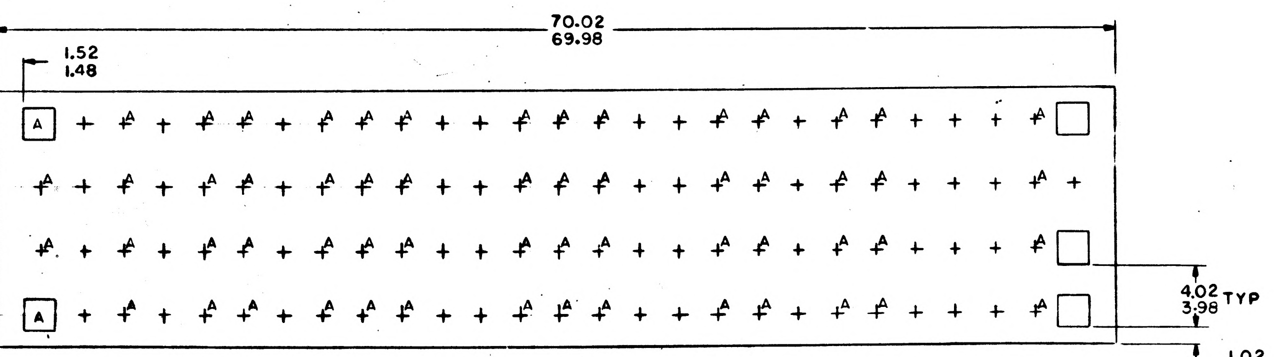
VIEW E-E
SEE SHEET 1

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 01753 DATE 26

BOTTOM REF



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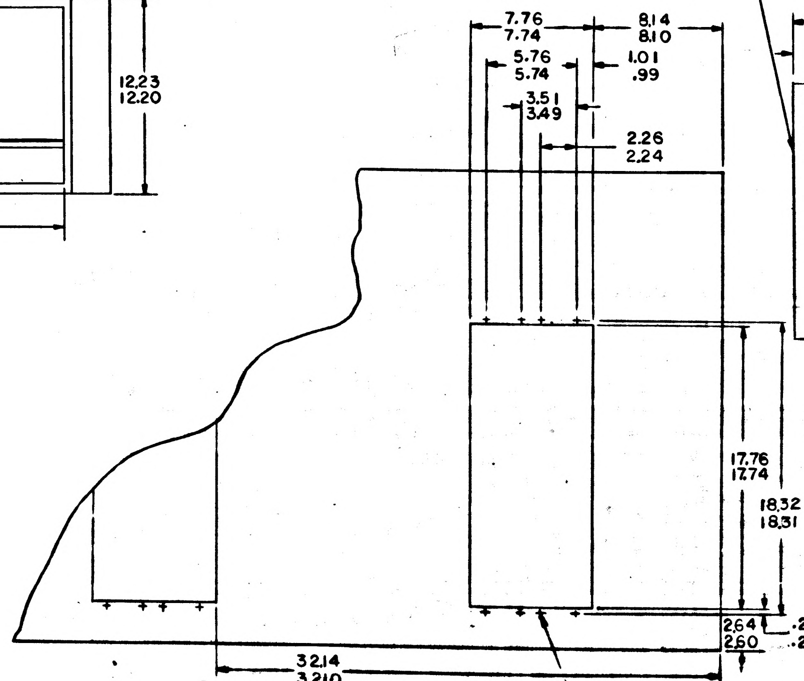
VIEW F-F
SEE SHEET 1



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NO. 10(.190)-32 UNF-2B
8 HOLES 2PLACES

VIEW B-B
SHEET 1

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
LIST OF MATERIALS		

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTES

HEAT TREATMENT

FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO

DRAWN Ray Wheeler DATE 29 May 63
CHECKED K. Krussell 7 June 63
APPROVAL 6.7.63
APPROVAL 6/17/63
APPROVAL 6/17/63
NASA APPROVAL
MIT APPROVAL 24 Jun 63
MIT APPROVAL 6/25/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CABINET, ELECTRICAL EQUIP

SPECIFICATION CONTROL DRAWI

CODE IDENT NO	SIZE	NASA DRAWING NO
	J	10069
SCALE NONE	WT	SHEET

INCHES
PHOTOGRAPHIC SCALE ONLY

E1 1006929

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

A 1869001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED 00443		
A	UPGRADED TO CLASS A WITH CHANGES PER TDRR 19721 DR H. Wong CHK R. Watts APPD A.S.M.		17 Jul 65

NOTES:

1. REQUIREMENTS:

   A. DESCRIPTION: THIS ADHESIVE SHALL BE CAPABLE OF BONDING MOLDED AND EXTRUDED NYLON TO METAL.

   B. PROPERTIES:

      (1) VISCOSITY: THE VISCOSITY OF THIS ADHESIVE SHALL BE 160 TO 200 CENTIPOISE AT 77° FAHRENHEIT.

      (2) CURING: THIS ADHESIVE SHALL NOT REQUIRE HEAT-CURING AND SHALL SET AT ROOM TEMPERATURE.

      (3) STRENGTH: THIS ADHESIVE SHALL BE CAPABLE OF PRODUCING A STRONG RESILIENT BOND BETWEEM PRIMED SUBSTRATES (NYLON AND METAL) IN 15 HOURS AND A LEAK-TIGHT SEAL IN 48 HOURS.

   C. STORAGE: THE MINIMUM SHELF LIFE OF THIS ADHESIVE WHEN STORED AT 77 ± 9°F IN THE AS-PURCHASED CONDITION SHALL BE SIX MONTHS.

   D. QUANTITIES SHALL BE SPECIFIED ON THE PURCHASE ORDER.

   E. MARKING: CONTAINERS SHALL BE MARKED PER STANDARD MIL-STD-129 WITH THE MANUFACTURER'S NAME, MATERIAL NOMENCLATURE, TYPE DESIGNATION AND DATE OF MANUFACTURE.

   F. PREPARATION FOR DELIVERY PER ND 1002215.

   G. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN MIL-Q-9858.

PROCURE ONLY FROM APPROVED SOURCES AS LISTED IN CONTRACTOR'S QUALIFIED VENDORS LIST.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498

DRAWN S.S. DATE 28 Jan 63
CHECKED H. Maynard 28 Jan 63
APPROVAL 2-13-63
APPROVAL 13 Feb 63
APPROVAL 2/13/63
NASA APPROVAL 2/20/63 Feb 20, 1963
MIT APPROVAL EC Hall 19 Feb 63
MIT APPROVAL 20 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADHESIVE, SELF CURING

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. 49956
SIZE C
NASA DRAWING NO. 1006981
SCALE NONE
WT
SHEET 1 OF 1

1006981 A

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

B 1869001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED 00443		
A	UPGRADED TO CLASS A WITH CHANGES PER TDRR 19721 DR H. Wong CHK R. APPD A.B.M.		17 Jul 65
B	REVISED PER TDRR 25922 DR G. CHK R.H.E. APPD A.B.M.		

NOTES:

1. REQUIREMENTS:

A. DESCRIPTION: THIS ADHESIVE SHALL BE CAPABLE OF BONDING MOLDED AND EXTRUDED NYLON TO METAL.

B. PROPERTIES:

(1) VISCOSITY: THE VISCOSITY OF THIS ADHESIVE SHALL BE 160 TO 200 CENTIPOISE AT 77° FAHRENHEIT. THIS ADHESIVE IS A SOLID AT ROOM TEMPERATURE AND MUST BE HEATED PRIOR TO APPLICATION.

(2) CURING: THIS ADHESIVE SHALL NOT REQUIRE HEAT-CURING AND SHALL SET AT ROOM TEMPERATURE.

(3) STRENGTH: THIS ADHESIVE SHALL BE CAPABLE OF PRODUCING A STRONG RESILIENT BOND BETWEEN PRIMED SUBSTRATES (NYLON AND METAL) IN 15 HOURS AND A LEAK-TIGHT SEAL IN 48 HOURS.

C. STORAGE: THE MINIMUM SHELF LIFE OF THIS ADHESIVE WHEN STORED AT 77 ± 9°F IN THE AS-PURCHASED CONDITION SHALL BE SIX MONTHS.

D. QUANTITIES SHALL BE SPECIFIED ON THE PURCHASE ORDER.

E. MARKING: CONTAINERS SHALL BE MARKED PER STANDARD MIL-STD-129 WITH THE MANUFACTURER'S NAME, MATERIAL NOMENCLATURE, TYPE DESIGNATION AND DATE OF MANUFACTURE.

F. PREPARATION FOR DELIVERY PER ND 1002215.

G. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN MIL-Q-9858.

1006981 B

MAST R

PROCURE ONLY FROM APPROVED SOURCES AS LISTED IN CONTRACTOR'S QUALIFIED VENDORS LIST.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498

DRAWN S.S. Pacholski DATE 28 Jan 63
CHECKED H. Maynard 28 Jan 63
APPROVAL 2-13-63
APPROVAL 13 Feb 63
APPROVAL 2/13/63
NASA APPROVAL 2/20/63 Feb 20, 1963
MIT APPROVAL E C Hall 19 Feb 63
MIT APPROVAL 20 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADHESIVE, SELF CURING

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.	SIZE	NASA DRAWING NO.
49956	C	1006981
SCALE NONE	WT	SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1869001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

NOTES:

1. REQUIREMENTS:

   A. DESCRIPTION: THIS ADHESIVE SHALL BE CAPABLE OF BONDING MOLDED AND EXTRUDED NYLON TO METAL.

   B. PROPERTIES:

      (1) VISCOSITY: THE VISCOSITY OF THIS ADHESIVE SHALL BE 160 TO 180 CENTIPOISE.

      (2) CURING: THIS ADHESIVE SHALL NOT REQUIRE HEAT-CURING AND SHALL SET AT ROOM TEMPERATURE.

      (3) STRENGTH: THIS ADHESIVE SHALL BE CAPABLE OF PRODUCING A STRONG RESILIENT BOND BETWEEN PRIMED SUBSTRATES (NYLON AND METAL) IN 15 HOURS AND A LEAK-TIGHT SEAL IN 48 HOURS.

   C. STORAGE: THE MINIMUM SHELF LIFE OF THIS ADHESIVE WHEN STORED AT 77 DEGREES FAHRENHEIT IN THE AS-PURCHASED CONDITION SHALL BE ONE YEAR.

   D. QUANTITIES SHALL BE SPECIFIED ON THE PURCHASE ORDER.

   E. MARKING: CONTAINERS SHALL BE MARKED PER STANDARD MIL-STD-129 WITH THE MANUFACTURER'S NAME, MATERIAL NOMENCLATURE, TYPE DESIGNATION AND DATE OF MANUFACTURE.

ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST NASA DOCUMENT ND 1002034.

1006981 1869001

FOR INFORMATION ONLY 00443
CLASS B RELEASE TDRR NO. ~~0042~~ DATE 20 Feb 63

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
CONTRACT NO. NAS 9-498

DRAWN S.S. Pachołek DATE 28 Jan '63
CHECKED H. Maynard 28 Jan '63
APPROVAL 2-13-63
APPROVAL 13 Feb 63
APPROVAL 2/13/63
NASA APPROVAL Jack Brown 2/20/63
C. Feldman Feb 20, 1963
MIT APPROVAL E.C. Hall 19 Feb 63
MIT APPROVAL 20 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADHESIVE, SELF CURING

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006981
SCALE NONE
WT
SHEET 1 OF 1

1006987

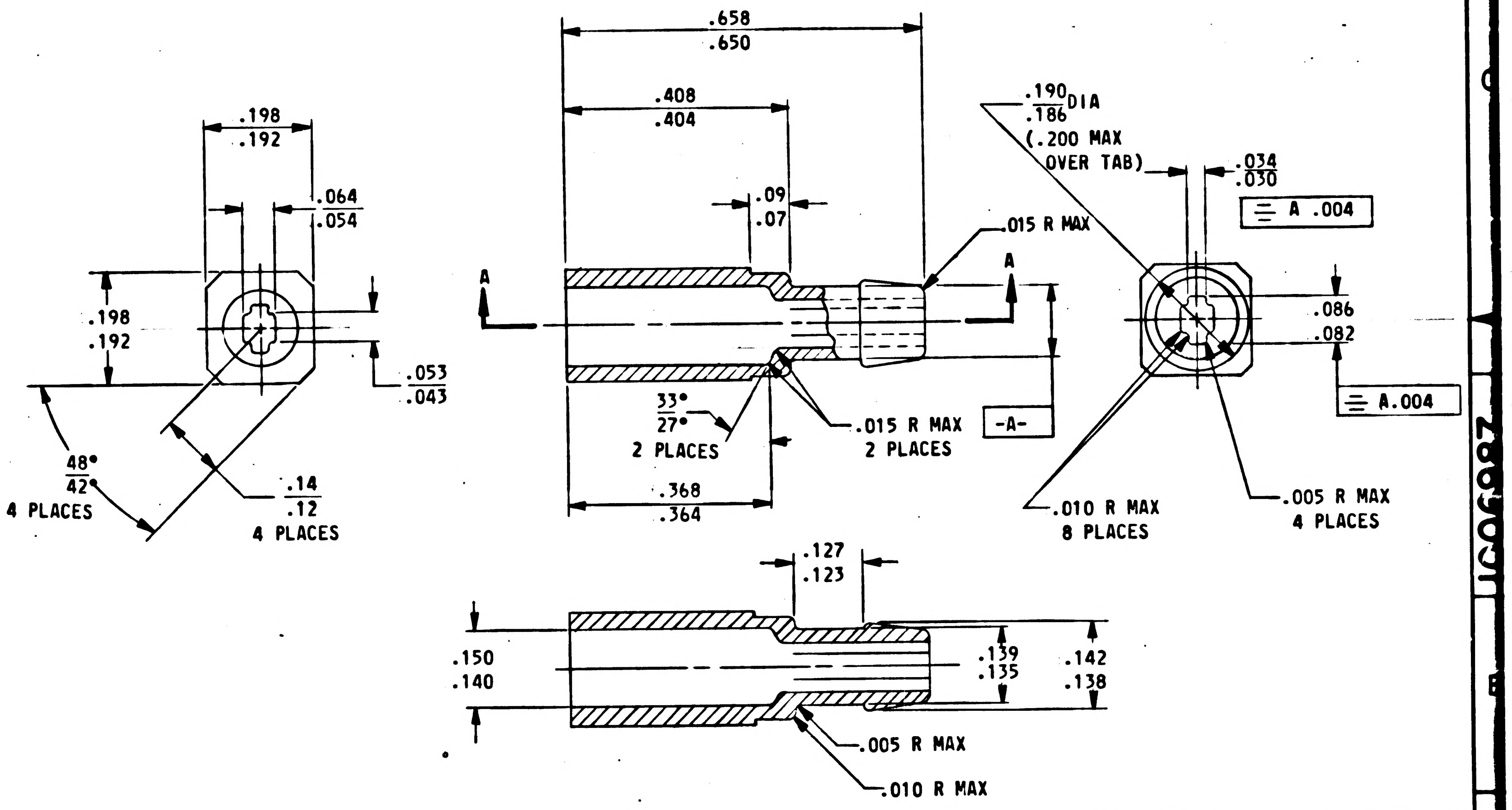
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00547 H Maynard CHK a Perr [illegible]	3/27/63	WR

NOTES:

1. REQUIREMENTS:
   A. MATERIAL: POLYAMIDE (NYLON) PER MIL-P-17091, TYPE I.
   B. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404 CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

CLASS B RELEASE TDR NO 00217 DATE 9 Jan 63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ORIGINAL SOURCE OF SUPPLY:

MALCO MANUFACTURING COMPANY
CHICAGO, ILLINOIS
CODE IDENT NO. 91886
PART NO. 3610012

PURCHASE PER QUALIFICATION STATUS LIST ND 1002034.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL: SEE NOTES
HEAT TREATMENT: NONE
FINAL FINISH: NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 13 Dec 62
CHECKED H Maynard 19 DEC '62
APPROVAL [illegible] 1-2-63
APPROVAL [illegible] 1/4/63
APPROVAL [illegible] 2 Jan 63 JP
NASA APPROVAL W J Rhine 1-9-63
[illegible] 1 Jan 63
MIT APPROVAL Eldon C Hall 8 Jan 63
MIT APPROVAL [illegible] 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INSULATOR, CONTACT, ELECTRICAL, MALE CRIMP TYPE

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006987
SCALE NONE
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

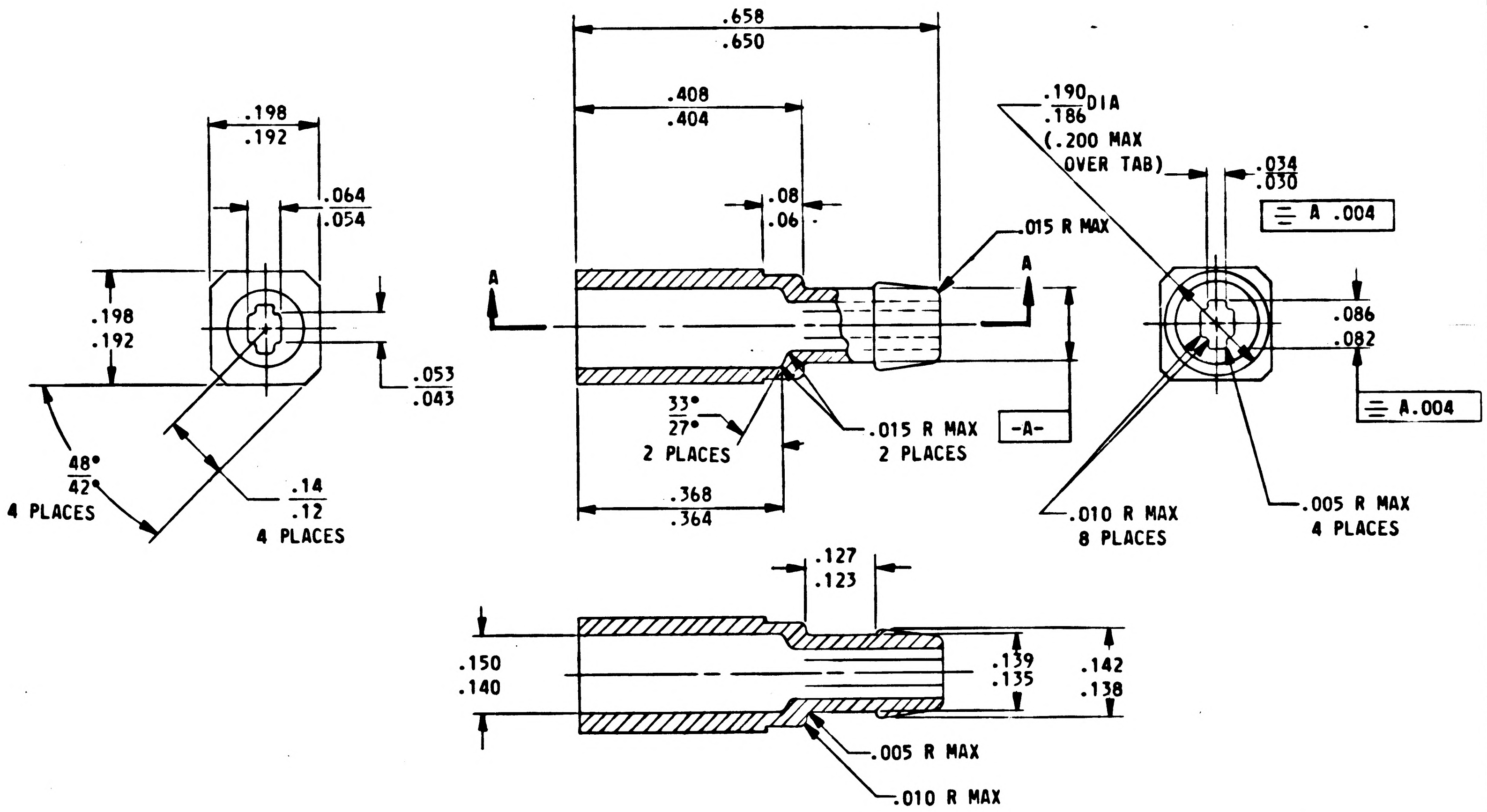
1006987

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: POLYAMIDE (NYLON) PER MIL-P-17091, TYPE I.
   - B. SURFACE QUALITY: 125/ PER STANDARD MIL-STD-10.
   - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404 CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

CLASS B RELEASE TDR NO 00217 DATE 9 Jan 63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2 PLACES
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2 PLACES
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.186 DIA
(.200 MAX
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.010 R MAX
8 PLACES
.005 R MAX
4 PLACES
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.150
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.005 R MAX
.010 R MAX

ORIGINAL SOURCE OF SUPPLY:

MALCO MANUFACTURING COMPANY
CHICAGO, ILLINOIS
CODE IDENT NO. 91886
PART NO. 3610012

PURCHASE PER QUALIFICATION STATUS LIST
ND 1002034.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 13 Dec 62
CHECKED R. Maynard 19 DEC '62
APPROVAL J. Schwab 1-2-63
APPROVAL 1-4-63
APPROVAL 2 Jan 63
NASA APPROVAL W J Rhine 1-9-63
1 Jan 63
MIT APPROVAL Eldon C Hall 8 Jan 63
MIT APPROVAL 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INSULATOR, CONTACT, ELECTRICAL,
MALE CRIMP TYPE
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006987
SCALE NONE
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

8869001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00406 DR B Jensen CHK J Miles APPD		WK

NOTES

1. REQUIREMENTS:

   A. MATERIAL: CHANNELS SHALL BE 7075-T6 ALUMINUM PER QQ-A-277. COMPONENT PARTS SHALL BE TYPE 302 OR 303 CORROSION RESISTANT STEEL, BALLS SHALL BE TYPE 440 CORROSION RESISTANT STEEL PER MIL-S-5059 OR MIL-S-7720.

   B. FINISH: CHASSIS SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, DYED BLACK AND DRY FILM LUBRICATE PER MIL-L-25504. CABINET SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, NON-DYED. CORROSION RESISTANT PARTS SHALL BE CLEAR PASSIVATED PER MIL-S-5002.

   C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.

2. SLIDE LOCKS IN OPEN POSITION ONLY AND IS PROVIDED WITH QUICK DISCONNECT OF CHASSIS SECTION. TO RETURN SLIDE TO CLOSED POSITION, PULL OUT CHASSIS SECTION APPROX 3/32 AND RELEASE LOCK.

3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

TABLE I

DASH NO.	CHASSIS SECTION	CABINET SECTION	JONATHAN PART NO.
-1	LEFT HAND SHOWN		130388 B-L
-2	RIGHT HAND OPPOSITE		130388 B-R
-3		LEFT HAND SHOWN	130388 A-L
-4		RIGHT HAND OPPOSITE	130388 A-R

REV A	REV A
REV -	REV -
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 63

MASTER

ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST
NASA DOCUMENT ND 1002034.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 26 Dec 62
CHECKED A. Kezerian 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J. Pendleton
NASA APPROVAL W J Rhine 1-30-63
MIT APPROVAL E C Hall 30 Jan 63
MIT APPROVAL 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. | SIZE C | NASA DRAWING NO. 1006988
SCALE NONE | WT | SHEET 1 OF 2

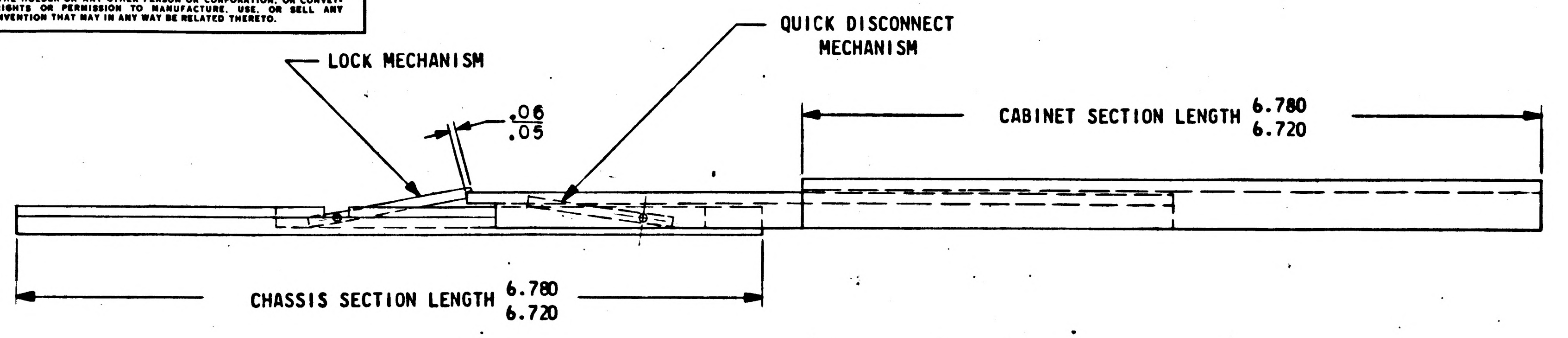
8869001 1006988

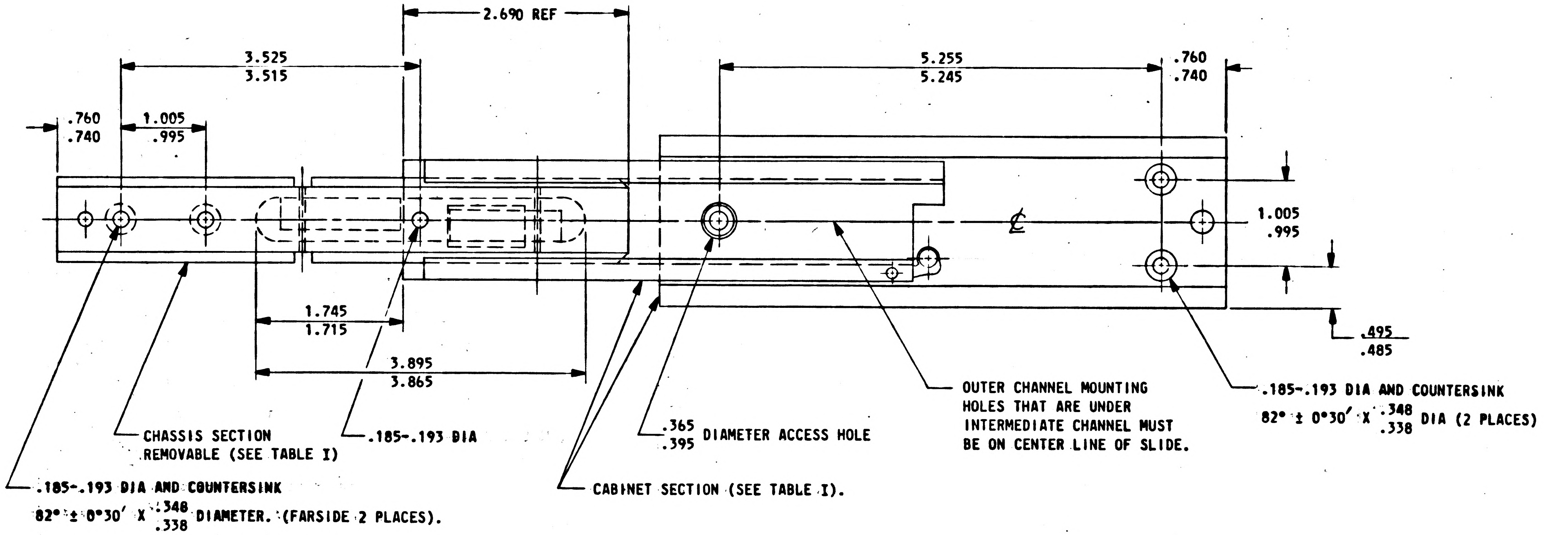
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

8869001

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00406 DR B Jensen CHK J Miles APPD		WK


TRAVEL 7.810 - 7.690 INCHES
QUICK DISCONNECT MECHANISM
LOCK MECHANISM
.06
.05
CABINET SECTION LENGTH 6.780
6.720
CHASSIS SECTION LENGTH 6.780
6.720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5.255
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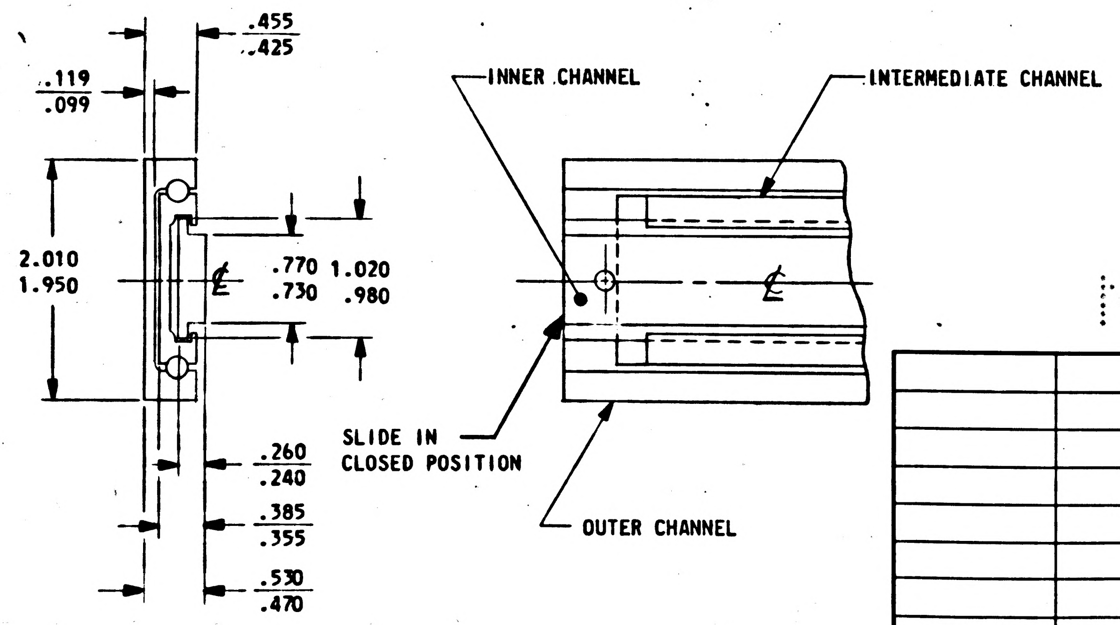
.740
.760
.740
1.005
.995
1.005
.995
.495
.485
1.745
1.715
3.895
3.865
℄
CHASSIS SECTION REMOVABLE (SEE TABLE I)
.185-.193 DIA
.365
.395 DIAMETER ACCESS HOLE
OUTER CHANNEL MOUNTING HOLES THAT ARE UNDER INTERMEDIATE CHANNEL MUST BE ON CENTER LINE OF SLIDE.
.185-.193 DIA AND COUNTERSINK 82° ± 0°30′ X .348 .338 DIA (2 PLACES)
.185-.193 DIA AND COUNTERSINK 82° ± 0°30′ X .348 .338 DIAMETER. (FARSIDE 2 PLACES).
CABINET SECTION (SEE TABLE I).


.455
.425
.119
.099
2.010
1.950
℄
.770
.730
1.020
.980
.260
.240
.385
.355
.530
.470
INNER CHANNEL
INTERMEDIATE CHANNEL
SLIDE IN CLOSED POSITION
OUTER CHANNEL
℄

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30JAN63

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 26 Dec 62
CHECKED A. Lazzie 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J Pomerleau
NASA APPROVAL 1-30-63
MIT APPROVAL E C Hall 30 Jan 63
MIT APPROVAL W Hupfer 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. SIZE C NASA DRAWING NO. 1006988
SCALE NONE WT SHEET 2 OF 2

1006988

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

8869001

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00406 DR B Jensen CHK J. Miles APPD		WK
B	REVISED PER TDRR 00750 DR A Maynard CHK G. Bogni APPD	10 Apr 63	WK

Ⓜ

NOTES

1. REQUIREMENTS:

   A. MATERIAL: CHANNELS SHALL BE 7075-T6 ALUMINUM PER QQ-A-277. COMPONENT PARTS SHALL BE TYPE 302 OR 303 CORROSION RESISTANT STEEL, BALLS SHALL BE TYPE 440 CORROSION RESISTANT STEEL PER MIL-S-5059 OR MIL-S-7720.

   B. FINISH: CHASSIS SECTION SHALL BE ANODIZED PER MIL-A-8625 , TYPE II, DYED BLACK AND DRY FILM LUBRICATE PER MIL-L-25504 . CABINET SECTION SHALL BE ANODIZED PER MIL-A-8625 , TYPE II, NON-DYED. CORROSION RESISTANT PARTS SHALL BE CLEAR PASSIVATED PER MIL-S-5002.

   C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.

2. SLIDE LOCKS IN OPEN POSITION ONLY AND IS PROVIDED WITH QUICK DISCONNECT OF CHASSIS SECTION. TO RETURN SLIDE TO CLOSED POSITION, PULL OUT CHASSIS SECTION APPROX 3/32 AND RELEASE LOCK.

3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

TABLE I

DASH NO.	CHASSIS SECTION	CABINET SECTION	JONATHAN PART NO.
-1	LEFT HAND SHOWN		130388 B-L
-2	RIGHT HAND OPPOSITE		130388 B-R
-3		LEFT HAND SHOWN	130388 A-L
-4		RIGHT HAND OPPOSITE	130388 A-R

REV B	REV B
REV A	REV A
REV -	REV -
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 63

MASTER

ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST
NASA DOCUMENT ND 1002034.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTES

HEAT TREATMENT
NONE

FINAL FINISH
NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 26 Dec 62
CHECKED A. Lezere 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J Pomdextone
NASA APPROVAL W J Rhine 1-30-63
D. Coleman 30 Jan 63
MIT APPROVAL E O Hall 30 Jan 63
MIT APPROVAL W Kupfer 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006988

SCALE NONE WT SHEET 1 OF 2

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1006988

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

8869001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00406 DR B Jensen CHK J Miles APPD		WK
B	REVISED PER TDRR 00750 DR H. Maynard CHK A. Bogan APPD	17 Apr 63	WK

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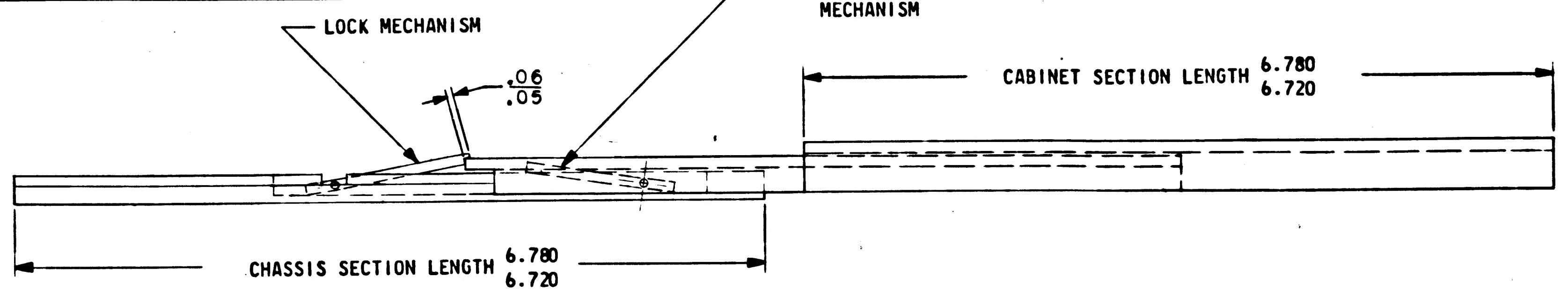
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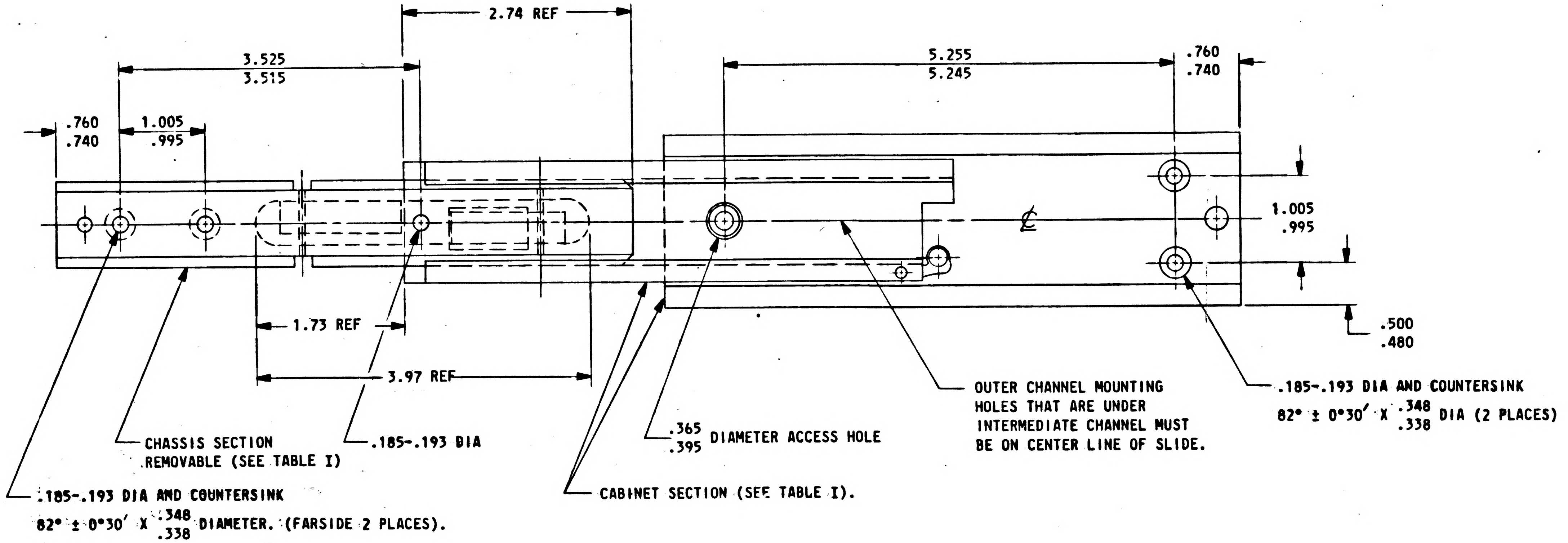
LOCK MECHANISM
QUICK DISCONNECT MECHANISM
.06
.05
CABINET SECTION LENGTH 6.780
6.720
CHASSIS SECTION LENGTH 6.780
6.720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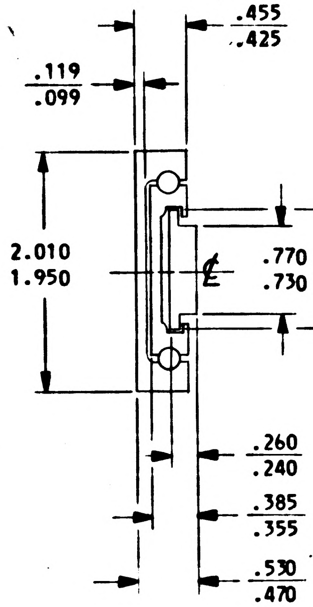
3.515
5.255
5.245
.760
.740
.760
.740
1.005
.995
1.005
.995
.500
.480
1.73 REF
3.97 REF
℄
OUTER CHANNEL MOUNTING HOLES THAT ARE UNDER INTERMEDIATE CHANNEL MUST BE ON CENTER LINE OF SLIDE.
.185-.193 DIA AND COUNTERSINK 82° ± 0°30′ X .348/.338 DIA (2 PLACES)
.365/.395 DIAMETER ACCESS HOLE
CHASSIS SECTION REMOVABLE (SEE TABLE I)
.185-.193 DIA
.185-.193 DIA AND COUNTERSINK 82° ± 0°30′ X .348/.338 DIAMETER. (FARSIDE 2 PLACES).
CABINET SECTION (SEE TABLE I).


.455
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.119
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.730
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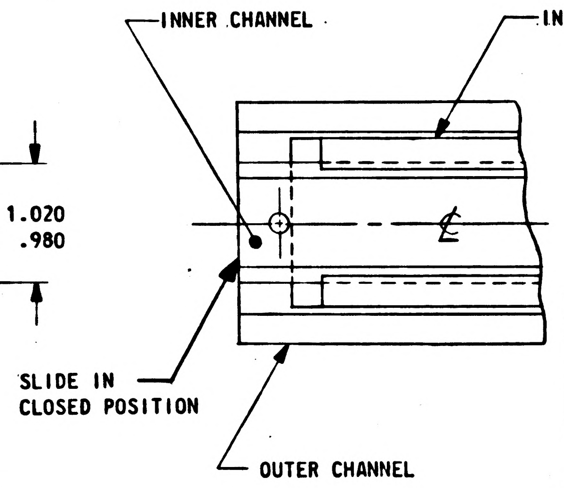
.470


INNER CHANNEL
INTERMEDIATE CHANNEL
℄
SLIDE IN CLOSED POSITION
OUTER CHANNEL

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30JAN63

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTES

HEAT TREATMENT
NONE

FINAL FINISH
NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 26 Dec 62
CHECKED A. Rogers A.M. 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J Poindexter
NASA APPROVAL W J Rhine 1-30-63
MIT APPROVAL D Colamaro 30 Jan 63 EC Hall 30 Jan 63
MIT APPROVAL W Kupfer 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006988
SCALE NONE
WT
SHEET 2 OF 2

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00406 DR B. Jensen CHK J. Moles APPD		WK
B	REVISED PER TDRR 00750 DR A. Maynard CHK A. Boyer APPD	Apr '3	WK
C	REVISED PER TDRR 01216 DR A. Maynard CHK J. Ruggeri APPD	[illegible] 3	WK

NOTES

1. REQUIREMENTS:
   - A. MATERIAL: CHANNELS SHALL BE 7075-T6 ALUMINUM PER QQ-A-277. COMPONENT PARTS SHALL BE TYPE 302 OR 303 CORROSION RESISTANT STEEL, BALLS SHALL BE TYPE 440 CORROSION RESISTANT STEEL PER MIL-S-5059 OR MIL-S-7720.
   - B. FINISH: CHASSIS SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, DYED BLACK AND DRY FILM LUBRICATE PER MIL-L-25504. CABINET SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, NON-DYED. CORROSION RESISTANT PARTS SHALL BE CLEAR PASSIVATED PER MIL-S-5002.
   - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.
2. SLIDE LOCKS IN OPEN POSITION ONLY AND IS PROVIDED WITH QUICK DISCONNECT OF CHASSIS SECTION. TO RETURN SLIDE TO CLOSED POSITION, PULL OUT CHASSIS SECTION APPROX 3/32 AND RELEASE LOCK.
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
4. MARKING: SLIDES SHALL BE MARKED PER MIL-STD-130

TABLE I

DASH NO.	CHASSIS SECTION	CABINET SECTION	JONATHAN PART NO.
-1	LEFT HAND SHOWN		130388 B-L
-2	RIGHT HAND OPPOSITE		130388 B-R
-3		LEFT HAND SHOWN	130388 A-L
-4		RIGHT HAND OPPOSITE	130388 A-R

REV C	REV C
REV B	REV B
REV A	REV A
REV -	REV -
SHEET 1	SHEET 2

REVISION STATUS OF SHEETS

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 63

MASTER

ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST ND 1002034

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1014061	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 26 Dec 62
CHECKED A. Ruggeri 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J. Pandolfo
NASA APPROVAL W. J. Rhine 1-30-63
MIT APPROVAL E. C. Hall 30 Jan 63
MIT APPROVAL 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. ——— SIZE C NASA DRAWING NO. 1006988
SCALE NONE WT SHEET 1 OF 2

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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C 8869001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00406 DR B Jensen CHK J Miles APPD		WK
B	REVISED PER TDRR 00750 DR A. Maynard CHK A. Bogai APPD	17 Apr 63	WK
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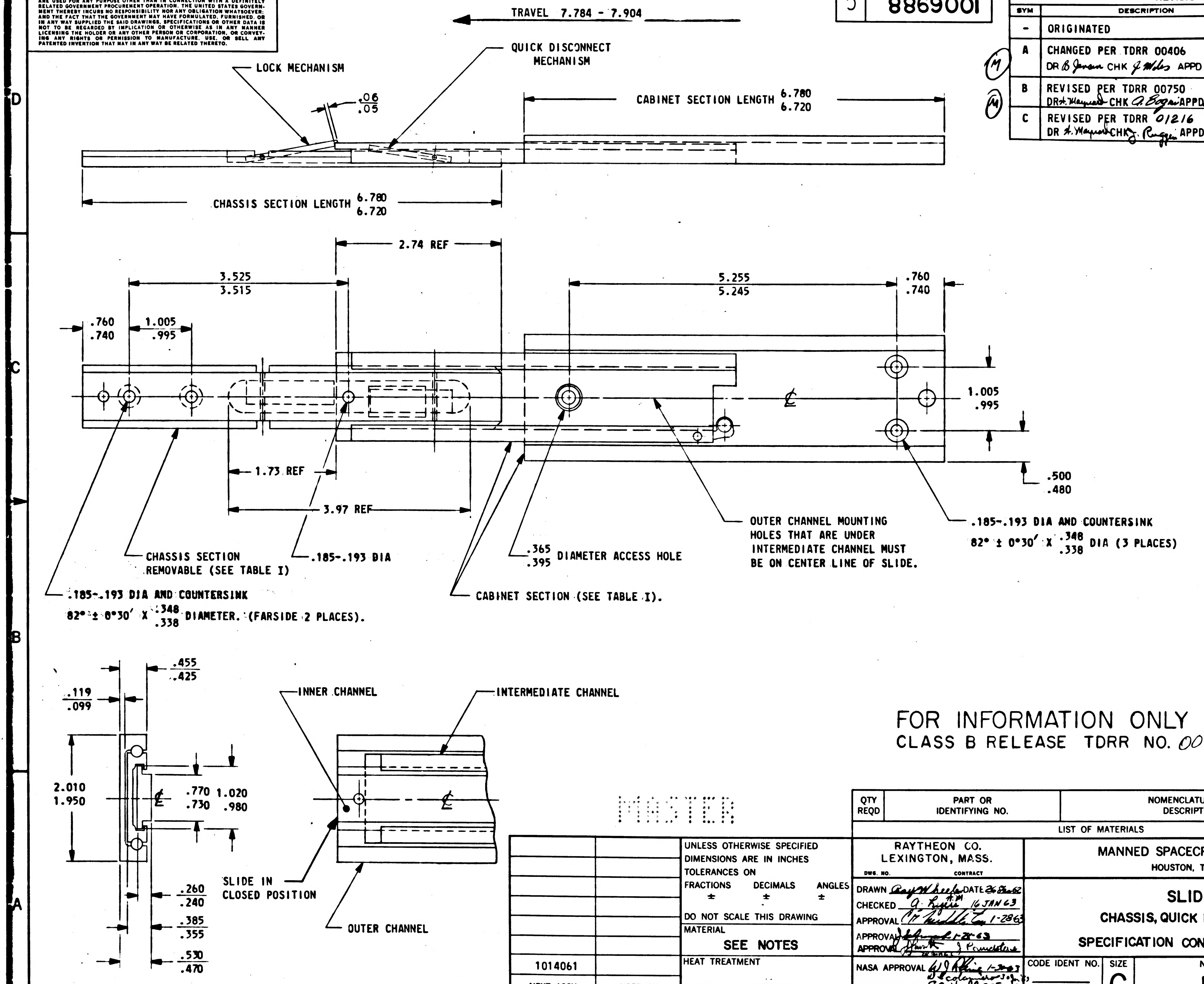

TRAVEL 7.784 - 7.904
QUICK DISCONNECT MECHANISM
LOCK MECHANISM
.06
.05
CABINET SECTION LENGTH 6.780 6.720
CHASSIS SECTION LENGTH 6.780 6.720
2.74 REF
3.525
3.515
5.255
5.245
.760
.740
.760
.740
1.005
.995
1.005
.995
.500
.480
1.73 REF
3.97 REF
CHASSIS SECTION REMOVABLE (SEE TABLE I)
.185-.193 DIA
.365
.395 DIAMETER ACCESS HOLE
OUTER CHANNEL MOUNTING HOLES THAT ARE UNDER INTERMEDIATE CHANNEL MUST BE ON CENTER LINE OF SLIDE.
.185-.193 DIA AND COUNTERSINK 82° ± 0°30′ X .348 .338 DIA (3 PLACES)
.185-.193 DIA AND COUNTERSINK 82° ± 0°30′ X .348 .338 DIAMETER. (FARSIDE 2 PLACES).
CABINET SECTION (SEE TABLE I).
.455
.425
.119
.099
2.010
1.950
.770
.730
1.020
.980
.260
.240
.385
.355
.530
.470
INNER CHANNEL
INTERMEDIATE CHANNEL
SLIDE IN CLOSED POSITION
OUTER CHANNEL

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30JAN63

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1014061	
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 26 Dec 62
CHECKED G. Ruggeri 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J Poindexter
NASA APPROVAL W J Rhine 1-30-63
MIT APPROVAL E C Hall 30 Jan 63
MIT APPROVAL W Huffer 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. ——
SIZE C
NASA DRAWING NO. 1006988
SCALE NONE
WT
SHEET 2 OF 2

1006988

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

D	8869001

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00406 DR B Jensen CHK APPD		WK
B	REVISED PER TDRR 00750 DR A. Maynard CHK APPD	63	WK
C	REVISED PER TDRR 01216 DR A. Maynard CHK APPD	63	WK
D	CLASS II CHANGE PER RD-R5527 DR R Wheeler CHK APPD		
E	REVISION CHANGED PER TDRR 10460 DR S.T. CHK APPD	7/8/64	TB

NOTES

1. REQUIREMENTS:
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   - B. FINISH: CHASSIS SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, DYED BLACK AND DRY FILM LUBRICATE PER MIL-L-25504. CABINET SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, NON-DYED. CORROSION RESISTANT PARTS SHALL BE CLEAR PASSIVATED PER MIL-S-5002.
   - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.
2. SLIDE LOCKS IN OPEN POSITION ONLY AND IS PROVIDED WITH QUICK DISCONNECT OF CHASSIS SECTION. ~~TO RETURN SLIDE TO CLOSED POSITION, PULL OUT CHASSIS SECTION APPROX 3/32 AND RELEASE LOCK.~~
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
4. MARKING: SLIDES SHALL BE MARKED PER MIL-STD-130
5. BREAK ALL OUTSIDE EDGES OF OUTER CHANNEL .03-.06.

TABLE I

DASH NO.	CHASSIS SECTION	CABINET SECTION	JONATHAN PART NO.
-1	LEFT HAND SHOWN		130388 B-L
-2	RIGHT HAND OPPOSITE		130388 B-R
-3		LEFT HAND SHOWN	130388 A-L
-4		RIGHT HAND OPPOSITE	130388 A-R

REVISION STATUS OF SHEETS	
REV E	REV E
REV D	REV D
REV C	REV C
REV B	REV B
REV A	REV A
REV -	REV -
SHEET 1	SHEET 2

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 63

ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST ND 1002034

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1014061	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN R. Wheeler DATE 26 Dec 62
CHECKED J. Ruggeri 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J Pendleton
NASA APPROVAL 1-30-63
30 Jan 63
MIT APPROVAL 30 Jan 63
MIT APPROVAL 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.	SIZE	NASA DRAWING NO.
———	C	1006988

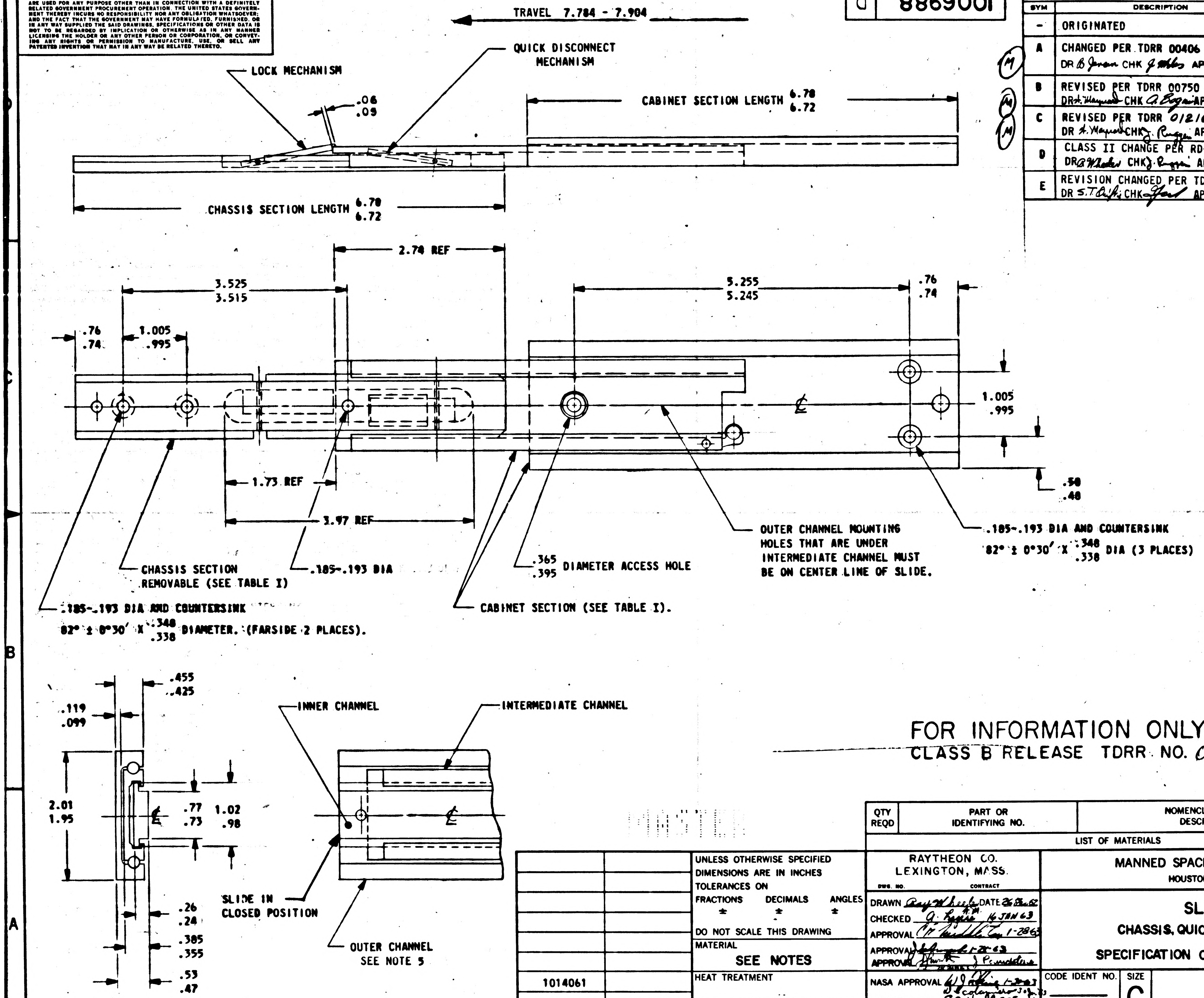
SCALE NONE WT SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

D 8869001

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00406 DR B Jensen CHK J. [illegible] APPD [illegible]		WK
B	REVISED PER TDRR 00750 DR A. Maynard CHK A. Boggan APPD [illegible]	12 [illegible] 63	WK
C	REVISED PER TDRR 01216 DR A. Maynard CHK J. Ruggeri APPD [illegible]	29 Aug 63	WK
D	CLASS II CHANGE PER RD-R5527 DR R. Wheeler CHK J. Ruggeri APPD A. Maynard	11/26/63	[illegible]
E	REVISION CHANGED PER TDRR 10460 DR S.T. Quirk CHK [illegible] APPD A.S.M.	7/8/64	[illegible]


TRAVEL 7.784 - 7.904
QUICK DISCONNECT MECHANISM
LOCK MECHANISM
.06
.09
CABINET SECTION LENGTH 6.70 6.72
CHASSIS SECTION LENGTH 6.70 6.72
2.74 REF
3.525
3.515
5.255
5.245
.76
.74
.76
.74
1.005
.995
1.005
.995
.50
.48
1.73 REF
3.97 REF
OUTER CHANNEL MOUNTING HOLES THAT ARE UNDER INTERMEDIATE CHANNEL MUST BE ON CENTER LINE OF SLIDE.
.185-.193 DIA AND COUNTERSINK 82° ± 0°30' X .348 .338 DIA (3 PLACES)
CHASSIS SECTION REMOVABLE (SEE TABLE I)
.185-.193 DIA
.365 .395 DIAMETER ACCESS HOLE
.185-.193 DIA AND COUNTERSINK 82° ± 0°30' X .348 .338 DIAMETER. (FARSIDE 2 PLACES).
CABINET SECTION (SEE TABLE I).
.455
.425
.119
.099
2.01
1.95
.77
.73
1.02
.98
.26
.24
.385
.355
.53
.47
INNER CHANNEL
INTERMEDIATE CHANNEL
SLIDE IN CLOSED POSITION
OUTER CHANNEL SEE NOTE 5

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30JAN63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1014061	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT
DRAWN Ray Wheeler DATE 26 Dec 62
CHECKED A. Ruggeri 16 JAN 63
APPROVAL [illegible] 1-28-63
APPROVAL [illegible] 1-28-63
APPROVAL [illegible] J Pendleton
NASA APPROVAL W J [illegible] 1-30-63
D Colaneri 30 Jan 63
MIT APPROVAL E O [illegible] 30 Jan 63
MIT APPROVAL W Huffer 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. ———
SIZE C
NASA DRAWING NO. 1006988
SCALE NONE
WT
SHEET 2 OF 2

1006988

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

8869001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CHANNELS SHALL BE 7075-T6 ALUMINUM PER QQ-A-277. COMPONENT PARTS SHALL BE TYPE 302 OR 303 CORROSION RESISTANT STEEL, BALLS SHALL BE TYPE 440 CORROSION RESISTANT STEEL PER MIL-S-5059 OR MIL-S-7720.
   - B. FINISH: CHASSIS SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, DYED BLACK AND DRY FILM LUBRICATE PER MIL-L-25504. CABINET SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, NON-DYED. CORROSION RESISTANT PARTS SHALL BE CLEAR PASSIVATED PER MIL-S-5002.
   - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.
2. SLIDE LOCKS IN OPEN POSITION ONLY AND IS PROVIDED WITH QUICK DISCONNECT OF CHASSIS SECTION.
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

TABLE I

DASH NO.	CHASSIS SECTION	CABINET SECTION	JONATHAN PART NO.
-1	LEFT HAND SHOWN		130388 B-L
-2	RIGHT HAND OPPOSITE		130388 B-R
-3		LEFT HAND SHOWN	130388 A-L
-4		RIGHT HAND OPPOSITE	130388 A-R

1006988

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 63

ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST NASA DOCUMENT ND 1002034.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL: SEE NOTES
HEAT TREATMENT: NONE
FINAL FINISH: NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG NO
CONTRACT

DRAWN Ray Wheeler DATE 26 Dec 62
CHECKED A. Legere 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J Pandolfo
NASA APPROVAL W J Rhines 1-30-63
MIT APPROVAL E C Hall 30 Jan 63
30 Jan 63
MIT APPROVAL 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

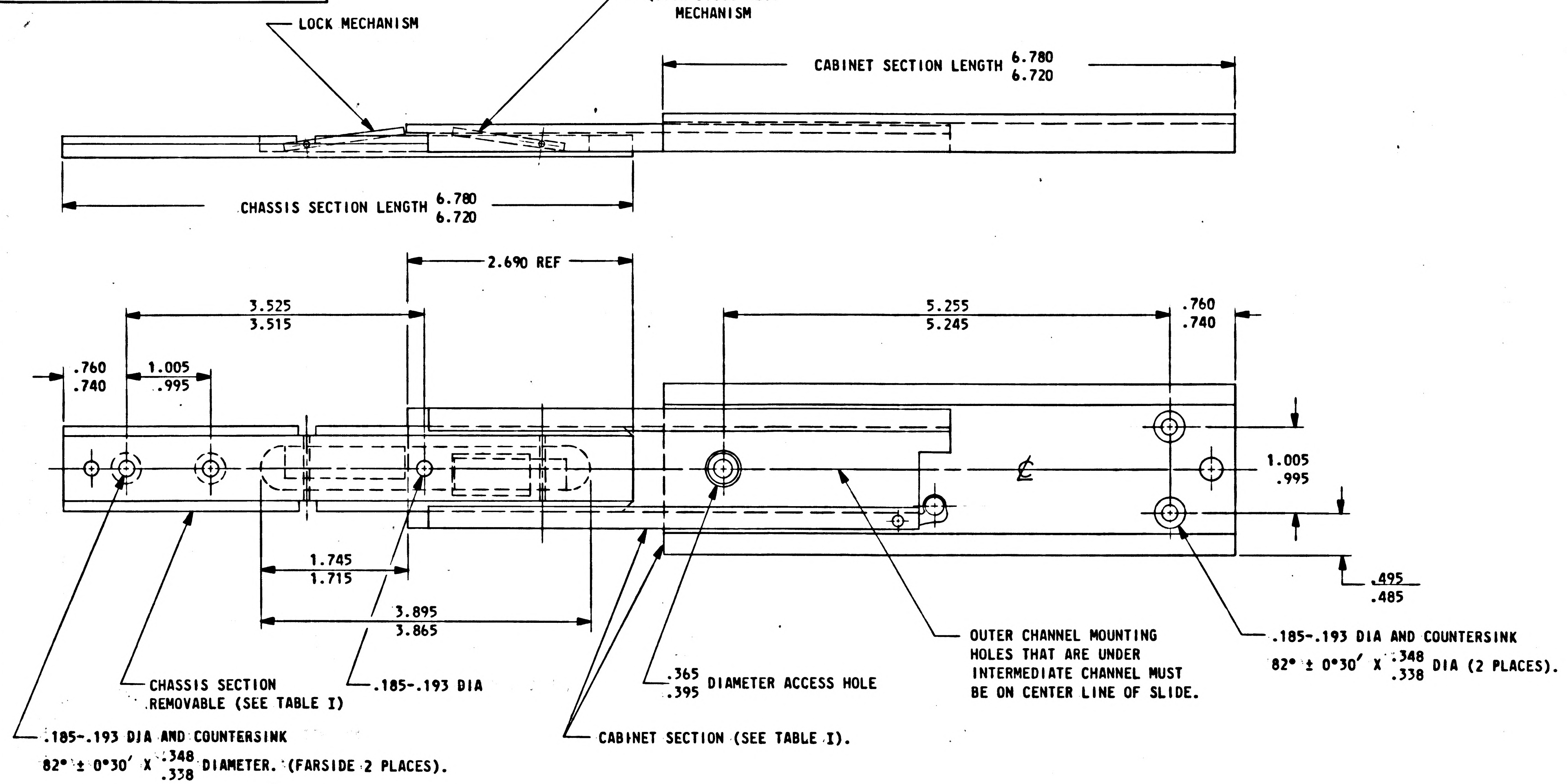
SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

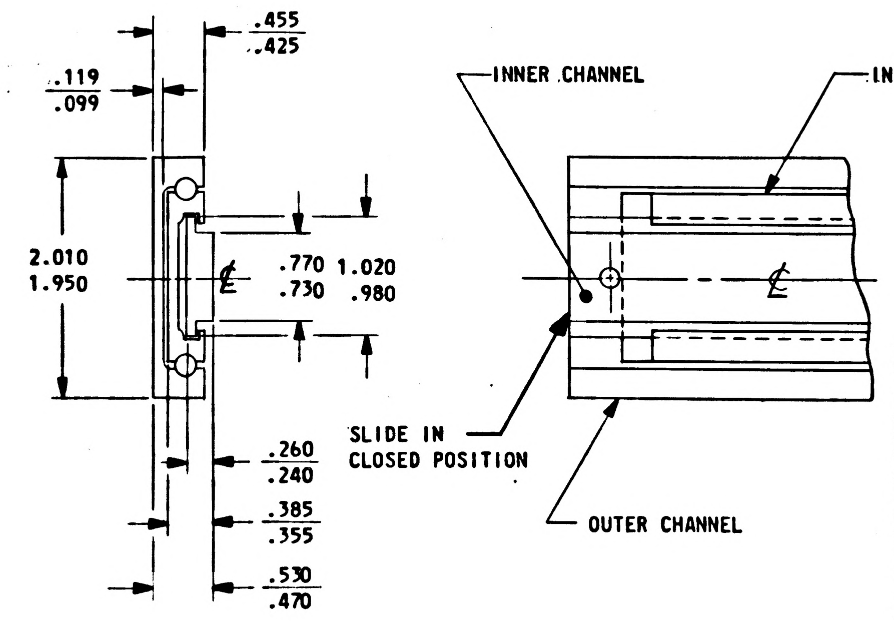
CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006988
SCALE NONE
WT
SHEET 1 OF 2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

8869001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		


TRAVEL 7.810 - 7.690 INCHES
LOCK MECHANISM
QUICK DISCONNECT MECHANISM
CABINET SECTION LENGTH 6.780 6.720
CHASSIS SECTION LENGTH 6.780 6.720
2.690 REF
3.525 3.515
5.255 5.245
.760 .740
.760 .740
1.005 .995
1.005 .995
℄
.495 .485
1.745 1.715
3.895 3.865
CHASSIS SECTION REMOVABLE (SEE TABLE I)
.185-.193 DIA
.365 .395 DIAMETER ACCESS HOLE
OUTER CHANNEL MOUNTING HOLES THAT ARE UNDER INTERMEDIATE CHANNEL MUST BE ON CENTER LINE OF SLIDE.
.185-.193 DIA AND COUNTERSINK 82° ± 0°30′ X .348 .338 DIA (2 PLACES).
.185-.193 DIA AND COUNTERSINK 82° ± 0°30′ X .348 .338 DIAMETER. (FARSIDE 2 PLACES).
CABINET SECTION (SEE TABLE I).


.455 .425
.119 .099
2.010 1.950
℄
.770 .730
1.020 .980
.260 .240
.385 .355
.530 .470
INNER CHANNEL
INTERMEDIATE CHANNEL
SLIDE IN CLOSED POSITION
OUTER CHANNEL

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 63

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL: SEE NOTES
HEAT TREATMENT: NONE
FINAL FINISH: NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray W Wheeler DATE 26 Dec 62
CHECKED A. M. Rezzie 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J Pounds 1-28-63
NASA APPROVAL W J Kling 1-30-63
W Colamero 30 Jan 63
MIT APPROVAL E C Hall 30 Jan 63
MIT APPROVAL W Kupfer 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006988
SCALE NONE
WT
SHEET 2 OF 2

1006988

B | 6869001

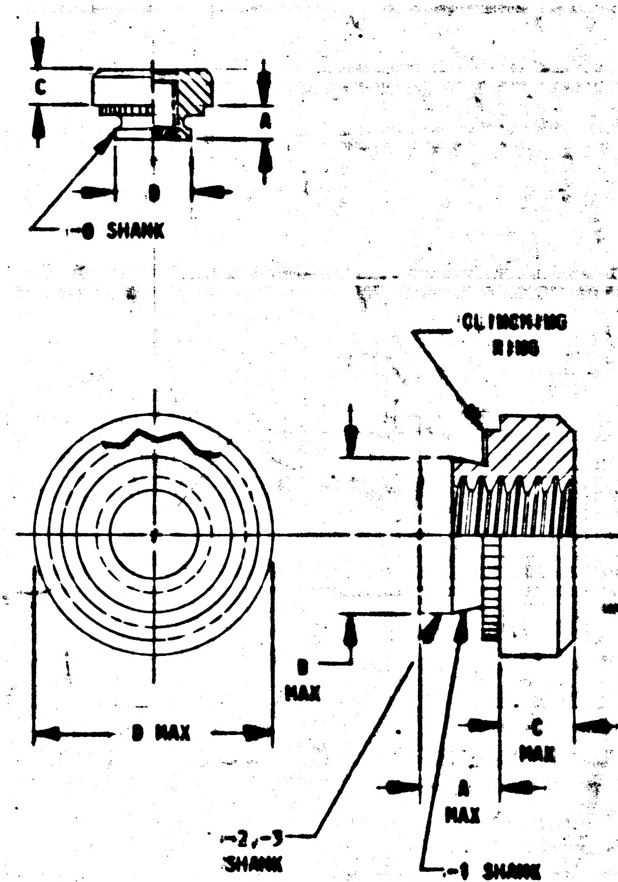
SYM	DESCRIPTION	DATE	APPROVAL
REVISIONS			
-	ORIGINATED		
A	CLASS II CHANGE PER RD-R5332 DR R Wheeler CHK J Bryan APPD A Weigand	9/11/63	JJ
B	REVISED PER TDRR 08548 DR S.T. CHK APPD	1/1/64	XZB

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CORROSION-RESISTING STEEL IN ACCORDANCE WITH QQ-S-763, CLASS 303, CONDITION A.
   - B. FINISH: PASSIVATE IN ACCORDANCE WITH MIL-F-14072, METHOD E 300 ~~PLUS SOLID FILM LUBRICANT IN ACCORDANCE WITH MIL-L-25504.~~
   - C. AMBIENT TEMPERATURE: UP TO 800°F.
   - D. SCREW THREADS: UNC-2B OR UNF-2B IN ACCORDANCE WITH NATIONAL BUREAU OF STANDARDS HANDBOOK H28.
   - E. EACH PART SHALL HAVE A FULLY FORMED CLINCH RING OF SERPENTINE SHAPE.
   - F. QUALITY ASSURANCE: SUPPLIER SHALL CONFORM TO THE PROVISIONS OF ND 1015404, CLASS III.
   - G. MARKING: EACH SHIPPING CONTAINER AND INTERIOR PACKAGE SHALL BE MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL, PART NUMBER AND QUANTITY OF PARTS. EACH INTERIOR PACKAGE SHALL ALSO CONTAIN THE NASA DRAWING AND DASH NUMBER TOGETHER WITH THE DRAWING REVISION LETTER.
2. APPLICATION: FOR USE ON MATERIALS HAVING A HARDNESS LESS THAN ROCKWELL B70 EXCEPT MAGNESIUM.
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

		DIMENSIONS				INSTALLATION DATA		
DASH NO.	THREAD SIZE	A	B	C	D	EDGE DIST MIN	HOLE SIZE +.003	SHEET THK
-1 -2 -3 -4	NO.2(.086)-56	.030 .038 .054 .087	.164	.078	.266	.188	.166	.032-.039 .040-.055 .056-.090 .091- UP
-5 -6 -7 -8	NO.4(.112)-40	.030 .038 .054 .087	.164	.078	.266	.188	.166	.032-.039 .040-.055 .056-.090 .091- UP
-9 -10 -11 -12	NO.6(.138)-32	.030 .038 .054 .087	.185	.078	.296	.218	.1875	.032-.039 .040-.055 .056-.090 .091- UP
-13 -14 -15 -16	NO.8(.164)-32	.030 .038 .054 .087	.210	.109	.328	.265	.213	.032-.039 .040-.055 .056-.090 .091- UP
-17 -18 -19 -20	NO.10(.190)-24	.030 .038 .054 .087	.247	.109	.359	.281	.250	.032-.039 .040-.055 .056-.090 .091- UP
-21 -22 -23 -24	NO.10(.190)-32	.030 .038 .054 .087	.247	.109	.359	.281	.250	.032-.039 .040-.055 .056-.090 .091- UP
-25 -26 -27	1/4-20	.054 .087 .120	.342	.188	.453	.344	.344	.056-.090 .091-.124 .125- UP
-28 -29 -30	1/4-28	.054 .087 .120	.342	.188	.453	.344	.344	.056-.090 .091-.124 .125- UP



FOR INFORMATION ONLY
CLASS B RELEASE TDR NO. 00266 DATE

PURCHASE TO QUALIFICATION
STATUS LIST N01002034

BUCKINGHAM, PENNSYLVANIA
CODE IDENT NO. 31937

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Roy Wheeler DATE
CHECKED D. M. Sleeper 2 Jan 63
APPROVAL 1-15-63
APPROVAL 1-15-63
APPROVAL 1-15-63
NASA APPROVAL
MIT APPROVAL R C Hall
MIT APPROVAL 1/16/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NUT, PLAIN, SELF-CLINCHING

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 10C6989
SCALE NONE
WT
SHEET 1 OF 1

6869001

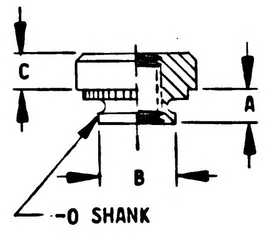
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

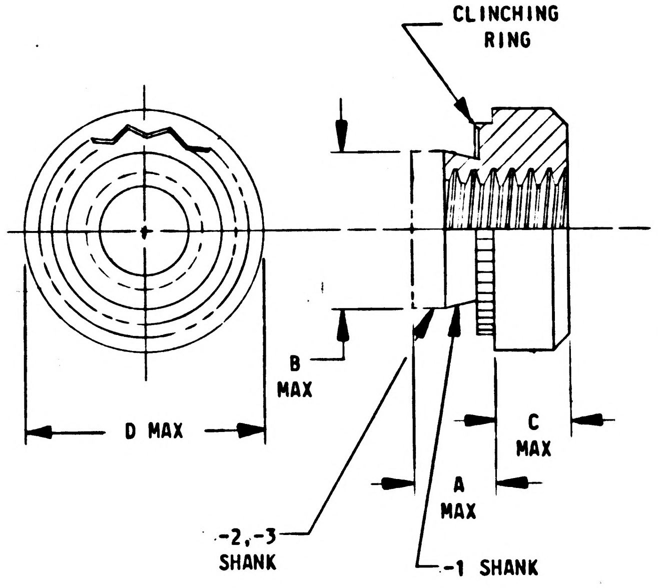
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CORROSION-RESISTING STEEL IN ACCORDANCE WITH QQ-S-763, CLASS 303, CONDITION A.
   - B. FINISH: PASSIVATE IN ACCORDANCE WITH MIL-F-14072, METHOD E 300 PLUS SOLID FILM LUBRICANT IN ACCORDANCE WITH MIL-L-25504.
   - C. AMBIENT TEMPERATURE: UP TO 800°F.
   - D. SCREW THREADS: UNC-2B OR UNF-2B IN ACCORDANCE WITH NATIONAL BUREAU OF STANDARDS HANDBOOK H28.
   - E. EACH PART SHALL HAVE A FULLY FORMED CLINCH RING OF SERPENTINE SHAPE.
   - F. QUALITY ASSURANCE: SUPPLIER SHALL CONFORM TO THE PROVISIONS OF ND 1015404, CLASS III.
   - G. MARKING: EACH SHIPPING CONTAINER AND INTERIOR PACKAGE SHALL BE MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL, PART NUMBER AND QUANTITY OF PARTS. EACH INTERIOR PACKAGE SHALL ALSO CONTAIN THE NASA DRAWING AND DASH NUMBER TOGETHER WITH THE DRAWING REVISION LETTER.
2. APPLICATION: FOR USE IN MATERIALS HAVING A HARDNESS LESS THAN ROCKWELL B70 EXCEPT MAGNESIUM.
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

	DIMENSIONS					INSTALLATION DATA		
DASH NO.	THREAD SIZE	A	B	C	D	EDGE DIST MIN	HOLE SIZE +.003	SHEET THK
-1 -2 -3 -4	NO.2(.086)-56	.030 .038 .054 .087	.164	.078	.266	.188	.166	.032-.039 .040-.055 .056-.090 .091- UP
-5 -6 -7 -8	NO.4(.112)-40	.030 .038 .054 .087	.164	.078	.266	.188	.166	.032-.039 .040-.055 .056-.090 .091- UP
-9 -10 -11 -12	NO.6(.138)-32	.030 .038 .054 .087	.185	.078	.296	.218	.1875	.032-.039 .040-.055 .056-.090 .091- UP
-13 -14 -15 -16	NO.8(.164)-32	.030 .038 .054 .087	.210	.109	.328	.265	.213	.032-.039 .040-.055 .056-.090 .091- UP
-17 -18 -19 -20	NO.10(.190)-24	.030 .038 .054 .087	.247	.109	.359	.281	.250	.032-.039 .040-.055 .056-.090 .091- UP
-21 -22 -23 -24	NO.10(.190)-32	.030 .038 .054 .087	.247	.109	.359	.281	.250	.032-.039 .040-.055 .056-.090 .091- UP
-25 -26 -27	1/4-20	.054 .087 .120	.342	.188	.453	.344	.344	.056-.090 .091-.124 .125- UP
-28 -29 -30	1/4-28	.054 .087 .120	.342	.188	.453	.344	.344	.056-.090 .091-.124 .125- UP





FOR INFORMATION ONLY
CLASS B RELEASE TDR NO. 00266 DATE 1/16/63

PURCHASE TO QUALIFICATION
STATUS LIST ND1002034

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTES

HEAT TREATMENT
NONE

FINAL FINISH
NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 21 Dec 62
CHECKED D. M. Sleeper 2 JAN 63
APPROVAL 1-15-63
APPROVAL S. Kozak 1-15-63
APPROVAL J. Poindexter 1-15-63
NASA APPROVAL Jack Barnard 1/16/63
Dennis Delaniers 16 Jan 63
MIT APPROVAL E C Hall 16 Jan 63
MIT APPROVAL D Hoag 1/16/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NUT, PLAIN, SELF-CLINCHING

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006989
SCALE NONE
WT
SHEET 1 OF 1

0669001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00918 DR CHK APPD	63	WR

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CHANNELS SHALL BE 7075-T6 ALUMINUM PER QQ-A-277. COMPONENT PARTS SHALL BE TYPE 302 OR 303 CORROSION RESISTANT STEEL AND BALLS SHALL BE TYPE 440 CORROSION RESISTANT STEEL PER MIL-S-5059 OR MIL-S-7720.
   - B. FINISH: CHASSIS SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, DYED BLACK AND DRY FILM LUBRICATE PER MIL-L-25504. CABINET SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, NON-DYED. CORROSION RESISTANT PARTS SHALL BE PASSIVATED PER MIL-S-5002.
   - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.
2. SLIDE LOCKS IN OPEN POSITION ONLY AND IS PROVIDED WITH QUICK DISCONNECT OF CHASSIS SECTION.
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

DASH NO.	CHASSIS SECTION	CABINET SECTION	JONATHAN PART NO.
-1	LEFT HAND SHOWN		1501239 B-L
-2	RIGHT HAND OPPOSITE		1501239 B-R
-3		LEFT HAND SHOWN	1501239 A-L
-4		RIGHT HAND OPPOSITE	1501239 A-R

A	A
—	—
SH 1	SH 2
REV STATUS OF SH	

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 1963

MASTER

ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST
NASA DOCUMENT ND 1002034.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 3/ 62
CHECKED 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J. Pomeroy
NASA APPROVAL 1-30-63
MIT APPROVAL E C Hall 30 Jan 63
MIT APPROVAL 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE C
NASA DRAWING NO. 1006990
SCALE NONE WT SHEET 1 OF 2

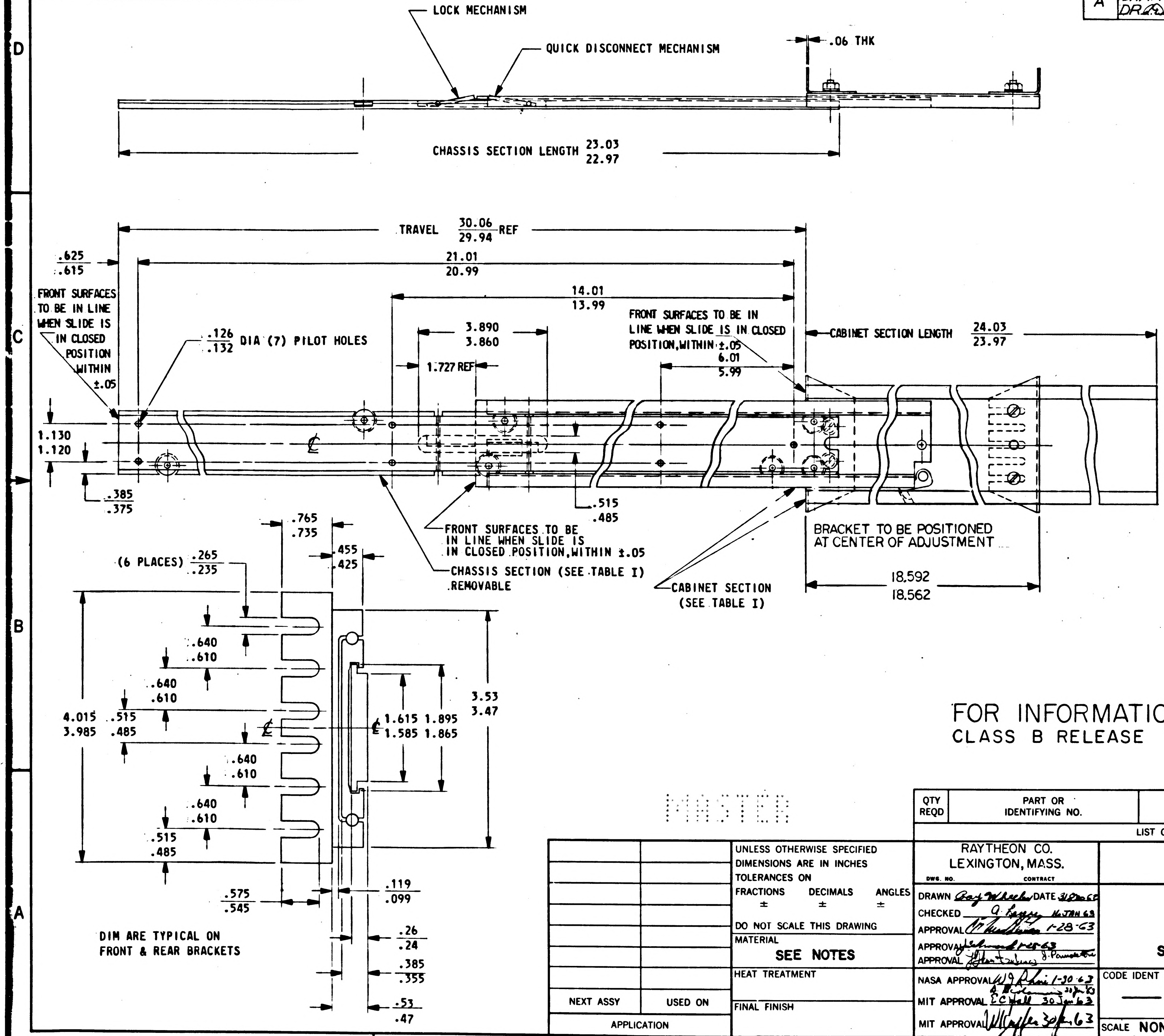
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

0669001

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

0669001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00918 DR. CHK W. Gifford APPD	8 May 63	WR


LOCK MECHANISM
QUICK DISCONNECT MECHANISM
.06 THK
CHASSIS SECTION LENGTH 23.03 / 22.97
TRAVEL 30.06 / 29.94 REF
21.01 / 20.99
.625 / .615
14.01 / 13.99
FRONT SURFACES TO BE IN LINE WHEN SLIDE IS IN CLOSED POSITION WITHIN ±.05
.126 / .132 DIA (7) PILOT HOLES
3.890 / 3.860
1.727 REF
FRONT SURFACES TO BE IN LINE WHEN SLIDE IS IN CLOSED POSITION, WITHIN ±.05
6.01 / 5.99
CABINET SECTION LENGTH 24.03 / 23.97
1.130 / 1.120
.385 / .375
.515 / .485
FRONT SURFACES TO BE IN LINE WHEN SLIDE IS IN CLOSED POSITION, WITHIN ±.05
CHASSIS SECTION (SEE TABLE I) REMOVABLE
CABINET SECTION (SEE TABLE I)
BRACKET TO BE POSITIONED AT CENTER OF ADJUSTMENT
18.592 / 18.562
.765 / .735
.455 / .425
(6 PLACES) .265 / .235
.640 / .610
.640 / .610
4.015 / 3.985
.515 / .485
.640 / .610
.640 / .610
.515 / .485
1.615 / 1.585
1.895 / 1.865
3.53 / 3.47
.575 / .545
.119 / .099
.26 / .24
.385 / .355
.53 / .47
DIM ARE TYPICAL ON FRONT & REAR BRACKETS

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 1963

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 31 Dec 62
CHECKED G. Lange 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL J. Pannatoni
NASA APPROVAL W J Rhine 1-30-63
A. Coleman 31 Jan 63
MIT APPROVAL E C Hall 30 Jan 63
MIT APPROVAL W Kupfer 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE C
NASA DRAWING NO. 1006990
SCALE NONE
WT
SHEET 2 OF 2

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

0669001

SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CHANNELS SHALL BE 7075-T6 ALUMINUM PER QQ-A-277. COMPONENT PARTS SHALL BE TYPE 302 OR 303 CORROSION RESISTANT STEEL AND BALLS SHALL BE TYPE 440 CORROSION RESISTANT STEEL PER MIL-S-5059 OR MIL-S-7720.
   - B. FINISH: CHASSIS SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, DYED BLACK AND DRY FILM LUBRICATE PER MIL-L-25504. CABINET SECTION SHALL BE ANODIZED PER MIL-A-8625, TYPE II, NON-DYED. CORROSION RESISTANT PARTS SHALL BE PASSIVATED PER MIL-S-5002.
   - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.
2. SLIDE LOCKS IN OPEN POSITION ONLY AND IS PROVIDED WITH QUICK DISCONNECT OF CHASSIS SECTION.
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

DASH NO.	CHASSIS SECTION	CABINET SECTION	JONATHAN PART NO.
-1	LEFT HAND SHOWN		1501239 B-L
-2	RIGHT HAND OPPOSITE		1501239 B-R
-3		LEFT HAND SHOWN	1501239 A-L
-4		RIGHT HAND OPPOSITE	1501239 A-R

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 1963

MASTER

ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST NASA DOCUMENT ND 1002034.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 3/18-62
CHECKED 16 JAN 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL 21 Jan 63 J. Poindexter
NASA APPROVAL 1-30-63
MIT APPROVAL E C Hall 30 Jan 63
MIT APPROVAL 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS, QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

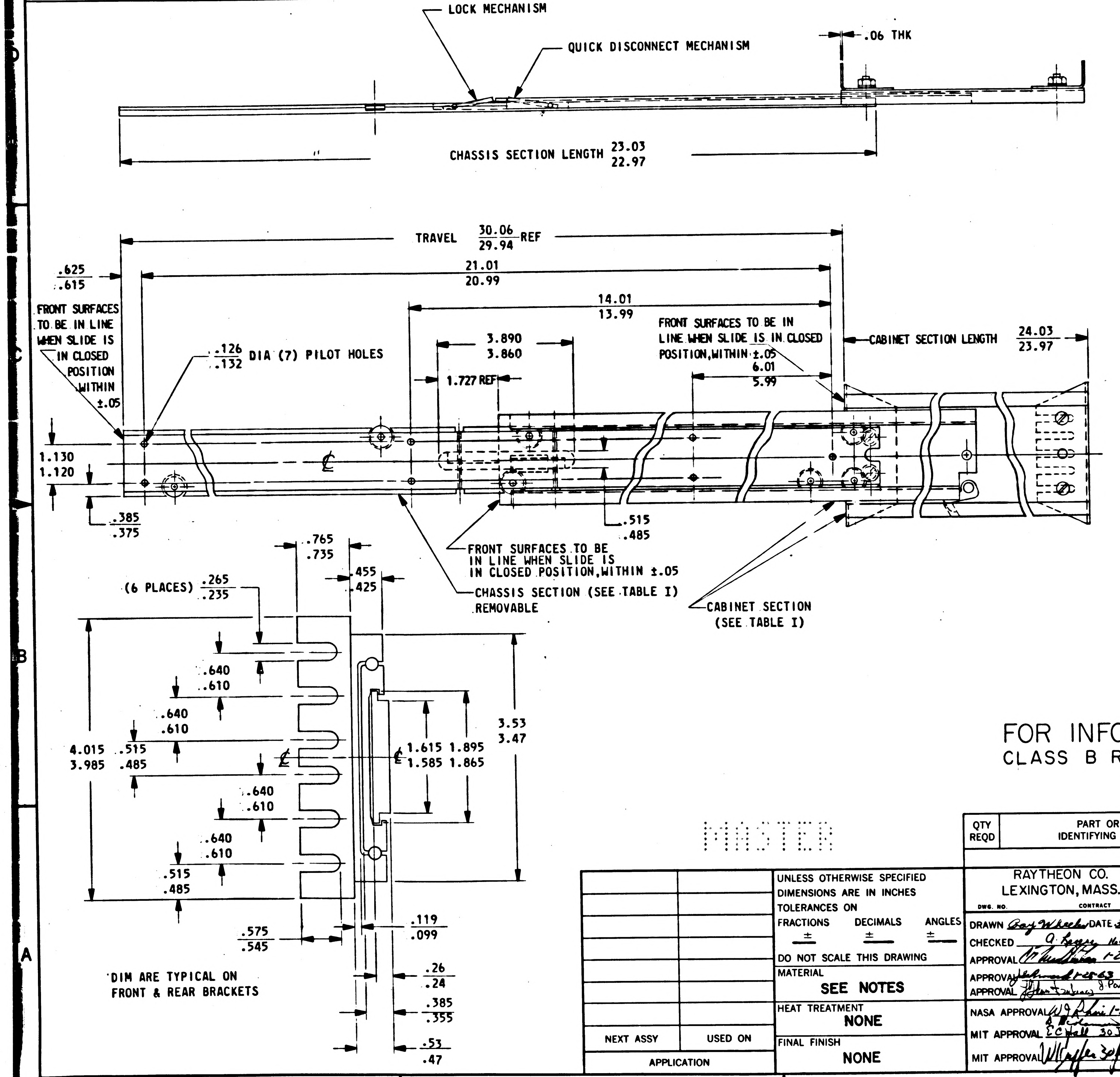
CODE IDENT NO. SIZE C NASA DRAWING NO. 1006990
SCALE NONE WT SHEET 1 OF 2

1006990

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

0669001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		


LOCK MECHANISM
QUICK DISCONNECT MECHANISM
.06 THK
CHASSIS SECTION LENGTH 23.03 / 22.97
TRAVEL 30.06 / 29.94 REF
.625 / .615
21.01 / 20.99
14.01 / 13.99
FRONT SURFACES TO BE IN LINE WHEN SLIDE IS IN CLOSED POSITION WITHIN ±.05
.126 / .132 DIA (7) PILOT HOLES
3.890 / 3.860
1.727 REF
FRONT SURFACES TO BE IN LINE WHEN SLIDE IS IN CLOSED POSITION, WITHIN ±.05
6.01 / 5.99
CABINET SECTION LENGTH
24.03 / 23.97
1.130 / 1.120
.385 / .375
.515 / .485
FRONT SURFACES TO BE IN LINE WHEN SLIDE IS IN CLOSED POSITION, WITHIN ±.05
CHASSIS SECTION (SEE TABLE I) REMOVABLE
CABINET SECTION (SEE TABLE I)
.765 / .735
.455 / .425
(6 PLACES) .265 / .235
.640 / .610
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4.015 / 3.985
.515 / .485
.640 / .610
.640 / .610
.515 / .485
1.615 / 1.585
1.895 / 1.865
3.53 / 3.47
.575 / .545
.119 / .099
.26 / .24
.385 / .355
.53 / .47
DIM ARE TYPICAL ON FRONT & REAR BRACKETS

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 1963

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 31 Dec 62
CHECKED Q. Kenny 16 JAN 63
APPROVAL [illegible] 1-28-63
APPROVAL [illegible] 1-28-63
APPROVAL [illegible] J. Pounds[illegible]
NASA APPROVAL W J Rhine 1-30-63
[illegible] 30 Jan 63
MIT APPROVAL E C Hall 30 Jan 63
MIT APPROVAL W Koffer 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLIDE,
CHASSIS QUICK DISCONNECT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006990
SCALE NONE
WT
SHEET 2 OF 2

1006990

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

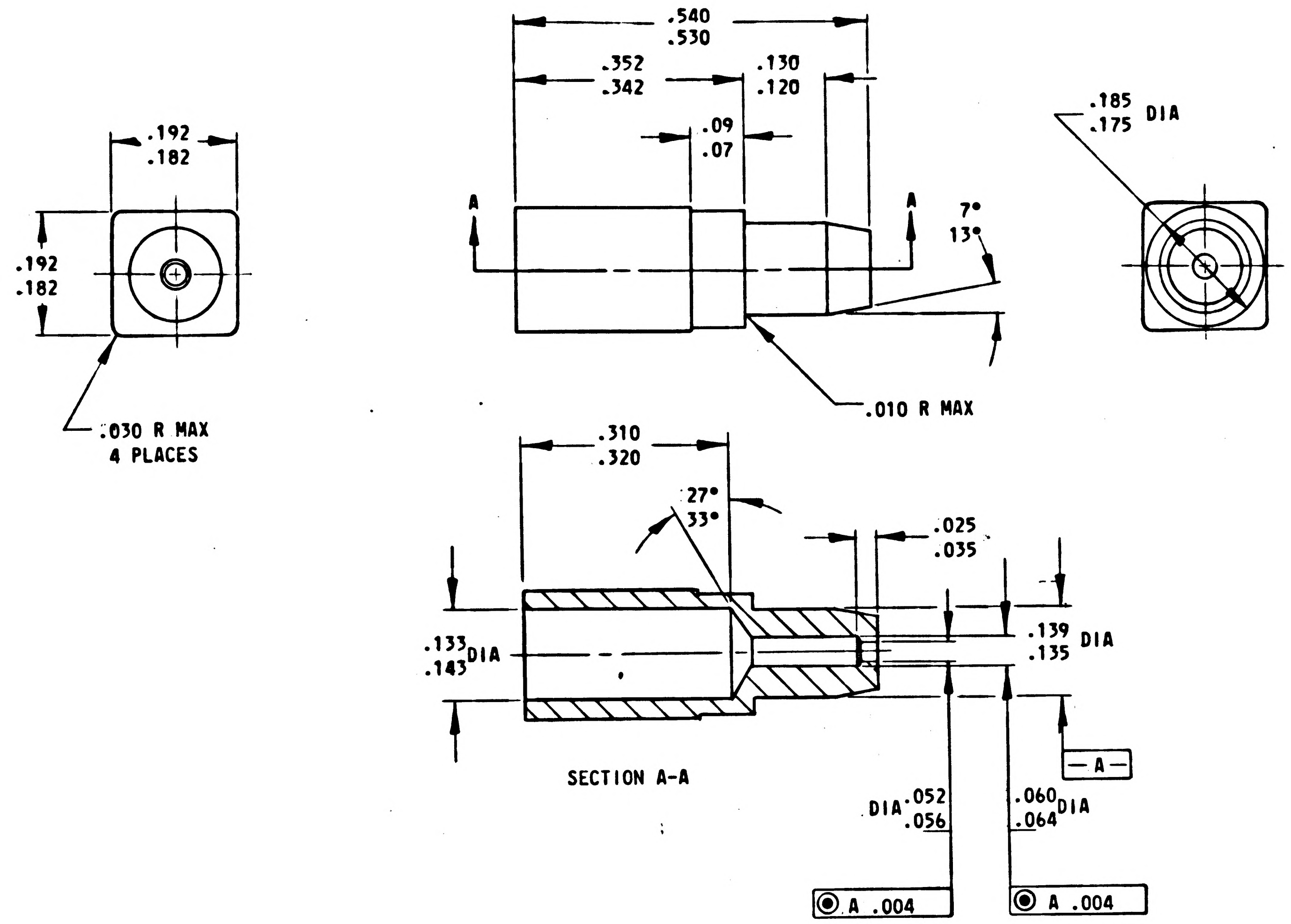
1669001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

FOR INFORATION ONLY
CLASS B RELEASE TDR NO. 00266 DATE 1/16/63

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: ALUMINUM ALLOY 1100-H-14 PER QQ-A-561.
   - B. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.



PURCHASE TO QUALIFICATION
STATUS LIST ND1002034

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTES

HEAT TREATMENT
NONE

FINAL FINISH
NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN [illegible] DATE 27 [illegible]
CHECKED A. Lezire 3 JAN 63
APPROVAL J. Schmidt 1-15-63
APPROVAL [illegible] 1-15-63
APPROVAL [illegible]
NASA APPROVAL [illegible] 1/16/63
Dennis [illegible] 1-16-63
MIT APPROVAL E C Hall 16 Jan 63
MIT APPROVAL [illegible] 1/16/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SLEEVE, GROUNDING, FEMALE
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. | SIZE C | NASA DRAWING NO. 1006991
SCALE NONE | WT | SHEET 1 OF 1

1006991

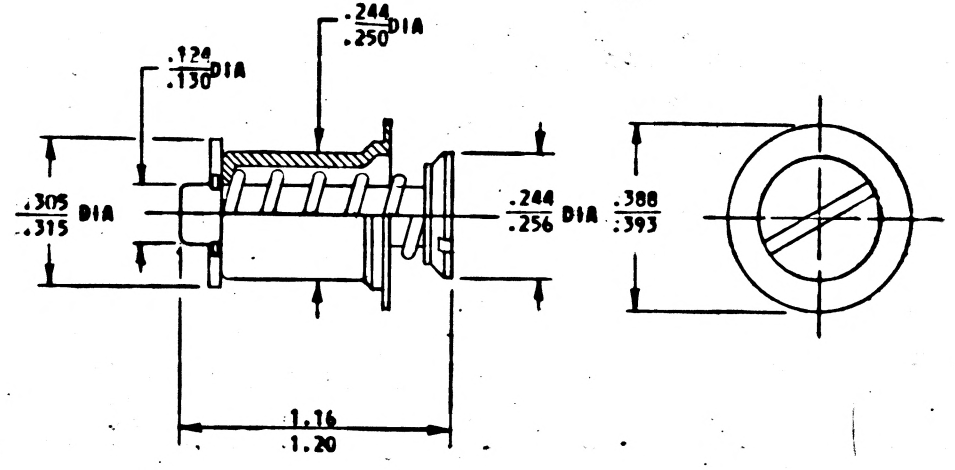
1006992 | A

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
	ORIGINATED		
A	UPGRADE TO CLASS A WITH CHANGE PER TDRR 18706 DR J Doty CHK Glenn APPD H.S.M	5 June 65	S F S

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CORROSION RESISTING STEEL, CLASS 303, CONDITION A PER QQ-S-763.
   - B. FINISH: PASSIVATE PER MIL-F-14072 METHOD E300.
   - C. AMBIENT TEMPERATURE: 700°F MAXIMUM.
   - D. SUPPLIERS SHALL CONFORM TO MIL-Q-9858. ~~ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.~~
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
3. PREPARATION FOR DELIVERY PER ND 1002215.



PROCURE ONLY FROM APPROVED SOURCES AS LISTED IN CONTRACTOR'S QUALIFIED VENDORS LIST.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE
HEAT TREATMENT NONE
FINAL FINISH SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN D Bergmann DATE 21 DEC 62
CHECKED A. Lepire 8 JAN 63
APPROVAL J. Schumacher 1-15-63
APPROVAL C.T. Maddling 1-15-63
APPROVAL
NASA APPROVAL
MIT APPROVAL E.C. Hall 16 Jan 63
MIT APPROVAL 1/16/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FASTENER, QUARTER TURN

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE C
NASA DRAWING NO. 1006992
SCALE NONE
WT
SHEET 1 OF 1

1006992 A

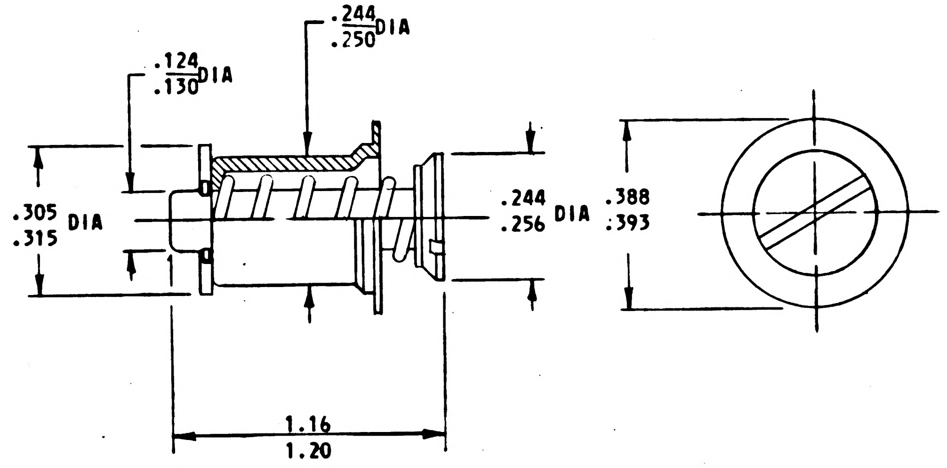
1006992

SYM	DESCRIPTION	DATE	APPROVAL
	ORIGINATED		

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CORROSION RESISTING STEEL, CLASS 303, CONDITION A PER QQ-S-763.
   - B. FINISH: PASSIVATE PER MIL-F-14072 METHOD E300.
   - C. AMBIENT TEMPERATURE: 700°F MAXIMUM.
   - D. SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.



FOR INFORMATION ONLY
CLASS B RELEASE TDR NO. 00266 DATE 1/16/63

PURCHASE TO QUALIFICATION STATUS
LIST ND1002034

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL: SEE NOTES
HEAT TREATMENT: NONE
FINAL FINISH: NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN D Bergman DATE 21DEC62
CHECKED A. Legere 2JAN63
APPROVAL J. Schwenck 1-15-63
APPROVAL C. T. Muddleton 1-15-63
APPROVAL
NASA APPROVAL Jack Barneburg 1/16/63
MIT APPROVAL E C Hall 16 Jan 63
MIT APPROVAL 1/16/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

FASTENER, QUARTER TURN

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. | SIZE C | NASA DRAWING NO. 1006992
SCALE NONE | WT | SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

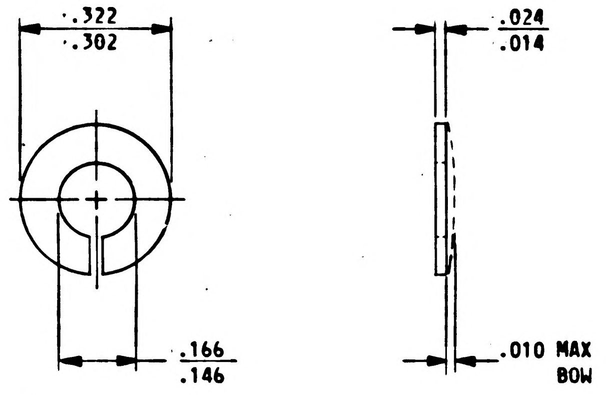
1006994

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CORROSION-RESISTING STEEL PER QQ-S-766, CLASS 302 ANNEALED CONDITION.
   - B. FINISH: PASSIVATE PER MIL-F-14072 METHOD E 300.
   - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404 CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

CLASS B RELEASE TDR NO 00217 DATE 9 Jan 63



ORIGINAL SOURCE OF SUPPLY:

CAMLOC FASTENER CORPORATION
PARAMUS, NEW JERSEY
CODE IDENT NO. 71286
PART NO. 2600-SW

PURCHASE PER QUALIFICATION STATUS LIST
ND 1002034.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTES

HEAT TREATMENT
NONE

FINAL FINISH
NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 11 Dec 62
CHECKED H Maynard 14 DEC '62
APPROVAL 1-3-63
APPROVAL 1/3/63
APPROVAL 3 Jan 63
NASA APPROVAL 1-9-63
'63
MIT APPROVAL Eldon C Hall 8 Jan 63
MIT APPROVAL 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WASHER, RETAINING

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006994
SCALE NONE
WT
SHEET 1 OF 1

1006994

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

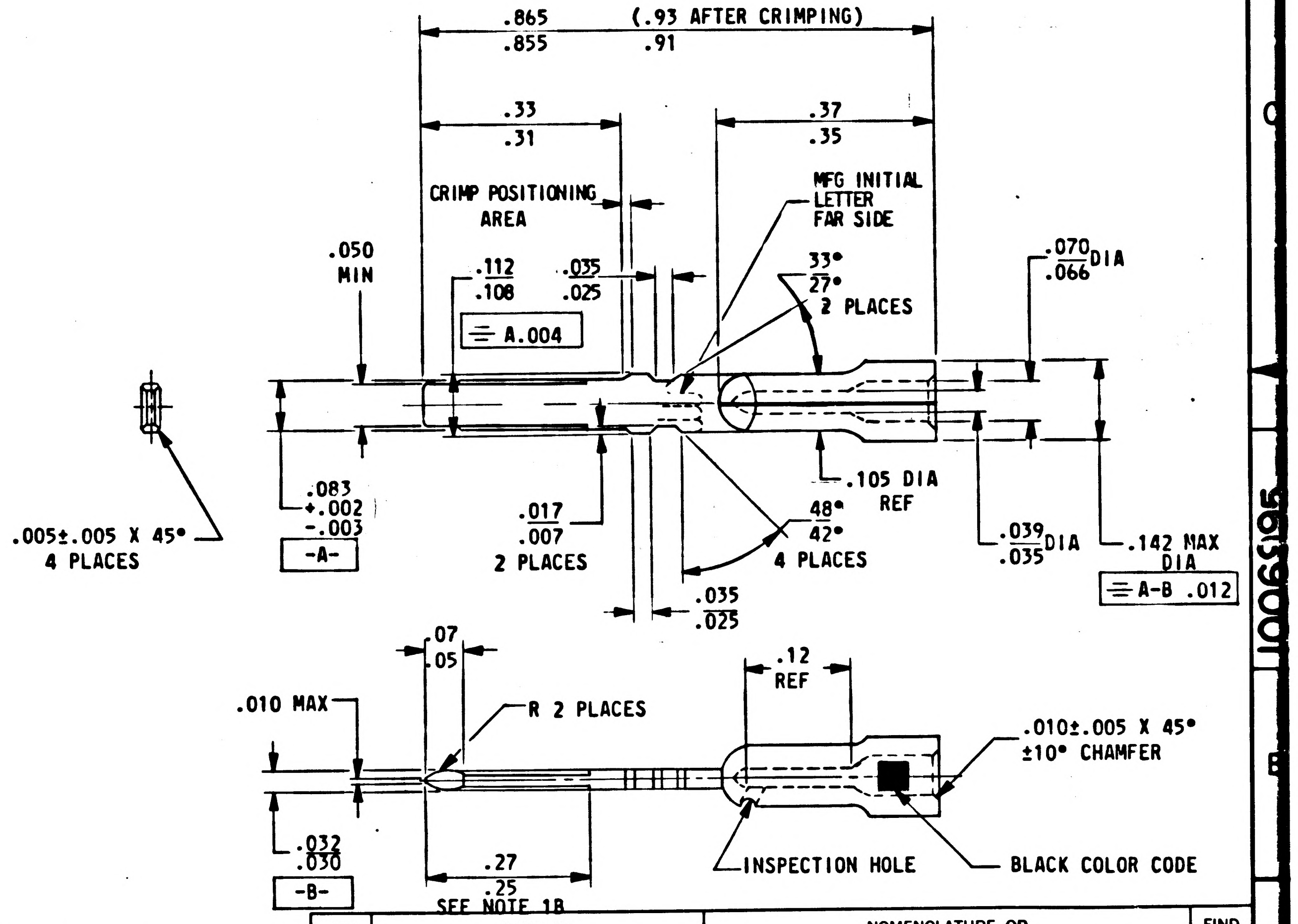
1006995

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	REVISED PER TDRR 00693 A. Maynard CHK		WK

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CADMIUM COPPER, 1/8 HARD.
   - B. FINISH: GOLD PLATE PER MIL-G-45204, TYPE II, CLASS 2 OVER SILVER PLATE PER QQ-S-365 .0002 MINIMUM THICKNESS, AT CONTACT AREA.
   - C. ALL DIMENSIONS AFTER PLATING.
   - D. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404 CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

CLASS B RELEASE TDR NO 00217 DATE 9 Jan 63


.865 / .855 (.93 AFTER CRIMPING) / .91
.33 / .31
.37 / .35
CRIMP POSITIONING AREA
MFG INITIAL LETTER FAR SIDE
.050 MIN
.112 / .108
.035 / .025
A .004
33° / 27° 2 PLACES
.070 / .066 DIA
.083 +.002 -.003
-A-
.005±.005 X 45° 4 PLACES
.017 / .007 2 PLACES
.105 DIA REF
48° / 42° 4 PLACES
.039 / .035 DIA
.142 MAX DIA
A-B .012
.035 / .025
.07 / .05
.12 REF
.010 MAX
R 2 PLACES
.010±.005 X 45° ±10° CHAMFER
.032 / .030
-B-
.27 / .25 SEE NOTE 1B
INSPECTION HOLE
BLACK COLOR CODE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

MASTER

ORIGINAL SOURCE OF SUPPLY:

MALCO MANUFACTURING COMPANY
CHICAGO, ILLINOIS
CODE IDENT NO. 91886
PART NO. 3610009

PURCHASE PER QUALIFICATION STATUS LIST ND 1002034.

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH SEE NOTES

RAYTHEON CO.
LEXINGTON, MASS.
DWG NO. CONTRACT

DRAWN Ray Wheeler DATE 17Dec62
CHECKED A. Maynard 19 DEC. 62
APPROVAL 1-2-63
APPROVAL 1/2/63
APPROVAL 2 Jan 63
NASA APPROVAL 1-9-63
MIT APPROVAL 8 Jan 63
MIT APPROVAL 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CONTACT, ELECTRICAL, MALE, CRIMP-TYPE
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006995
SCALE NONE
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

B 1006995

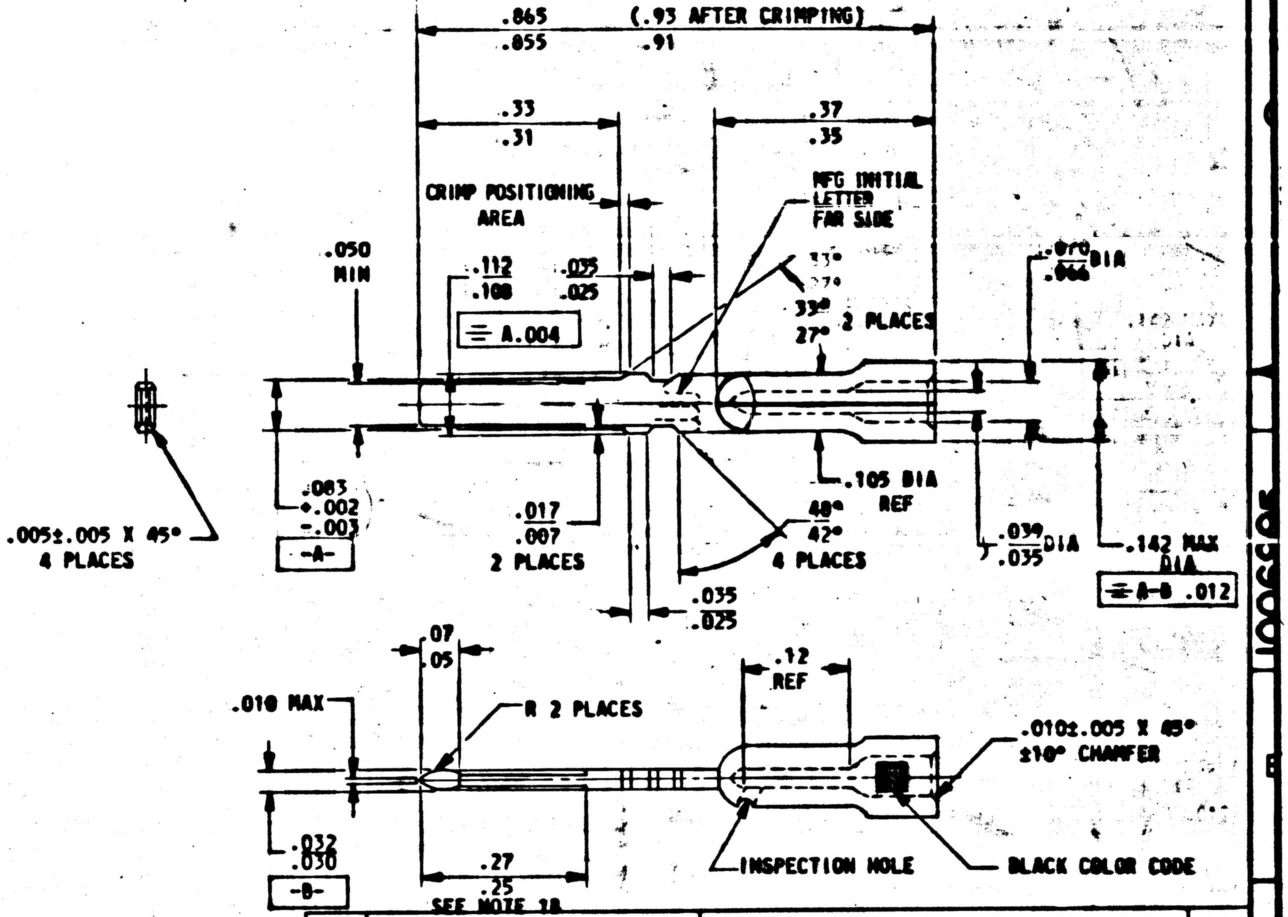
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	REVISED PER TDRR 00693 A. Maynard CHK		WR
B	~~REVISED PER REVISION DIRECTIVE~~ A. Maynard CHK		
C	REVISED PER TDRR 00578 DR CHK APPD	1/1/64	KEB

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CADMIUM COPPER, 1/8 HARD.
   - B. FINISH: GOLD PLATE PER MIL-G-45204, TYPE II, CLASS 1 L-G-45204 TYPE II OVER SILVER PLATE PER QQ-S-365 .0002 MINIMUM THICKNESS, AT CONTACT AREA.
   - C. ALL DIMENSIONS AFTER PLATING.
   - D. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT NO 1015404 CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00217 DATE 9 Jan 63


.865
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(.93 AFTER CRIMPING)
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CRIMP POSITIONING AREA
MFG INITIAL LETTER FAR SIDE
.050 MIN
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2 PLACES
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-A-
.005±.005 X 45°
4 PLACES
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48°
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4 PLACES
.105 DIA REF
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.035 DIA
.142 MAX DIA
A-B .012
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.12 REF
.010 MAX
R 2 PLACES
.010±.005 X 45°
±10° CHAMFER
.032
.030
-B-
.27
.25
SEE NOTE 1B
INSPECTION HOLE
BLACK COLOR CODE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

MASTER

ORIGINAL SOURCE OF SUPPLY:

MALCO MANUFACTURING COMPANY
CHICAGO, ILLINOIS
CODE IDENT NO. 91886
PART NO. 3610000
PURCHASE PER QUALIFICATION STATUS LIST
NO 1002034.

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH SEE NOTES

RAYTHEON CO
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN DATE 12 Dec 62
CHECKED A. Maynard 12 Dec. 62
APPROVAL 1-2-63
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CONTACT, ELECTRICAL, MALE, CRIMP-TYPE
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. | SIZE C | NASA DRAWING NO. 1006995
SCALE NONE | WT | SHEET 1 OF 1

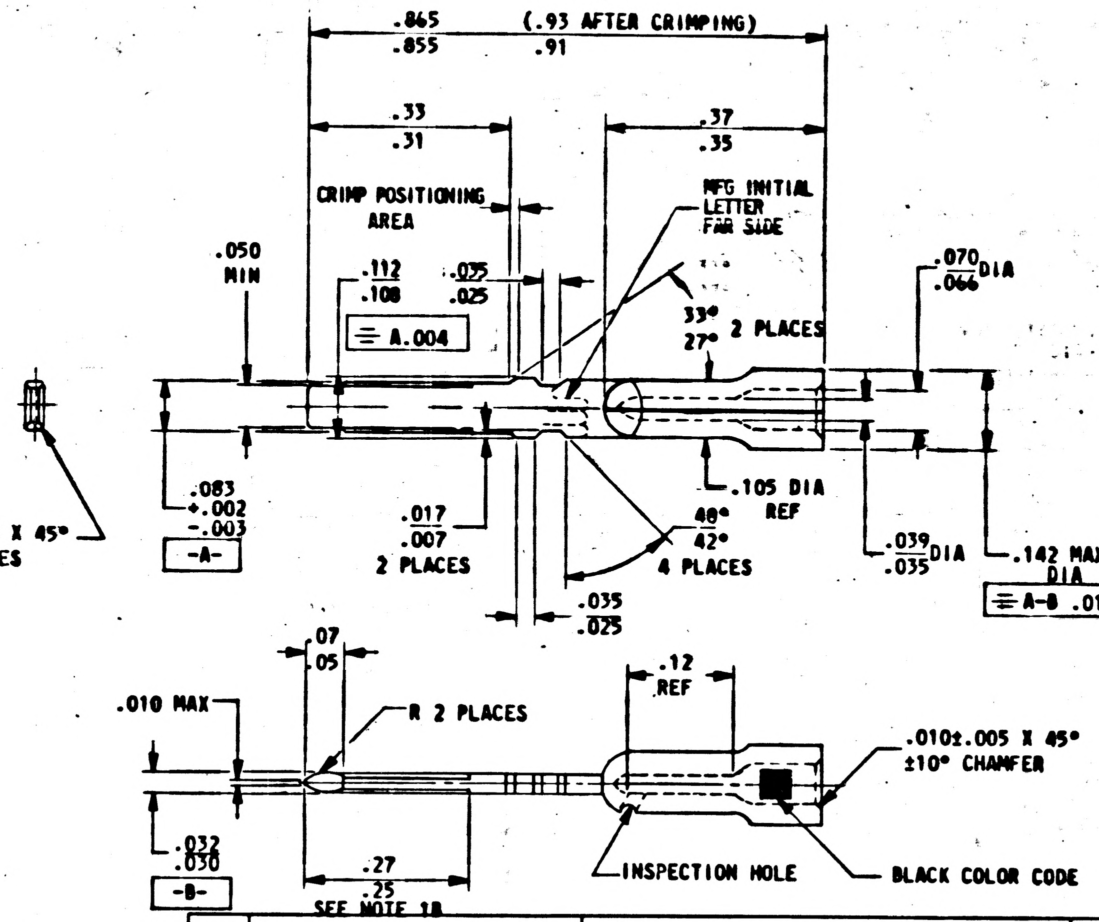
1006995 D

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	REVISED PER TDRR 00693 A. Maynard CHK		WK
B	REVISED PER REVISION DIRECTIVE R5145 A Maynard CHK		
C	REVISED PER TDRR 00578 DR CHK APPD	1/1/64	KEB
D	UPDATE TO CLASS A WITH CHANGE PER TDRR 18706 DR CHK APPD	3 June 65	

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CADMIUM COPPER, 1/8 HARD.
   - B. FINISH: GOLD PLATE PER MIL-G-45204, TYPE II, CLASS 1 OVER SILVER PLATE PER QQ-S-365 .0002 MINIMUM THICKNESS, AT CONTACT AREA.
   - C. ALL DIMENSIONS AFTER PLATING.
   - D. SUPPLIER SHALL CONFORM TO ~~MIL-Q-9858~~ ASSURANCE [illegible]
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
3. PREPARATION FOR DELIVERY PER ND 1002215.


.865
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(.93 AFTER CRIMPING)
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CRIMP POSITIONING AREA
MFG INITIAL LETTER FAR SIDE
.050 MIN
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2 PLACES
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-A-
.005±.005 X 45°
4 PLACES
.017
.007
2 PLACES
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4 PLACES
.105 DIA REF
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DIA
.142 MAX DIA
A-B .012
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.010 MAX
R 2 PLACES
.010±.005 X 45° ±10° CHAMFER
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-B-
.27
.25
SEE NOTE 1B
INSPECTION HOLE
BLACK COLOR CODE

MASTER

PROCURE ONLY FROM APPROVED SOURCES AS LISTED IN CONTRACTOR'S QUALIFIED VENDORS LIST. ~~[illegible]~~
~~CHICAGO, ILLINOIS~~
~~CODE IDENT NO. 91886~~
~~Part No. [illegible]~~
~~PURCHASE PER QUALIFICATION STATUS LIST~~
~~NO 1003034~~

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE
HEAT TREATMENT NONE
FINAL FINISH SEE NOTE

RAYTHEON CO
LEXINGTON, MASS.
DWG NO. CONTRACT

DRAWN Ray Wheeler DATE 17 Nov 62
CHECKED A Maynard 18 Dec 62
APPROVAL 1-2-63
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL
MIT APPROVAL 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CONTACT, ELECTRICAL, MALE, CRIMP-TYPE
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. —
SIZE C
NASA DRAWING NO. 1006995
SCALE NONE
WT
SHEET 1 OF 1

1006995 D

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

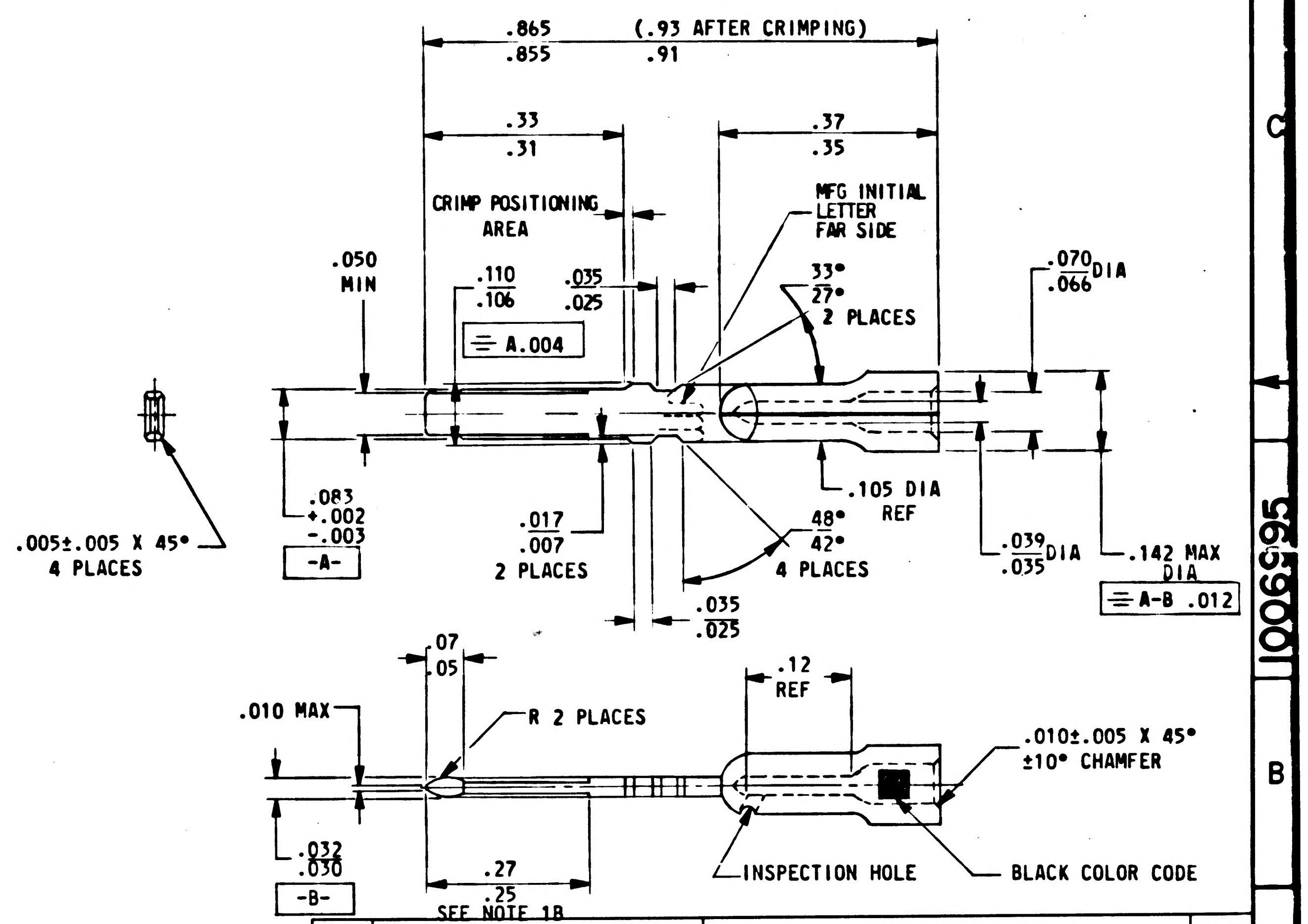
1006995

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CADMIUM COPPER, 1/8 HARD.
   - B. FINISH: GOLD PLATE PER MIL-G-45204, TYPE II, CLASS 2 OVER SILVER PLATE PER QQ-S-365 .0002 MINIMUM THICKNESS, AT CONTACT AREA.
   - C. ALL DIMENSIONS AFTER PLATING.
   - D. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404 CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

CLASS B RELEASE TDR NO 00217 DATE 9 Jan 63


.865
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(.93 AFTER CRIMPING)
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CRIMP POSITIONING AREA
MFG INITIAL LETTER FAR SIDE
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2 PLACES
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.066 DIA
.105 DIA REF
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4 PLACES
.017
.007
2 PLACES
48°
42°
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.039
.035 DIA
.142 MAX DIA
A-B .012
.035
.025
.07
.05
.12 REF
.010 MAX
R 2 PLACES
.010±.005 X 45°
±10° CHAMFER
.032
.030
-B-
.27
.25
SEE NOTE 1B
INSPECTION HOLE
BLACK COLOR CODE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

ORIGINAL SOURCE OF SUPPLY:

MALCO MANUFACTURING COMPANY
CHICAGO, ILLINOIS
CODE IDENT NO. 91886
PART NO. 3610009

PURCHASE PER QUALIFICATION STATUS LIST ND 1002034.

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTES

HEAT TREATMENT
NONE

FINAL FINISH
SEE NOTES

RAYTHEON CO.
LEXINGTON, MASS.
DWG NO CONTRACT

DRAWN Ray Wheeler DATE 17 Dec 62
CHECKED A Maynard 19 DEC. '62
APPROVAL 1-2-63
APPROVAL 1/2/63
APPROVAL Jan 63
NASA APPROVAL W J Rhine 1-9-63
MIT APPROVAL Eldon C Hall 8 Jan 63
MIT APPROVAL 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CONTACT, ELECTRICAL, MALE, CRIMP-TYPE

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006995
SCALE NONE
WT
SHEET 1 OF 1

1006995

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

9669001 Ⓜ

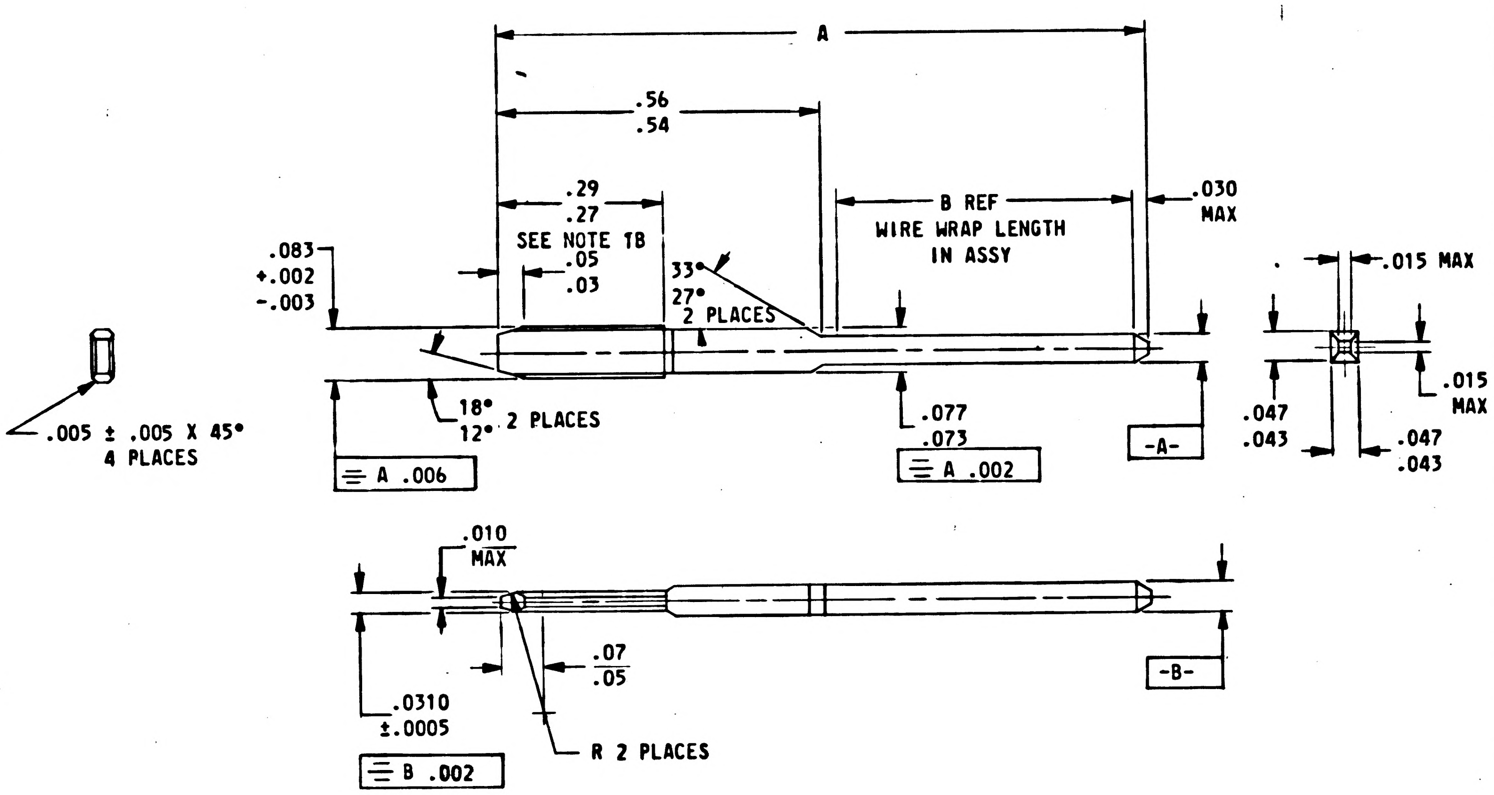
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	CHANGED PER TDRR 00550 H. Maynard CHK A. Prune E Kaut	3/27/63	WK

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: BRASS PER FEDERAL SPECIFICATION QQ-B-613 COMPOSITION 1,
   - B. FINISH: GOLD PLATE .000030 MINIMUM THICKNESS PER MIL-G-45204, TYPE II OVER SILVER PLATE PER QQ-S-365 .0002 MINIMUM THICKNESS AT CONTACT AREA.
   - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404 CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

CLASS B RELEASE TDR NO. 00217 DATE 9 Jan 63

DASH NO.	DIMENSIONS A	DIMENSIONS B REF	MALCO PART NUMBER
1	.853 .843	.250	3610003-1
2	.978 .968	.375	3610003-2
3	1.103 1.093	.500	3610003-3
4	1.228 1.218	.625	3610003-4
5	1.353 1.343	.750	3610003-5
6	.795 .785	.192	3610003-6



ORIGINAL SOURCE OF SUPPLY:

MALCO MANUFACTURING COMPANY
CHICAGO, ILLINOIS
CODE IDENT NO. 91886

PURCHASE PER QUALIFICATION STATUS LIST
ND 1002034.

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH SEE NOTES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 12 Dec 62
CHECKED H. Maynard 17 DEC 62
APPROVAL J [illegible] 1-2-63
APPROVAL J Kaupelc 1/2/63
APPROVAL [illegible] 2 Jan 63
NASA APPROVAL W J [illegible] 9-63
MIT APPROVAL Ellen C Hall 8 Jan 63
MIT APPROVAL W [illegible] 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WRAPOST, MALE

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. | SIZE C | NASA DRAWING NO. 1006996
SCALE NONE | WT | SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

9669001

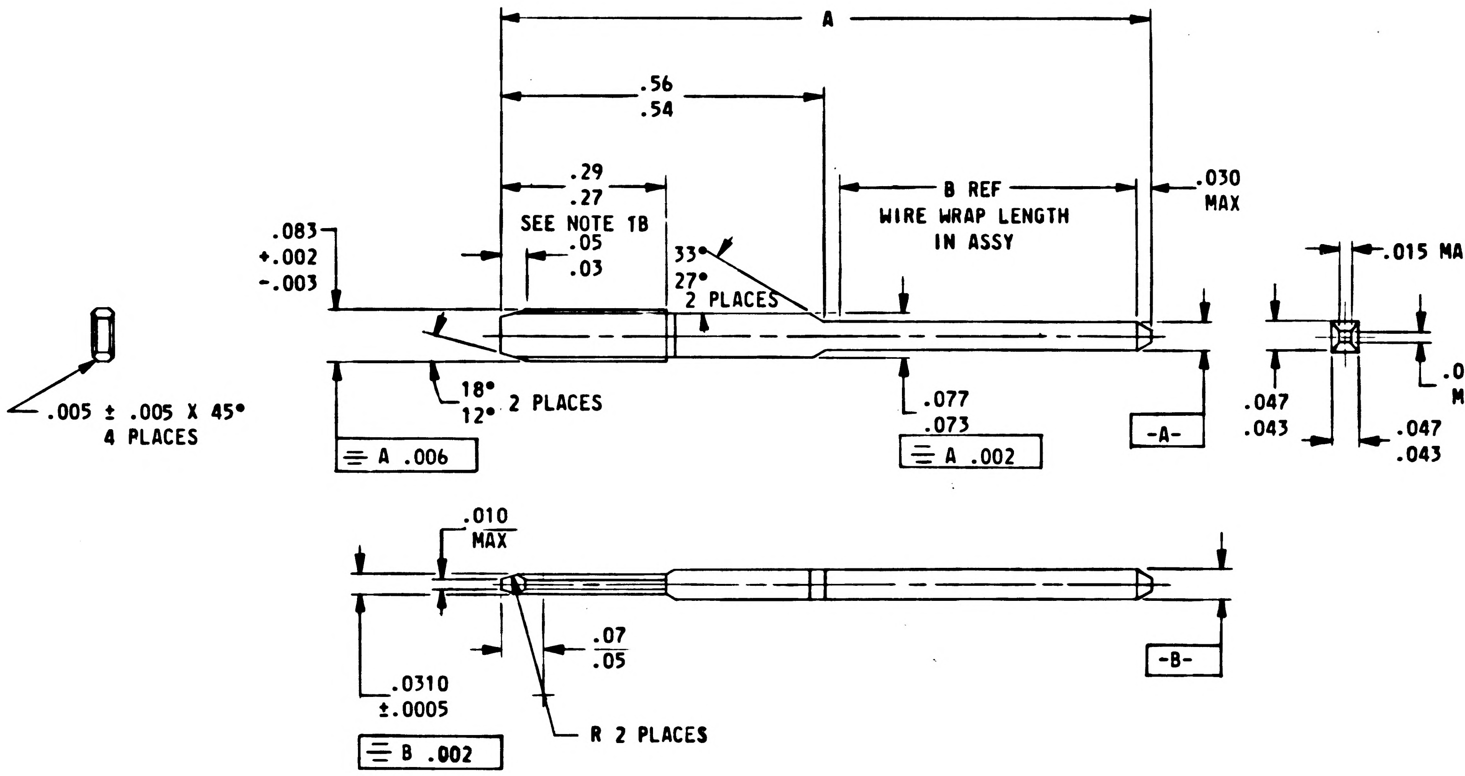
SYM	DESCRIPTION	DATE	APPROVAL
REVISIONS			
-	ORIGINATED		

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: BRASS PER FEDERAL SPECIFICATION QQ-B-613 COMPOSITION 1, SPRING TEMPER.
   - B. FINISH: GOLD PLATE .000030 MINIMUM THICKNESS PER MIL-G-45204, TYPE II OVER SILVER PLATE PER QQ-S-365 .0002 MINIMUM THICKNESS AT CONTACT AREA.
   - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404 CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-B-70327.

CLASS B RELEASE TDR NO. 00217 DATE 9 Jan 63

DASH NO.	DIMENSIONS A	DIMENSIONS B REF	MALCO PART NUMBER
1	.850 .846	.250	3610003-1
2	.975 .971	.375	3610003-2
3	1.100 1.096	.500	3610003-3
4	1.225 1.221	.625	3610003-4
5	1.350 1.346	.750	3610003-5
6	.792 .788	.192	3610003-6



ORIGINAL SOURCE OF SUPPLY:

MALCO MANUFACTURING COMPANY
CHICAGO, ILLINOIS
CODE IDENT NO. 91886

PURCHASE PER QUALIFICATION STATUS LIST
ND 1002034.

MASTE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH SEE NOTES

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Gary Wheeler DATE 12 Dec 62
CHECKED H. Maynard 17 DEC 62
APPROVAL J [illegible] 1-2-63
APPROVAL J Kangle 1/2/63
APPROVAL [illegible] 2 Jan 63
NASA APPROVAL W J [illegible] 9-63
MIT APPROVAL Eldon C Hall 8 Jan 63
MIT APPROVAL W [illegible] 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WRAPOST, MALE

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. | SIZE C | NASA DRAWING NO. 1006996
SCALE NONE | WT | SHEET 1 OF 1

9669001 1006996

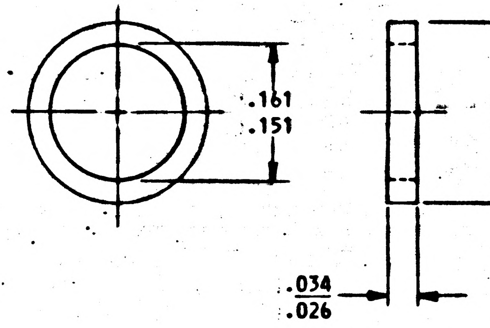
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

A	1006997

REVISIONS 00217 9-9-63			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		
A	UPGRADED TO CLASS A WITH CHANGE PER TDRR 11988	15 Aug 64	WR

REQUIREMENTS:

1. GENERAL:
   - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
   - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND1015104 CLASS 3.
   - C. MARKING: SHIPPING CONTAINERS SHALL BE MARKED WITH THE DRAWING NUMBER, AND REVISION LETTER PER ND 1002019.
   - D. PREPARATION FOR DELIVERY: PER ND 1002215, CLASS F.
2. INSPECTION AND ACCEPTANCE:
   - A. DIMENSIONS: AS SHOWN
3. DESIGN REQUIREMENTS:
   - A. MATERIAL: AUSTENITE CORROSION RESISTING STEEL PER QQ-S-776, CLASS 1 OR CLASS 2.
   - B. FINISH: PASSIVATE PER MIL-F-14072 METHOD E-300.
   - C. SURFACE QUALITY: .125 $\checkmark$ PER MIL-STD-10.



PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND1002034 FOR THIS DRAWING.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL **SEE NOTES**
HEAT TREATMENT **NONE**
FINAL FINISH **SEE NOTES**

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 12 Dec 62
CHECKED H Maynard 20 DEC 62
APPROVAL 1-2-63
APPROVAL 1/2/63
APPROVAL
NASA APPROVAL 1-4-63
MIT APPROVAL 8 Jan 63
MIT APPROVAL 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WASHER, PLAIN FLAT

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	C	1006997
SCALE NONE	WT	SHEET 1 OF 1

G. RICE

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

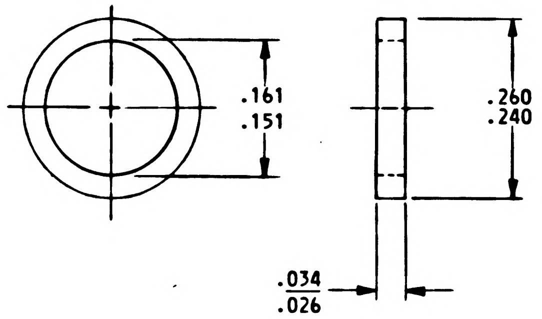
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1006997

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: AUSTENITE CORROSION RESISTING STEEL PER QQ-S-776 CLASS 1 OR CLASS 2.
   - B. FINISH: PASSIVATE PER MIL-F-14072 METHOD E 300.
   - C. SURFACE QUALITY: $125\surd$ PER STANDARD MIL-STD-10.
   - D. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404 CLASS III.
2. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.



CLASS B RELEASE TDR NO. 00217 DATE 9 Jan 63

ORIGINAL SOURCE OF SUPPLY:

ALLMETAL SCREW PRODUCTS CO. INC.
GARDEN CITY, NEW YORK
CODE IDENT NO. 70318

PURCHASE PER QUALIFICATION STATUS LIST ND 1002034.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL **SEE NOTES**
HEAT TREATMENT **NONE**
FINAL FINISH **SEE NOTES**

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 12 Dec 62
CHECKED H Maynard 20 DEC'62
APPROVAL 1-2-63
APPROVAL 1/2/63
APPROVAL
NASA APPROVAL 1-9-63
8 Jan 63
MIT APPROVAL Eldon C Hall 8 Jan 63
MIT APPROVAL 9 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

WASHER, PLAIN FLAT
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006997
SCALE **NONE** WT SHEET 1 OF 1

1006997

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

8669001

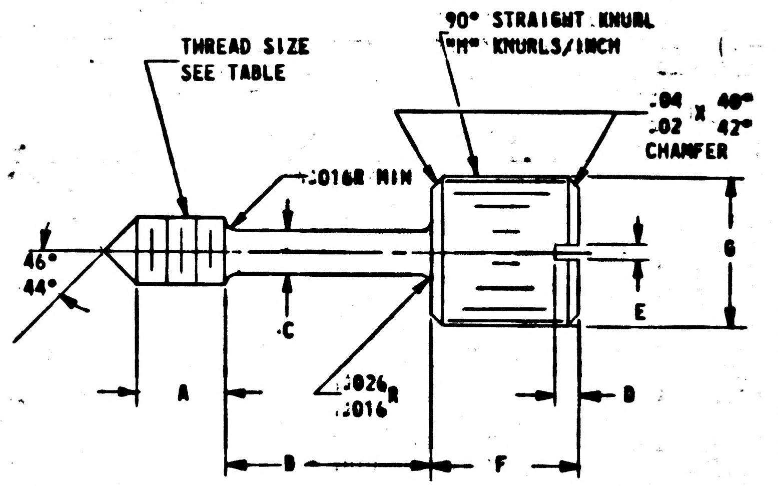
DASH NO.	THREAD SIZE UNC-2A	A ±.016	B ±.010	C ±.005	D ±.016	E ±.016	F ±.016	G ±.016	H APPROX
-1	NO.6-32	.281	.453	.087	.062	.047	.375	.281	40
-2	NO.10-24	.266	.500	.120	.093	.062	.438	.375	30

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
—	ORIGINATED		
A	REVISED PER TDRR 08026 DR J.A Leonard CHK REF APPD A.M	6/11/64	KEB

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CORROSION RESISTING STEEL IN ACCORDANCE WITH QQ-S-763, CLASS 303, CONDITION A.
   - B. FINISH: PASSIVATE IN ACCORDANCE WITH MIL-F-14072, METHOD E 300.
   - C. SURFACE ROUGHNESS: 63 MICROINCHES MAXIMUM.
   - D. MARKING: EACH INTERIOR PACKAGE SHALL BE MARKED WITH THE MANUFACTURERS NAME OR SYMBOL, PART NUMBER, PLUS NASA DRAWING AND DASH NUMBER.
2. INTERPRET DRAWING IN ACCORDANCE WITH THE STANDARDS PRESCRIBED IN MIL-D-70327.



ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST
NASA DOCUMENT NO 1002034.

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 1963

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE
HEAT TREATMENT ——
FINAL FINISH SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 14 Dec 62
CHECKED D. M. Sleeper 14 Jan 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL
NASA APPROVAL 1-30-63
MIT APPROVAL 30 Jan 63
MIT APPROVAL 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SCREW, CAPTIVE, KNURLED HEAD
SPECIFICATION CONTROL DRAWING

CODE IDENT NO. ——
SIZE C
NASA DRAWING NO. 1006998
SCALE NONE
WT
SHEET 1 OF 1

1006998

MASTER

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

8669001

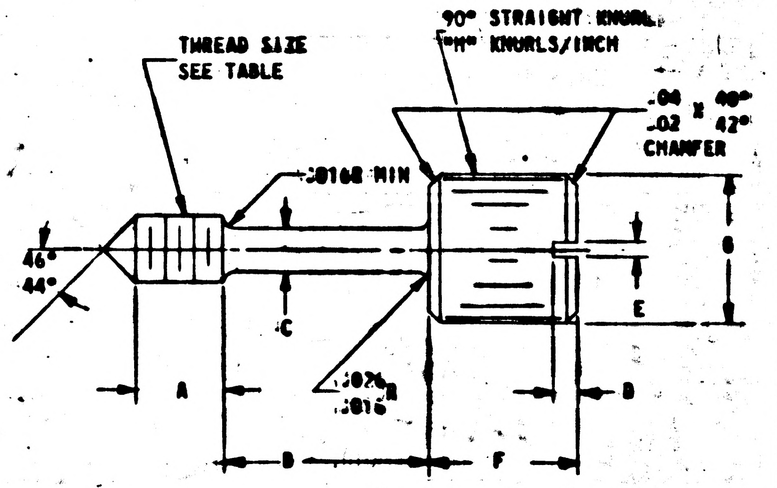
DASH NO.	THREAD SIZE UNC-2A	A ±.016	B ±.010	C ±.005	D ±.016	E ±.016	F ±.016	G ±.016	H APPROX
-1	6(.138)-32	.281	.453	.087	.062	.047	.375	.281	40
-2	10(.190)-24	.266	.500	.120	.093	.062	.438	.375	30
-3	10(.190)-24	.266	.625	.120	.093	.062	.438	.375	30

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
—	ORIGINATED		
A	REVISED PER TDRR 08026 DR J.A. Leonard CHK REF APPD	6/11/64	KEG
B	REVISED PER TDRR 14859 DR CHK APPD	1/1/65	

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CORROSION RESISTING STEEL IN ACCORDANCE WITH QQ-S-763, CLASS 303, CONDITION A.
   - B. FINISH: PASSIVATE IN ACCORDANCE WITH MIL-F-14072, METHOD E 300.
   - C. SURFACE ROUGHNESS: 63 MICROINCHES MAXIMUM.
   - D. MARKING: UNIT PACKAGES AND SHIPPING CONTAINERS SHALL BE MARKED INTERNALLY AND EXTERNALLY PER ND 1002215 WITH THE MANUFACTURER'S NAME, NASA DRAWING NUMBER, REVISION LETTER AND DASH NUMBER, SUPPLIER'S LOT OR SERIAL NUMBER AND DATE OF MANUFACTURING OR CODING.
   - E. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS AS CONTAINED IN ND 1015404, CLASS 3.
   - F. PREPARATION FOR DELIVERY: PACKAGING AND PACKING OF ITEMS SHALL BE IN ACCORDANCE WITH ND 1002215 CLASS I, CODE 7.
   - G. VENDOR SUPPLIED DATA: EACH SHIPMENT OF PARTS SHALL BE ACCOMPANIED BY THE FOLLOWING DOCUMENTATION:
     - (1) CERTIFICATE OF COMPLIANCE WITH THE MATERIAL AND FINISH REQUIREMENTS.
2. INTERPRET DRAWING IN ACCORDANCE WITH THE STANDARDS PRESCRIBED IN MIL-D-70327.



1006998 8669001

CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 63

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL: SEE NOTE
HEAT TREATMENT: ———
FINAL FINISH: SEE NOTE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 14 Jan 63
CHECKED D M Sleeper 14 Jan 63
APPROVAL 1-28-63
APPROVAL 1-28-63
APPROVAL
NASA APPROVAL 1-30-63
MIT APPROVAL 30 Jan 63
MIT APPROVAL W Cuffe 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SCREW, CAPTIVE, KNURLED HEAD

SPECIFICATION CONTROL DRAWING

CODE IDENT NO.	SIZE	NASA DRAWING NO.
—	C	1006998
SCALE NONE	WT	SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

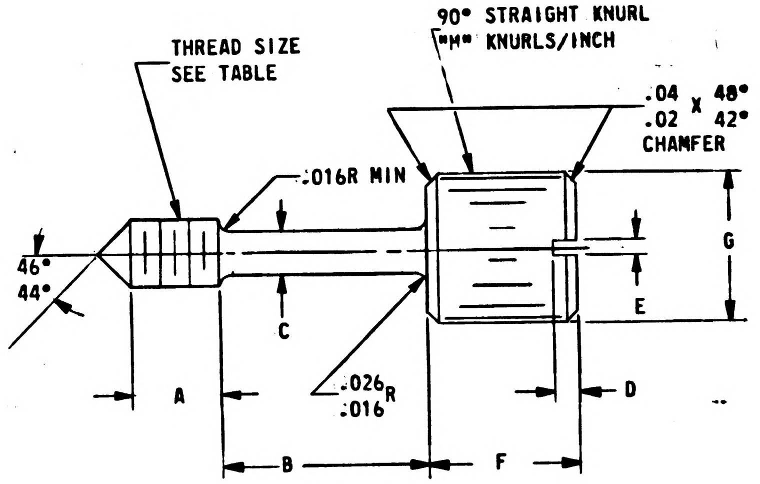
8669001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
–	ORIGINATED		

DASH NO.	THREAD SIZE UNC-2A	A ±.016	B ±.010	C ±.005	D ±.016	E ±.016	F ±.016	G ±.016	H APPROX
-1	NO.6-32	.281	.453	.087	.062	.047	.375	.312	40
-2	NO.10-24	.266	.500	.120	.093	.062	.438	.375	30

NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CORROSION RESISTING STEEL IN ACCORDANCE WITH QQ-S-763, CLASS 303, CONDITION A.
   - B. FINISH: PASSIVATE IN ACCORDANCE WITH MIL-F-14072, METHOD E 300.
   - C. SURFACE ROUGHNESS: 62 MICROINCHES MAXIMUM.
   - D. MARKING: EACH INTERIOR PACKAGE SHALL BE MARKED WITH THE MANUFACTURERS NAME OR SYMBOL, PART NUMBER, PLUS NASA DRAWING AND DASH NUMBER.
2. INTERPRET DRAWING IN ACCORDANCE WITH THE STANDARDS PRESCRIBED IN MIL-D-70327.



1006998

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 00304 DATE 30 JAN 1963

ORIGINAL SOURCE OF SUPPLY:

PURCHASE PER QUALIFICATION STATUS LIST NASA DOCUMENT ND 1002034.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH SEE NOTES

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Ray Wheeler DATE 14 Dec 62
CHECKED D. M. Sleeper 14 Jan 63
APPROVAL [illegible] 1-28-63
APPROVAL [illegible] 1-28-63
APPROVAL [illegible]
NASA APPROVAL [illegible] 1-30-63
[illegible] 30 Jan 63
MIT APPROVAL [illegible] 30 Jan 63
MIT APPROVAL [illegible] 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SCREW, CAPTIVE, KNURLED HEAD

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. SIZE C NASA DRAWING NO. 1006998
SCALE NONE WT SHEET 1 OF 1

6669001

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
-	ORIGINATED		

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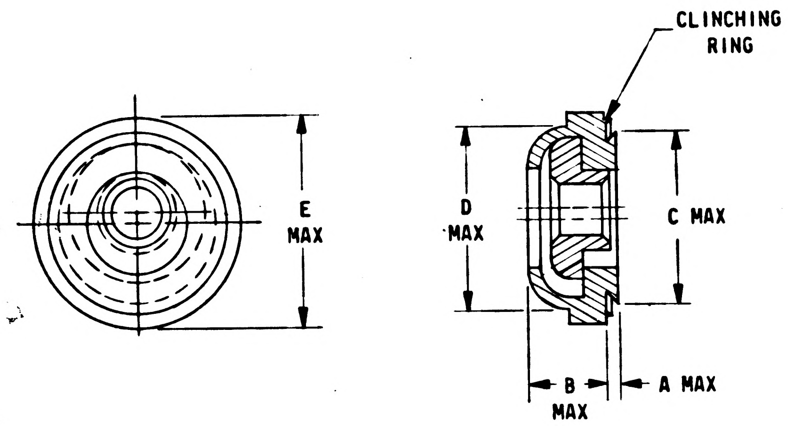
NOTES:

1. REQUIREMENTS:
   - A. MATERIAL: CORROSION-RESISTING STEEL IN ACCORDANCE WITH QQ-S-763, CLASS 303, CONDITION A.
   - B. FINISH: PASSIVATE IN ACCORDANCE WITH MIL-F-14072, METHOD E 300 PLUS SOLID FILM LUBRICANT IN ACCORDANCE WITH MIL-L-25504.
   - C. AMBIENT TEMPERATURE: UP TO 800°F.
   - D. SCREW THREADS: UNC-2B OR UNF-2B IN ACCORDANCE WITH NATIONAL BUREAU OF STANDARDS HANDBOOK H28.
   - E. EACH PART SHALL HAVE A FULLY FORMED CLINCH RING OF SERPENTINE SHAPE.
   - F. SELF-ALIGNING CAPABILITY (FLOAT): 0.015 IN ANY DIRECTION FROM CENTER.
   - G. QUALITY ASSURANCE: SUPPLIER SHALL CONFORM TO THE PROVISIONS OF ND 1015404; CLASS III.
   - H. MARKING: EACH SHIPPING CONTAINER AND INTERIOR PACKAGE SHALL BE MARKED WITH THE MANUFACTURERS NAME OR SYMBOL, PART NUMBER AND QUANTITY OF PARTS. EACH INTERIOR PACKAGE SHALL ALSO CONTAIN THE NASA DRAWING AND DASH NUMBER TOGETHER WITH THE DRAWING REVISION LETTER.
2. APPLICATION: FOR USE IN MATERIALS HAVING A HARDNESS LESS THAN ROCKWELL B70 EXCEPT MAGNESIUM OR CORROSION-RESISTING STEEL THINNER THAN 0.050.
3. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

	DIMENSIONS						INSTALLATION DATA		
DASH NO.	THREAD SIZE	A	B	C	D	E	EDGE DIST MIN	HOLE SIZE +.003	SHEET THK
-1	2-56	.038	.140	.289	.290	.375	.204	.290	.040-.055
-2	2-56	.054	.140	.289	.290	.375	.204	.290	.056- UP
-3	4-40	.038	.140	.289	.290	.375	.204	.290	.040-.055
-4	4-40	.054	.140	.289	.290	.375	.204	.290	.056- UP
-5	6-32	.038	.140	.327	.330	.407	.234	.328	.040-.055
-6	6-32	.054	.140	.327	.330	.407	.234	.328	.056- UP
-7	8-32	.038	.140	.367	.365	.454	.266	.368	.040-.055
-8	8-32	.054	.140	.367	.365	.454	.266	.368	.056- UP
-9	10-24	.038	.172	.405	.405	.484	.312	.406	.040-.055
-10	10-24	.054	.172	.405	.405	.484	.312	.406	.056- UP
-11	10-32	.038	.172	.405	.405	.484	.312	.406	.040-.055
-12	10-32	.054	.172	.405	.405	.484	.312	.406	.056- UP
-13	1/4-20	.054	.218	.514	.510	.609	.375	.515	.056- UP
-14	1/4-28	.054	.218	.514	.510	.609	.375	.515	.056- UP



FOR INFORMATION ONLY
CLASS B RELEASE TDR NO. 00266 DATE 1/16/63

PURCHASE TO QUALIFICATION STATUS LIST ND1002034

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTES
HEAT TREATMENT NONE
FINAL FINISH NONE

RAYTHEON CO.
LEXINGTON, MASS.
DWG. NO. CONTRACT

DRAWN Gary Wheeler DATE 27 Jan 63
CHECKED D. M. Sleeper 2 JAN 63
APPROVAL [illegible] 1-15-63
APPROVAL [illegible] 1-15-63
APPROVAL [illegible]
NASA APPROVAL [illegible] 1/16/63
Dennis [illegible] 16 Jan 63
MIT APPROVAL E C Hall 16 Jan 63
MIT APPROVAL [illegible] 1/16/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NUT, PLAIN,
SELF-CLINCHING, FLOATING
SPECIFICATION CONTROL DRAWING

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1006999
SCALE NONE
WT
SHEET 1 OF 1

1006999

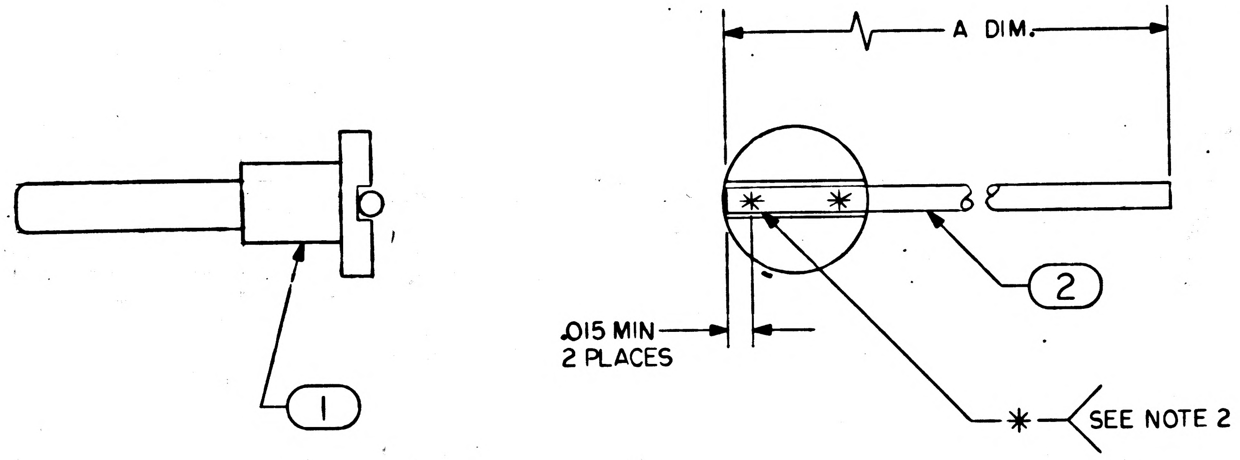
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1007000 A

REVISIONS CLASS B TDRR 00123

SYM	DESCRIPTION	DATE	APPROVAL
	UPGRADED FOR CLASS A RELEASE PER TDRR 00499	9-2-63	s.c.s. W.K.

DASH NO.	A DIM.
-1	2.625/2.375
-2	4.125/3.875



NOTES -

1- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

2. WELD PER ND-1002005

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
SEE CHART		1015400	WIRE, NICKEL	2
	1	1008000	TERMINAL, LUG	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007011	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT
DRAWN Mahoney DATE 11-26-62
CHECKED D. DeTommaso 11-29-62
APPROVAL S. C. Smith 11-26-62
APPROVAL
NASA APPROVAL Jack Barnard 11/28/62
MIT APPROVAL W. Kupfer 28 Nov 62

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERMINAL, LUG
ASSEMBLY

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007000
SCALE 10/1
WT
SHEET 1 OF 1

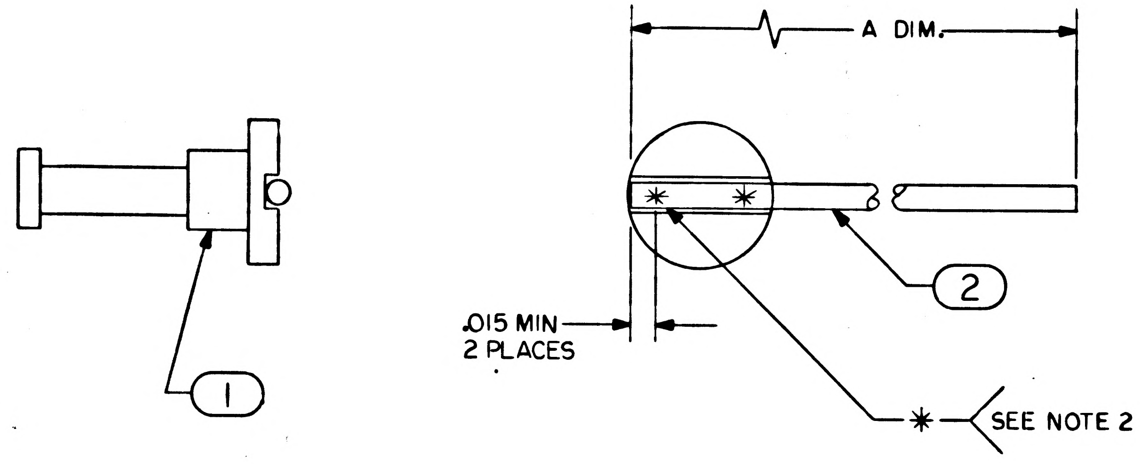
1007000

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1007000

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

DASH NO.	A DIM.
-1	2.625/2.375
-2	4.125/3.875



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 00123 DATE 11-28-62

NOTES -

1- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2- NUMBERS ENCLOSED IN BALLOONS ARE FIND NUMBERS AND ARE IDENTIFIED ON LIST OF MATERIALS
3- WELD PER ND 1002005

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
SEE CHART		WIRE, NICKEL	2
1	1008000	TERMINAL, LUG	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN Mahoney DATE 11-26-62
CHECKED 11-27-62
APPROVAL S. C. Smith 11-26-62
APPROVAL
NASA APPROVAL 11/28/62
MIT APPROVAL 28 Nov 62

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERMINAL, LUG
ASSEMBLY

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007000
SCALE 10/1
WT
SHEET 1 OF 1

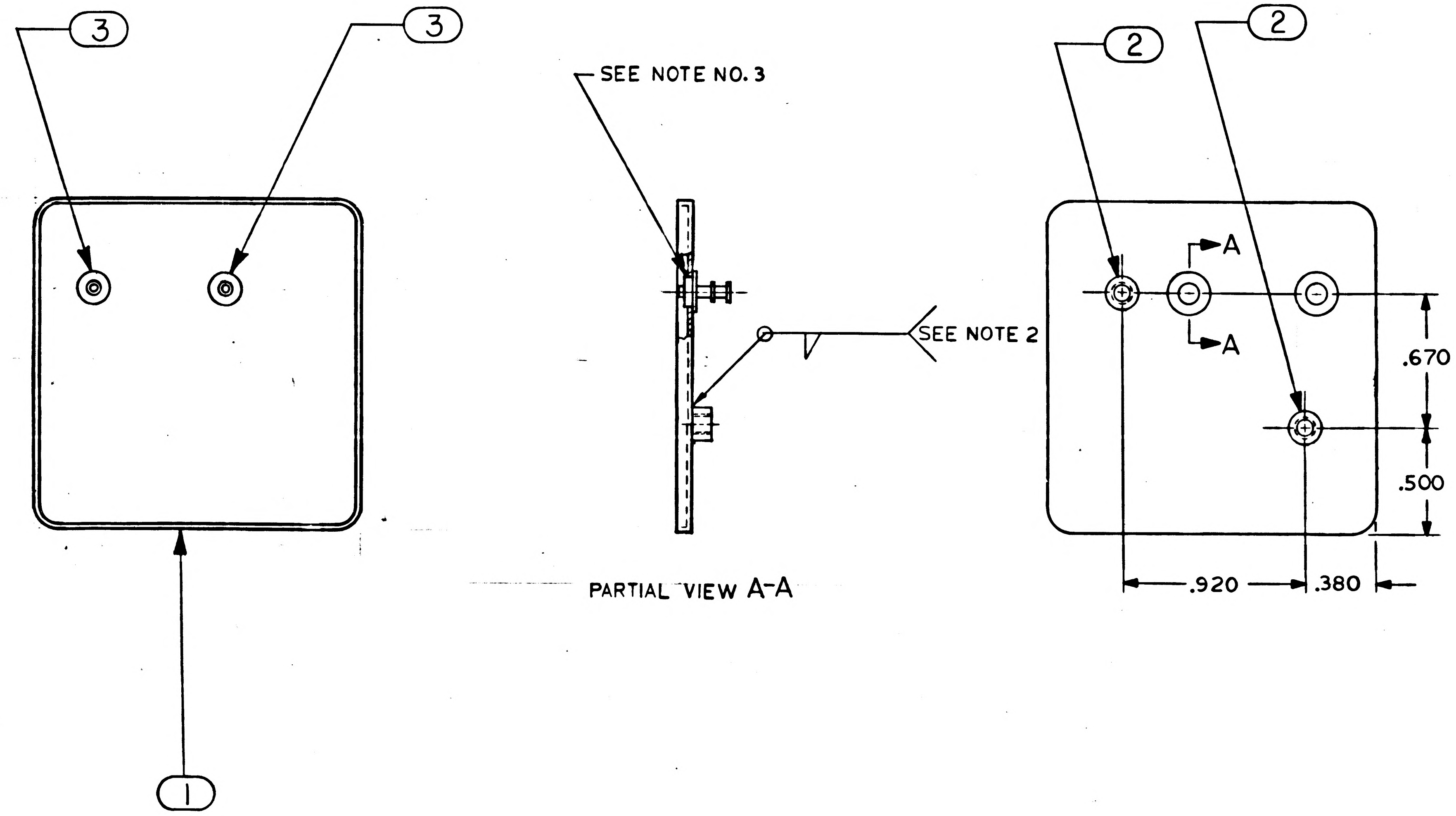
1007000

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1007001

REVISIONS TDRR 00380

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00892	S.C.S.	4-16-63 WK



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. .030 MAX FILLET BRAZE 2 FIND NO.2 TO FIND NO.1 PER MIL-B-7883
3. FINISH: ELECTRO-TIN FUSED PER MIL-P-10727 TYPE I BEFORE ASSEMBLING TERMINALS
4. SOLDER 2 FIND NO.3 TO FIND NO.1 PER MIL-S-6872 LEAD SILVER

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1010281	TERMINAL	3
2	1008014	SPACER	2
1	1008004	COVER, SUSPENSION	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007028	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± // DECIMALS ±.005 ANGLES ± //
DO NOT SCALE THIS DRAWING

MATERIAL //

HEAT TREATMENT //

FINAL FINISH SEE NOTE 3

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

DRAWN DATE 3DEC62
CHECKED
APPROVAL S. C. Smith 2-9-63
APPROVAL

NASA APPROVAL W J Rhine 2-13-63

MIT APPROVAL 8Feb63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SUSPENSION COVER ASSY (INSEPARABLE)

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007001

SCALE 2/1
WT
SHEET 1 OF 1

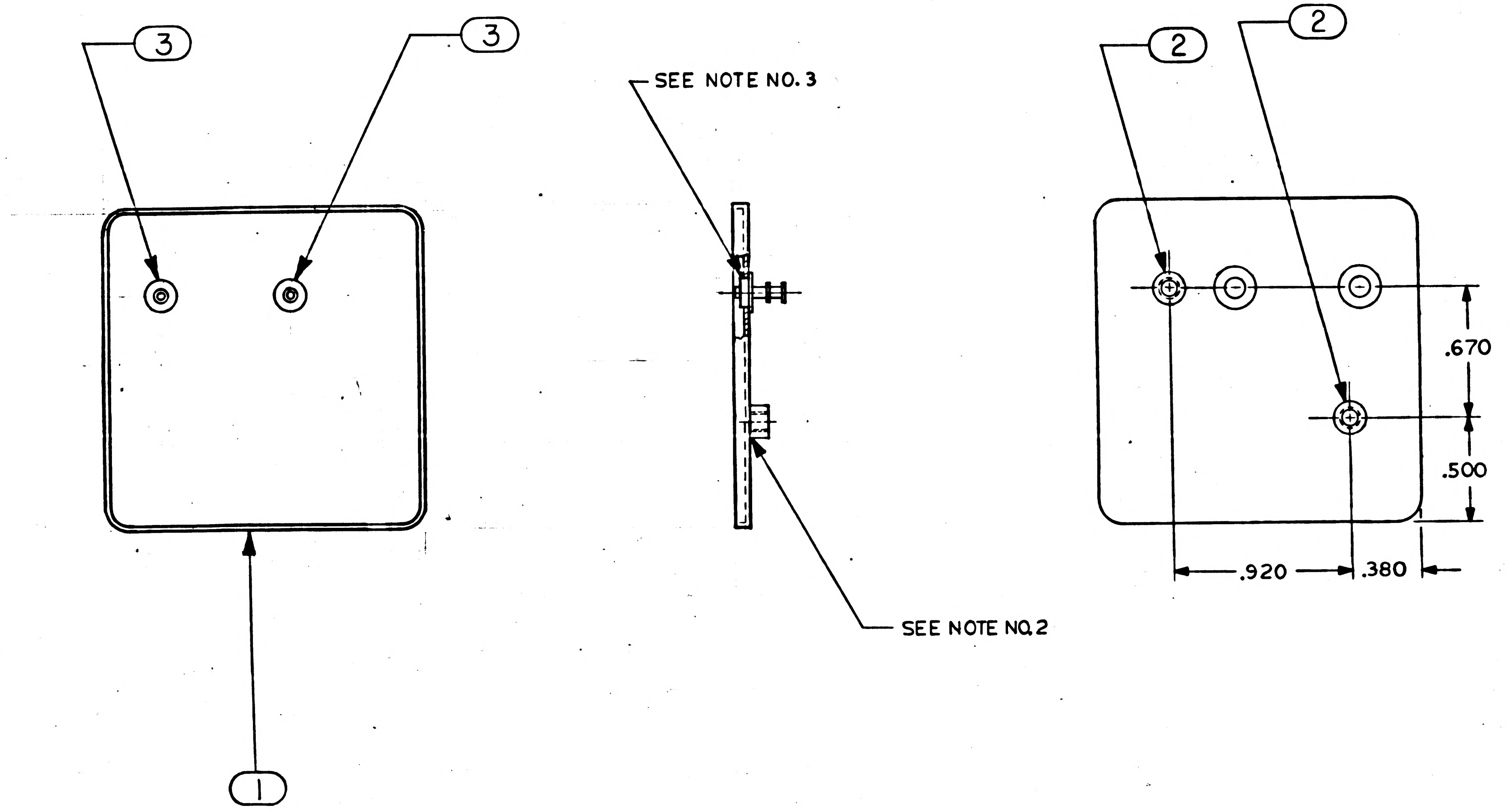
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007001

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1007001

REVISIONS TDRR 00380			
SYM	DESCRIPTION	DATE	APPROVAL



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. BRAZE 2 FIND NO. 2 TO FIND NO. 1 PER ND
3. SOLDER 2 FIND NO. 3 TO FIND NO. 1 PER MSFC-PROC-158 A USING SOLDER PER QQ-S-571

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1010281	TERMINAL	3
2	1008014	SPACER	2
1	1008004	COVER SUSPENSION	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007006	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± // DECIMALS ± // ANGLES ± //
DO NOT SCALE THIS DRAWING
MATERIAL //
HEAT TREATMENT //
FINAL FINISH //

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN R. Tatiak DATE 3DEC62
CHECKED
APPROVAL S. C. Smith 2-9-63
APPROVAL
NASA APPROVAL W. J. Rhine 2-13-63
MIT APPROVAL W. [illegible] 8 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SUSPENSION COVER ASSY (INSEPARABLE)

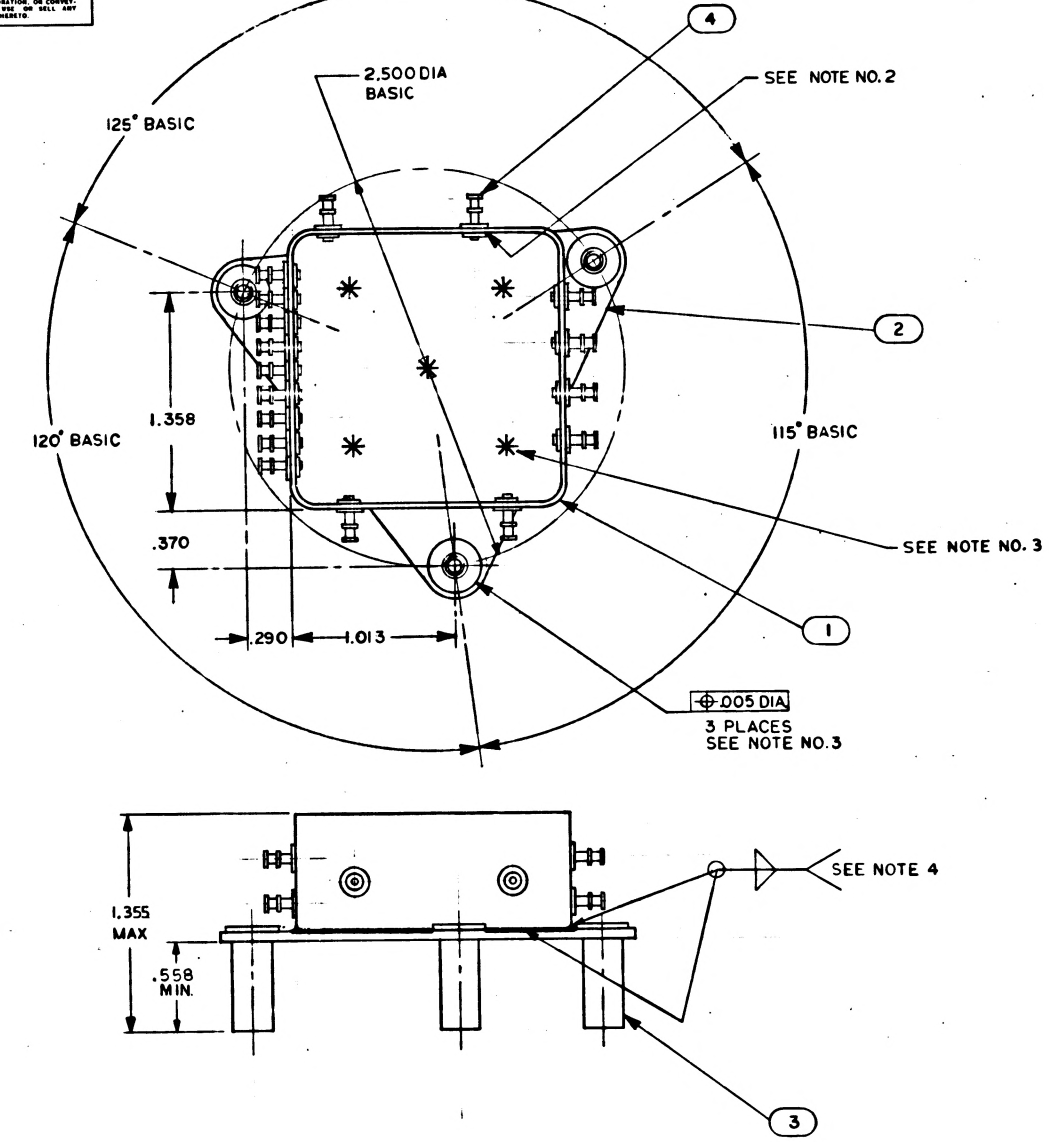
CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007001
SCALE 2 / 1
WT
SHEET 1 OF 1

1007001

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00380

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00866	4-10-63	WK



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. SPOT WELD FIND NO.1 TO FIND NO.2 PER MIL-W-6858
3. DIP BRAZE 3 FIND NO. 3 TO FIND NO. 2 PER MIL-B-7883
4. .030/.040 FILLET BRASED PER MIL-B-7883 TO BE DONE AFTER STAND-OFF'S ARE ASSEMBLED
5. FINISH: ELECTRO-TIN FUSED PER MIL-P-10727 TYPE I BEFORE ASSEMBLING TERMINALS
6. SOLDER 19 FIND NO.4 TO FIND NO.1 PER MIL-S-6872 LEAD SILVER PER QQ-S-571

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
19	1010281	TERMINAL	4
3	1008005	STAND-OFF	3
1	1008006	FLANGE, SUSPENSION	2
1	1008003	BOX, SUSPENSION	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007028	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH SEE NOTE 5

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN R. Taticek DATE 4DEC62
CHECKED
APPROVAL L.C. Smith 2-9-63
APPROVAL
NASA APPROVAL W. J. Rhine 2-13-63
MIT APPROVAL 13Feb63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SUSPENSION BOX ASSY
(INSEPARABLE)

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007002
SCALE 2/1
WT
SHEET 1 OF 1

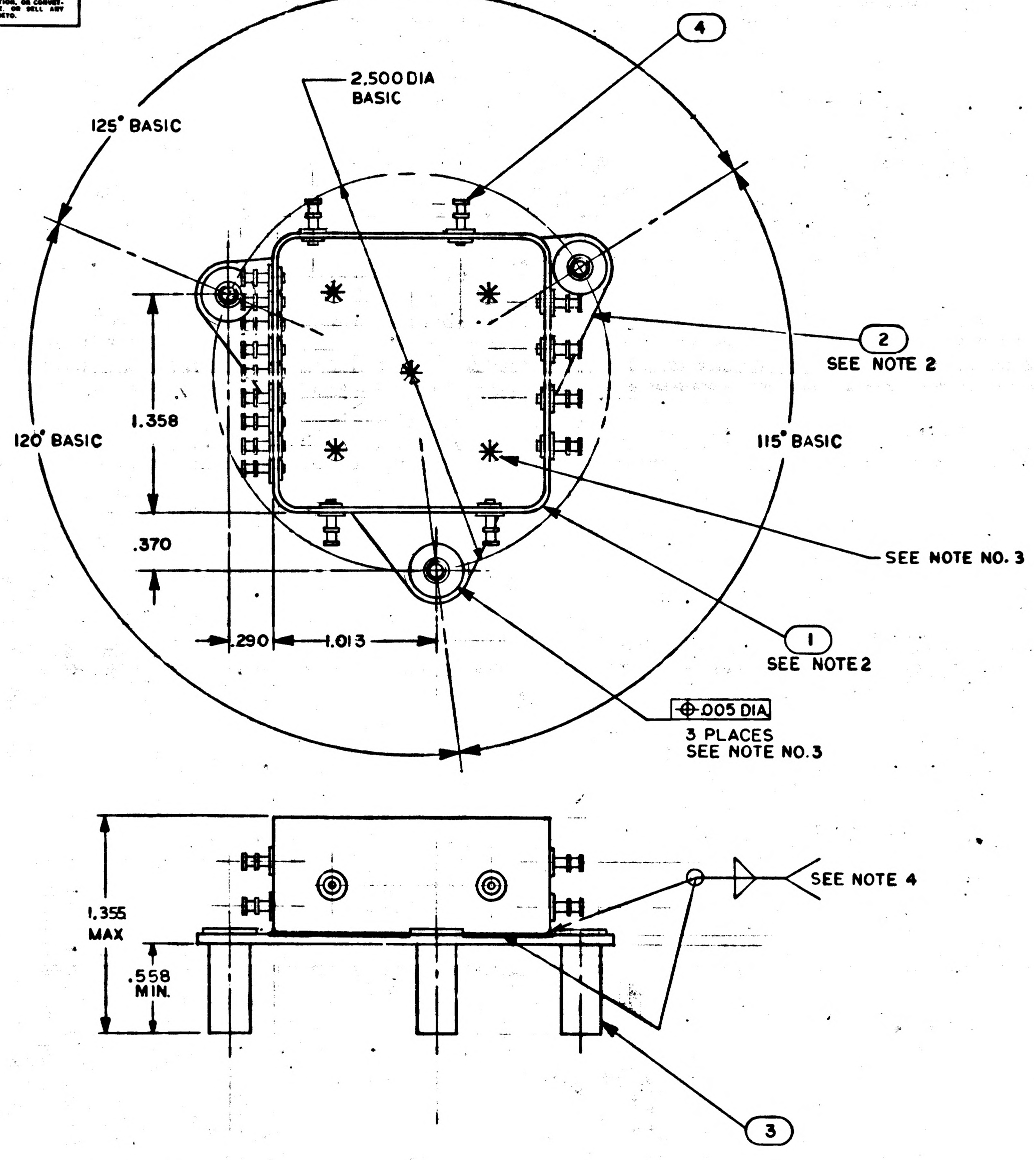
1007002 A

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00380

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00866	4-16-63	WK
B	REVISED PER TDRR 01880	7-1-63	



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. SPOT WELD FIND NO.1 TO FIND NO.2 5 PLACES PER MIL-W-6858
3. DIP BRAZE FIND NO.3 TO FIND NO.2 3 PLACES PER MIL-B-7883
4. .030/.040 FILLET BRAZED PER MIL-B-7883 TO BE DONE AFTER STAND-OFF'S ARE ASSEMBLED
5. FINISH: ELECTRO-TIN FUSED PER MIL-P-10727 TYPE I BEFORE ASSEMBLING TERMINALS
6. SOLDER FIND NO.4 TO FIND NO.1 19 PLACES PER MIL-S-6872 LEAD SILVER PER QQ-S-571

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
19	1010281	TERMINAL	4
3	1008005	STAND-OFF	3
1	1008006	FLANGE, SUSPENSION	2
1	1008003	BOX, SUSPENSION	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007028	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH SEE NOTE 5

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN R. Taticek DATE 6DEC62
CHECKED
APPROVAL L.C. Smith 2-9-63
APPROVAL
NASA APPROVAL W. J. 2-13-63
MIT APPROVAL 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SUSPENSION BOX ASSY (INSEPARABLE)

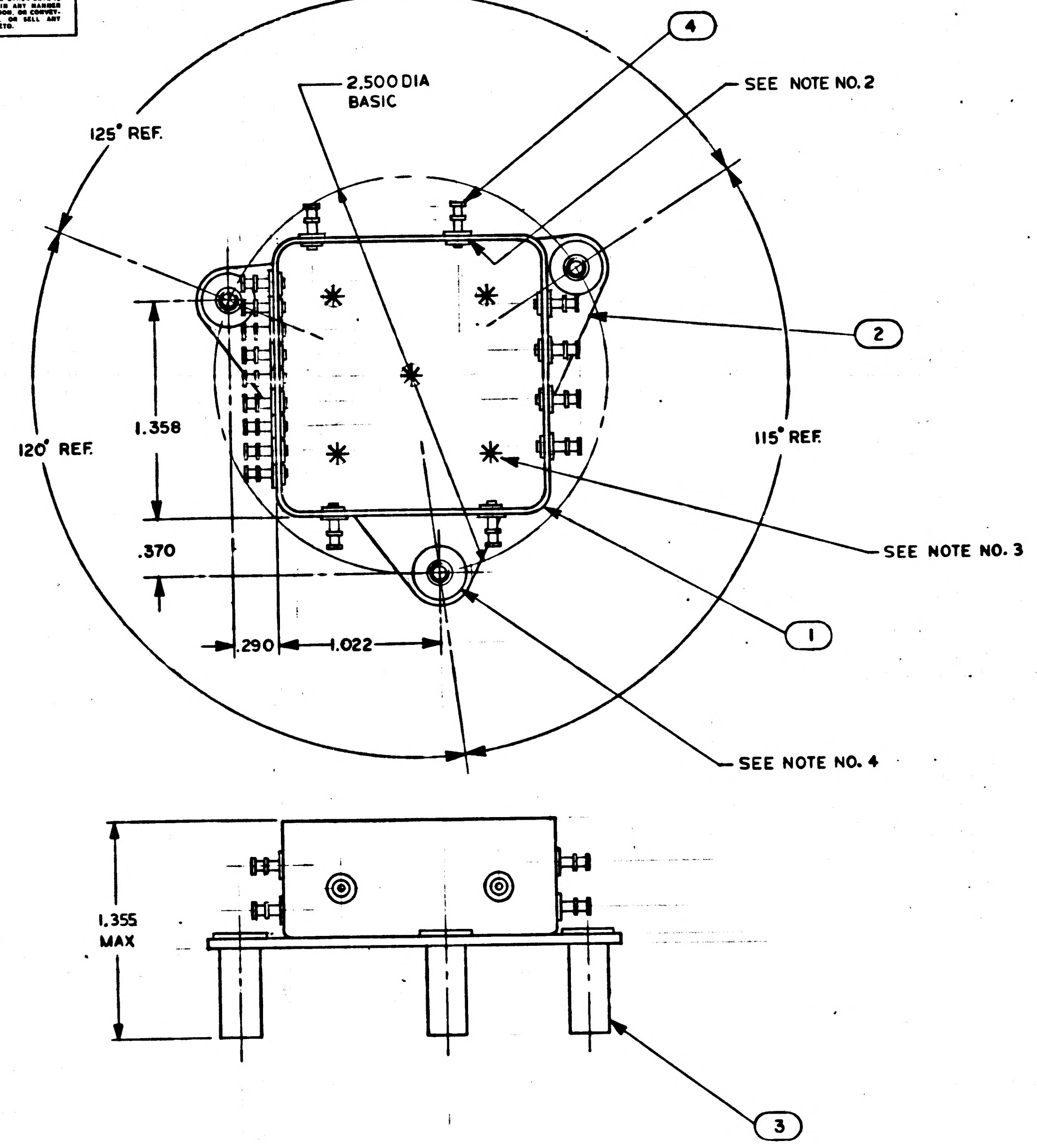
CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007002
SCALE 2/1
WT
SHEET 1 OF 1

35

1007002 B

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. SOLDER 19 FIND NO. 4 TO FIND NO. 1 PER MSFC-PROC-158A USING SOLDER PER QQ-S-571
3. SPOT WELD FIND NO. 1 TO FIND NO. 2 PER
4. DIP BRAZE 3 FIND NO. 3 TO FIND NO. 2 PER
5. FINISH: ELECTRO-TIN FUSED PER MIL-10727 TYPE I BEFORE ASSEMBLING TERMINALS AND STAND-OFF

REVISIONS TORR 00380

SYM	DESCRIPTION	DATE	APPROVAL

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
19	1010281	TERMINAL	4
3	1008005	STAND-OFF	3
1	1008006	FLANGE SUSPENSION	2
1	1008003	BOX SUSPENSION	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007006	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH SEE NOTE 5

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN R. Tatecki DATE 4 DEC 62
CHECKED
APPROVAL I. C. Smith 2-9-63
APPROVAL
NASA APPROVAL W. J. Rhine 2-13-63
MIT APPROVAL 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

SUSPENSION BOX ASSY (INSEPARABLE)

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007002
SCALE 2/1
WT
SHEET 1 OF 1

1007002

01

REVISIONS	TDRR 00781		
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	4/17/63	W.T. WR

D

C

B

1007003 A

A

3	-OGE	INSERT SCREW-LOCKING	1
QTY REQ'D	T OR YING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
D C DIFFERENTIAL AMPLIFIER AND PRECISION VOLTAGE REFERENCE

ANGLES ± $\frac{1}{2}$°

DRAWN — DATE 8-11-62

CHECKED — 2 FEB 63

APPROVED — 2-13-63

APPROVED

NASA APPROVAL — 2-8-63

MIT APPROVAL — 13 Feb 63

CODE IDENT NO — SIZE J — NASA DRAWING NO. 1007003

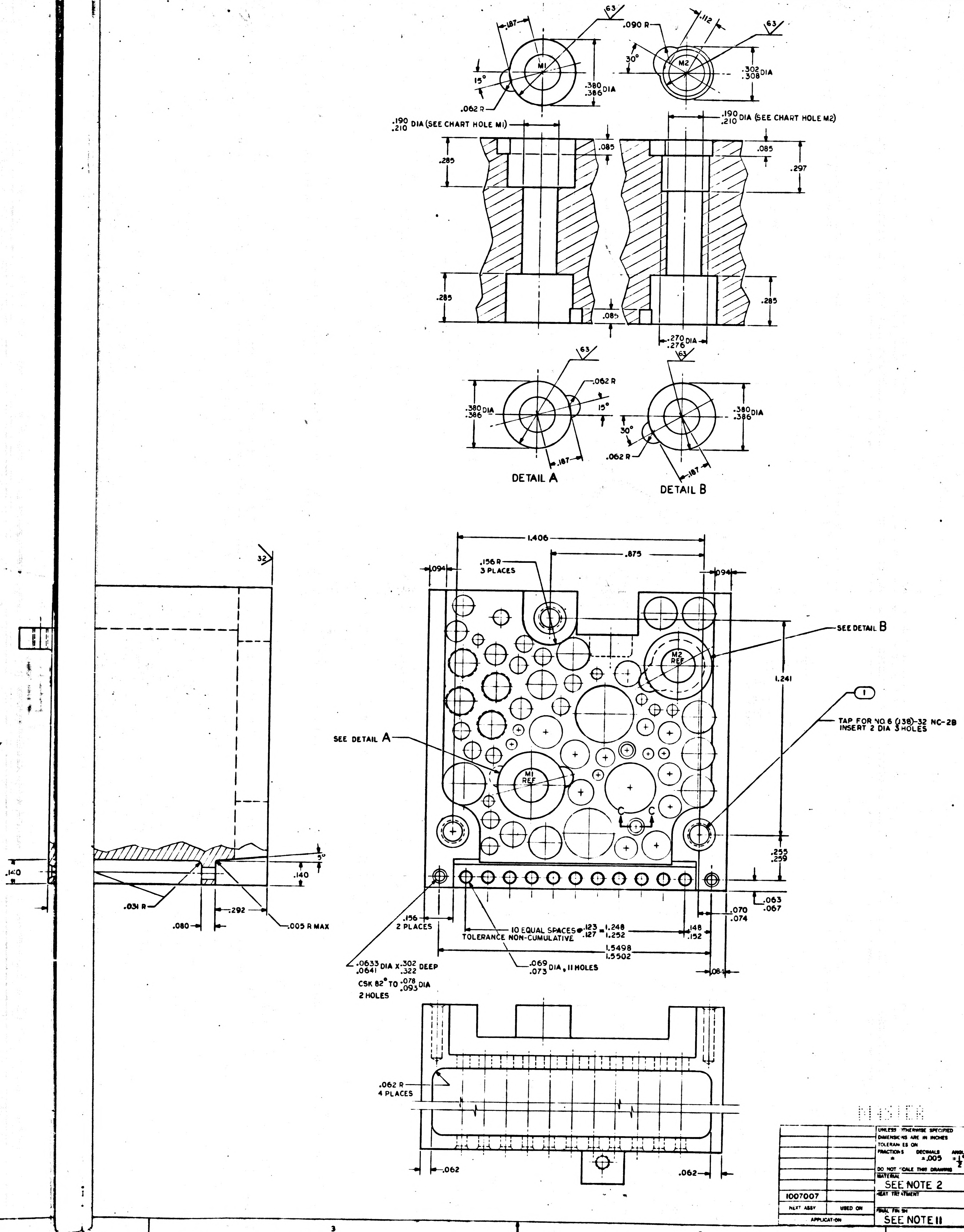
SCALE 5:1 — WT — SHEET 1 OF 1

A

1007003 A

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 00873	4/17/63	W.T.

REVISIONS TDRR 00381



.187
63
15°
M1
.062 R
.380 DIA
.386
.090 R
.112
30°
M2
.302 DIA
.308
.190 DIA (SEE CHART HOLE M1)
.210
.190 DIA (SEE CHART HOLE M2)
.210
.085
.285
.297
.270 DIA
.276
.062 R
DETAIL A
DETAIL B
1.406
.875
.156 R
3 PLACES
.094
SEE DETAIL B
SEE DETAIL A
M1 REF
M2 REF
1.241
C
TAP FOR NO.6 (138)-32 NC-2B
INSERT 2 DIA 3 HOLES
1
.255
.259
.063
.067
.070
.074
.148
.152
.156
2 PLACES
10 EQUAL SPACES @ .123 = 1.248
.127 1.252
TOLERANCE NON-CUMULATIVE
1.5498
1.5502
.0633 DIA X .302 DEEP
.0641 .322
CSK 82° TO .078 DIA
.093
2 HOLES
.069 DIA, 11 HOLES
.073
.081
32
5°
.140
.031 R
.080
.292
.005 R MAX
.062 R
4 PLACES
.062

3	NAS 1222-06E	INSERT SCREW-LOCKING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±½°
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTE 2
HEAT TREATMENT
FINAL FINISH
SEE NOTE 11

1007007	
NEXT ASSY	USED ON
APPLICATION	

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN W. Horgan DATE 12-11-62
CHECKED W. J. Gifford 2FEB63
APPROVAL D. A. Tint 2-13-63
APPROVAL
NASA APPROVAL W. J. Rhine 2-18-63
MIT APPROVAL 13Feb63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

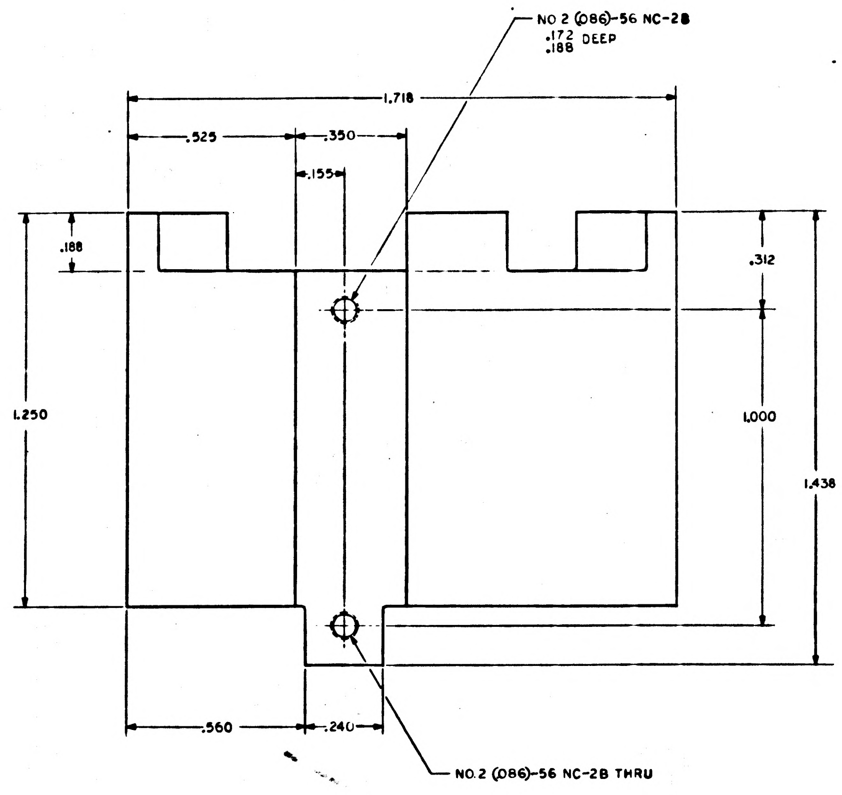
HEATSINK
D C DIFFERENTIAL AMPLIFIER
AND PRECISION VOLTAGE REFERENCE

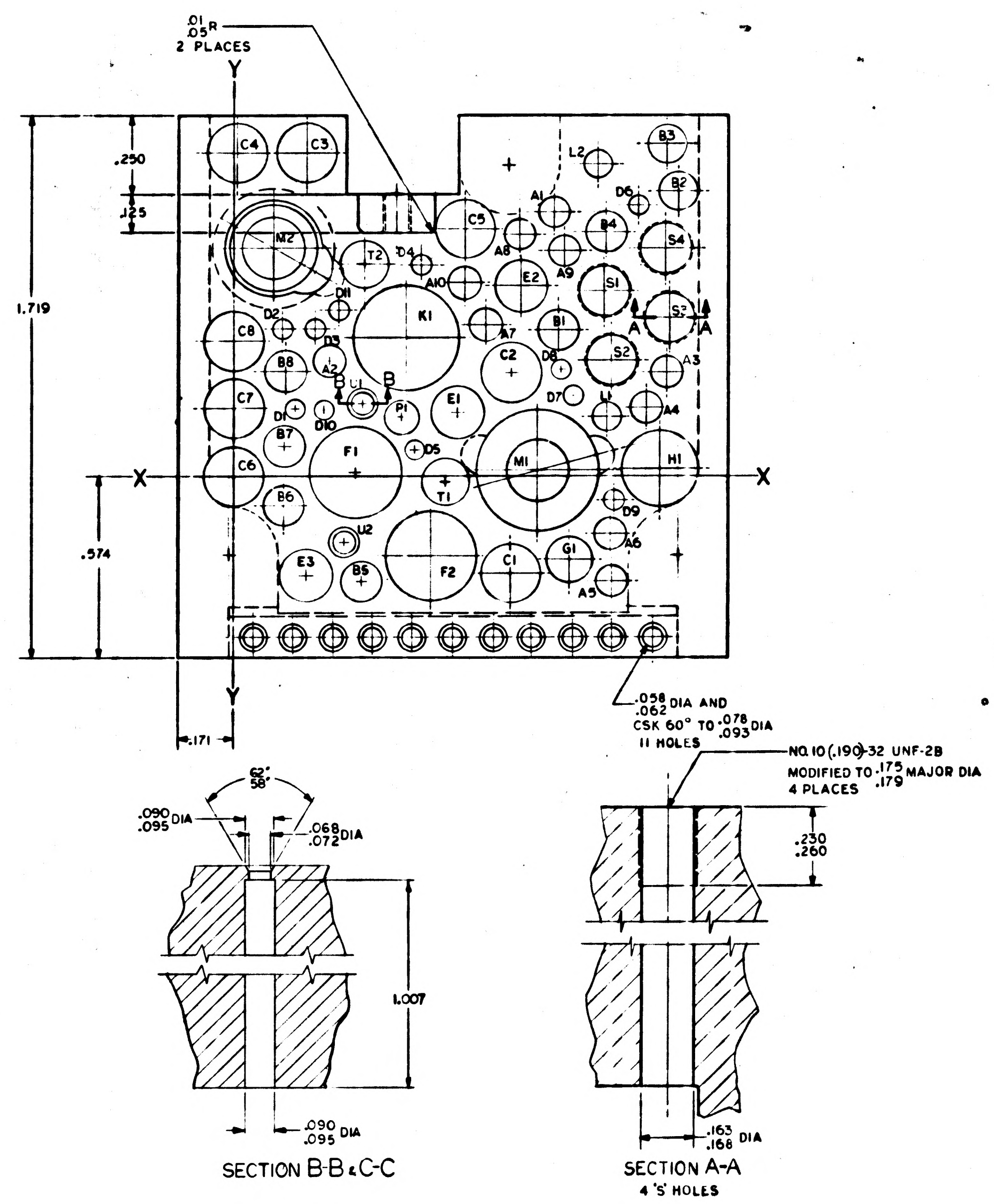
CODE IDENT NO
SIZE J
NASA DRAWING NO 1007003
SCALE 5:1
WT
SHEET 1 OF 1

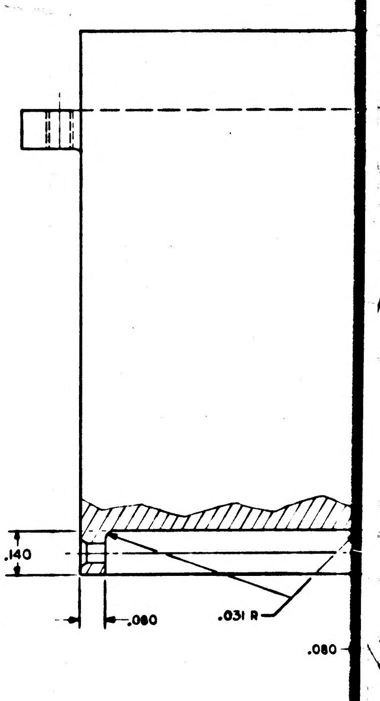
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⊕-DIA	HOLE DIA	QTY
A1	1.002	.834	.006	.099 .103	12
A2	.299	.366			
A3	1.353	.328			
A4	1.290	.216			
A5	1.182	-.330			
A6	1.178	-.183			
A7	.788	.477			
A8	.893	.762			
A9	1.035	.712			
A10	.720	.610			
B1	1.015	.462	.006	.127 .131	8
B2	1.390	.903			
B3	1.353	1.055			
B4	1.164	.772			
B5	.400	-.332			
B6	.155	-.092			
B7	.158	.096			
B8	.164	.330			
C1	.867	-.307	.006	.181 .185	8
C2	.868	.326			
C3	.228	1.024			
C4	.011	1.024			
C5	.722	.781			
C6	.000	.000			
C7	.000	.214			
C8	.000	.426			
D1	.192	.214	.006	.058 .062	11
D2	.150	.462			
D3	.255	.462			
D4	.586	.664			
D5	.566	.084			
D6	1.267	.857			
D7	1.062	.257			
D8	1.024	.338			
D9	1.189	-.074			
D10	.264	.210			
D11	.328	.522			
E1	.699	.202	.006	.165 .169	3
E2	.897	.600			
E3	.228	-.315			
F1	.382	.011	.006	.282 .289	2
F2	.617	-.252			
G1	1.051	-.263	.006	.143 .147	1
H1	1.333	.024	.006	.237 .241	1
K1	.538	.436	.006	.329 .336	1
L1	1.166	.190	.006	.092 .096	2
L2	1.138	.988			
M1	.949	.017	.006	SEE DETAIL A	1
M2	.123	.720	.006	SEE DETAIL B	1
P1	.526	.188	.006	.105 .109	1
S1	1.159	.584	.006	SEE SECTION A-A	4
S2	1.181	.366			
S3	1.363	.500			
S4	1.349	.722			
T1	.662	-.009	.006	.146 .150	2
T2	.410	.670			
U1	.404	.232	.006	SEE SECTION B-B&C-C	2
U2	.346	-.208			

NOTES

1-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2-MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3-UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4-TRUE POSITIONING AS SHOWN IN CHART
5-FLATNESS TO BE WITHIN .010
6-UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7-ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8-REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9-COAT THREAD AND FIND NO.1 WITH MIL P-8585 WET ZINC CHROMATE PRIMER
10-INSTALL FIND NO.1 PER MS-33537, EXCEPT DIM. F TO BE .594, BREAK OFF DRIVING TANG
11-FINISH: ANODIZE PER MIL-M-3171A, TYPE IV


NO 2 (.086)-56 NC-2B
.172 .188 DEEP
1.718
.525
.350
.155
.188
.312
1.250
1.000
1.438
.560
.240
NO.2 (.086)-56 NC-2B THRU


.01 .05 R
2 PLACES
Y
X
1.719
.250
.125
.574
.171
A1 A2 A3 A4 A5 A6 A7 A8 A9 A10
B1 B2 B3 B4 B5 B6 B7 B8
C1 C2 C3 C4 C5 C6 C7 C8
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11
E1 E2 E3
F1 F2
G1 H1 K1 L1 L2 M1 M2 P1
S1 S2 S3 S4
T1 T2 U1 U2
.058 .062 DIA AND
CSK 60° TO .078 .093 DIA
11 HOLES
NO.10 (.190)-32 UNF-2B
MODIFIED TO .175 .179 MAJOR DIA
4 PLACES
.230 .260
.163 .168 DIA
SECTION A-A
4 'S' HOLES
62° 58°
.090 .095 DIA
.068 .072 DIA
1.007
.090 .095 DIA
SECTION B-B & C-C


A
.140
.080
.031 R
.080

REVISIONS TDRR 00781			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	4/17/63	AT. WK
B	REVISED PER TDRR 01180	5.8.63	AT WK

(4)

D

C

B

A

1007003 B

3	22-06E	INSERT SCREW-LOCKING	1
QT' REQ	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	F.ND NO

LIST OF MATERIALS

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
D C DIFFERENTIAL AMPLIFIER
AND PRECISION VOLTAGE REFERENCE

ANGLES $\pm\frac{1}{2}°$

TION LAB

DATE 12-11-62

2FEB63

2-13-63

2-18-63

13Feb63

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	J	1007003

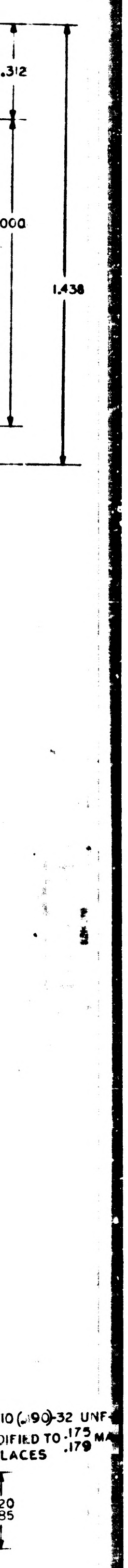
SCALE 5:1 WT SHEET 1 OF 1

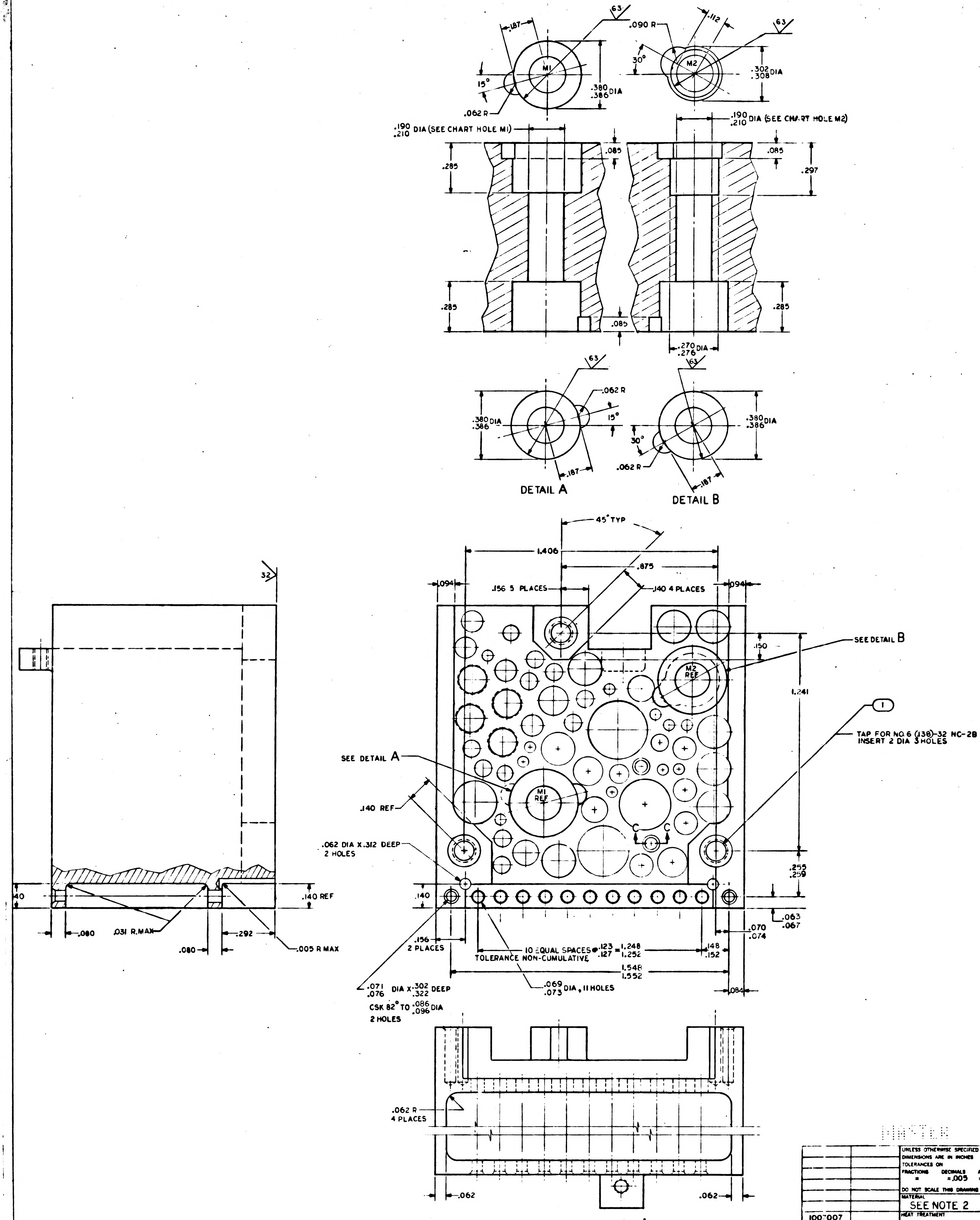
1

(34)

1007003	B

SYM	DESCRIPTION
A	REVISED PER TDRR
B	REVISED PER TDRR 0/1


.312
.000
1.438
10 (.190)-32 UNF
DIFIED TO .175/.179 MA
LACES
.120
.135


.187
63
.090 R
.112
63
30°
M1
M2
15°
.302/.308 DIA
.380/.386 DIA
.062 R
.190/.210 DIA (SEE CHART HOLE M1)
.190/.210 DIA (SEE CHART HOLE M2)
.085
.085
.285
.297
.285
.085
.285
.270/.276 DIA
63
63
.062 R
.380/.386 DIA
15°
.380/.386 DIA
30°
.187
.062 R
.187
DETAIL A
DETAIL B
45° TYP
1.406
.875
.094
.156 5 PLACES
.140 4 PLACES
.094
.150
SEE DETAIL B
M2 REF
1.241
1
TAP FOR NO.6 (.138)-32 NC-2B
INSERT 2 DIA 3 HOLES
SEE DETAIL A
M1 REF
.140 REF
C
C
.062 DIA X .312 DEEP
2 HOLES
.255/.259
.140
.063/.067
.070/.074
.156
2 PLACES
10 EQUAL SPACES @ .123/.127 = 1.248/1.252
TOLERANCE NON-CUMULATIVE
.148/.152
1.548/1.552
.069/.073 DIA, 11 HOLES
.084
.071/.076 DIA X .302/.322 DEEP
CSK 82° TO .086/.096 DIA
2 HOLES
32
.40
.140 REF
.080
.031 R.MAX
.080
.292
.005 R MAX
.062 R
4 PLACES
.062
.062

MASTER

3	NAS 1222-06E	INSERT SCREW-LOCK
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE DESCRIPTION

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±1/2°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

1007007	
NEXT ASSY	USED ON
APPLICATION	

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN W. Horgan DATE 8-11-62
CHECKED W. J. Gifford 2 FEB 63
APPROVAL D. A. Tost 2-13-63
APPROVAL

NASA APPROVAL W. J. Rhine 2-19-63
MIT APPROVAL W. Kupfer 13 Feb 63

MANNED SPACECRA
HOUSTON, TEXA

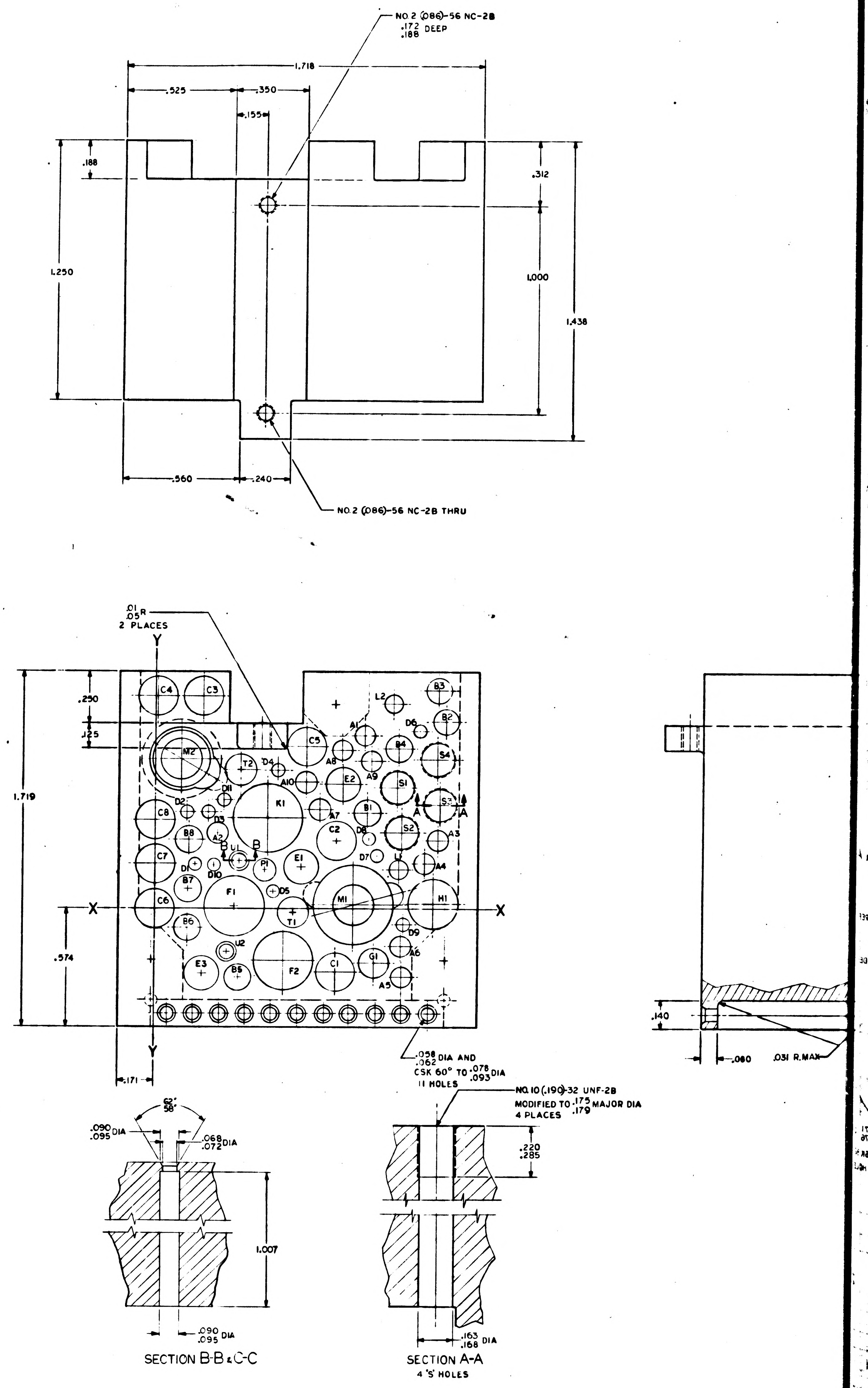
HEATSIN
D C DIFFERENTIAL
AND PRECISION VOLTA

CODE IDENT NO | SIZE J | NASA 100
SCALE 5:1 | WT

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	1.002	.834	.006	.099 .103	12
A2	.299	.366			
A3	1.353	.328			
A4	1.290	.216			
A5	1.182	-.330			
A6	1.178	-.183			
A7	.788	.477			
A8	.893	.762			
A9	1.035	.712			
A10	.720	.610			
B1	1.015	.462	.006	.127 .131	8
B2	1.390	.903			
B3	1.353	1.055			
B4	1.164	.772			
B5	.400	-.332			
B6	.155	-.092			
B7	.158	.096			
B8	.164	.330			
C1	.867	-.307	.006	.181 .185	8
C2	.868	.326			
C3	.228	1.024			
C4	.011	1.024			
C5	.722	.781			
C6	.000	.000			
C7	.000	.214			
C8	.000	.426			
D1	.192	.214	.006	.058 .062	11
D2	.150	.462			
D3	.255	.462			
D4	.586	.664			
D5	.566	.084			
D6	1.267	.857			
D7	1.062	.257			
D8	1.024	.338			
D9	1.189	-.074			
D10	.284	.210			
D11	.328	.522			
E1	.699	.202	.006	.165 .169	3
E2	.897	.600			
E3	.228	-.315			
F1	.382	.011	.006	.282 .289	2
F2	.617	-.252			
G1	1.051	-.263	.006	.143 .147	1
H1	1.333	.024	.006	.237 .241	1
K1	.538	.436	.006	.329 .336	1
L1	1.166	.190	.006	.092 .096	2
L2	1.138	.988			
M1	.949	.017	.006	SEE DETAIL A	1
M2	.123	.720	.006	SEE DETAIL B	1
P1	.526	.188	.006	.105 .109	1
S1	1.159	.584	.006	SEE SECTION A-A	4
S2	1.181	.366			
S3	1.363	.500			
S4	1.349	.722			
T1	.662	-.009	.006	.146 .150	2
T2	.410	.670			
U1	.404	.232	.006	SEE SECTION B-B&C-C	2
U2	.346	-.208			

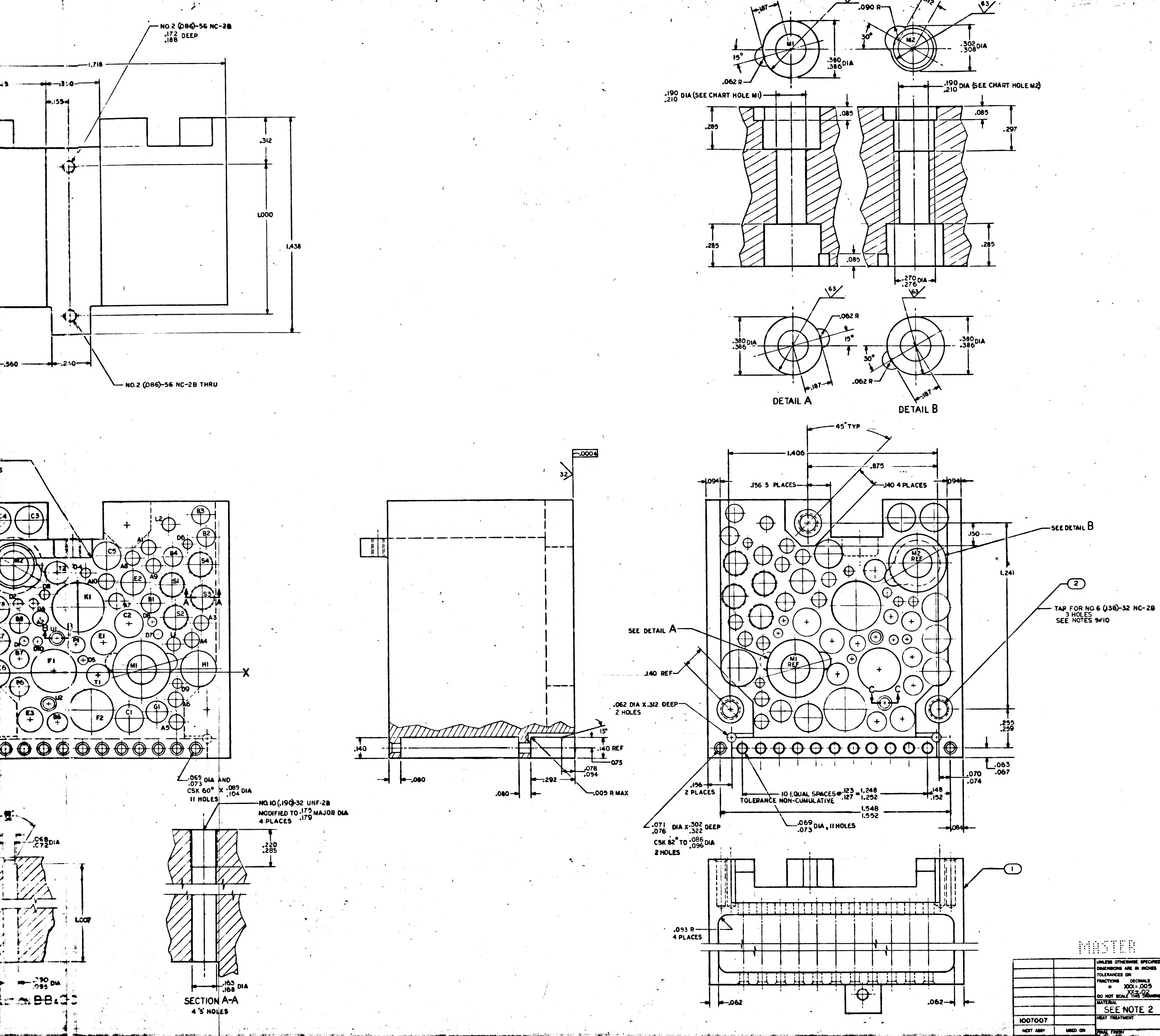
NOTES

1-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2-MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3-UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4-TRUE POSITIONING AS SHOWN IN CHART
5-FLATNESS TO BE WITHIN .010
6-UNLESS OTHERWISE SPECIFIED $\sqrt{}^{125}$ ALL OVER
7-ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8-REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9-COAT THREAD AND FIND NO.1 WITH MIL P-8585 WET ZINC CHROMATE PRIMER
10-INSTALL FIND NO.1 PER MS-33537, EXCEPT DIM. F TO BE .594, BREAK OFF DRIVING TANG
11-FINISH: ANODIZE PER MIL-M-3171A, TYPE IV


NO.2 (.086)-56 NC-2B
.172
.188 DEEP
1.718
.525
.350
.155
.188
.312
1.250
1.000
1.438
.560
.240
NO.2 (.086)-56 NC-2B THRU
.01
.05 R
2 PLACES
Y
X
.250
.125
1.719
.574
.171
C4
C3
M2
T2
D4
C5
A8
A1
L2
B3
D6
B2
B4
S4
E2
A9
S1
K1
A10
D11
D2
C8
B8
D3
A2
B1
S3
A
A
C2
D8
S2
A3
A7
U1
B
B
P1
E1
D7
L1
A4
C7
D1
D10
B7
F1
D5
M1
H1
C6
T1
B6
D9
U2
A6
E3
B5
F2
C1
G1
A5
.058
.062 DIA AND
CSK 60° TO .078
.093 DIA
11 HOLES
NO.10 (.190)-32 UNF-2B
MODIFIED TO .175
.179 MAJOR DIA
4 PLACES
.220
.285
.163
.168 DIA
SECTION A-A
4 'S' HOLES
62°
58°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA
SECTION B-B & C-C
.140
.080
.031 R.MAX

1007003 C

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	[illegible]	[illegible]
B	REVISED PER TDRR 01180	5-8-63	QT
C	REVISED PER TDRR 01872	7-2-63	JJA



NO.2 (086)-56 NC-2B .172 .188 DEEP
1.718
.350
.155
.312
1.000
1.438
.560
.210
NO.2 (086)-56 NC-2B THRU
63
.187
M1
15°
.062 R
.380 .386 DIA
.090 R
.112
30°
M2
.302 .308 DIA
.190 .210 DIA (SEE CHART HOLE M1)
.190 .210 DIA (SEE CHART HOLE M2)
.085
.285
.297
.270 .276 DIA
.062 R
DETAIL A
DETAIL B
45° TYP
1.406
.875
.094
.156 5 PLACES
.140 4 PLACES
.150
SEE DETAIL B
1.241
2
TAP FOR NO.6 (.138)-32 NC-2B 3 HOLES SEE NOTES 9 & 10
SEE DETAIL A
.140 REF
.062 DIA X .312 DEEP 2 HOLES
M1 REF
M2 REF
C
.255 .259
.063 .067
.070 .074
.156 2 PLACES
10 EQUAL SPACES @ .123 .127 = 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148 .152
1.548 1.552
.084
.071 .076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 HOLES
.069 .073 DIA, 11 HOLES
1
.093 R 4 PLACES
.062
.0004
32
.140
.080
.292
15°
.140 REF
.075
.078 .094
.005 R MAX
.069 .073 DIA AND CSK 60° X .089 .104 DIA 11 HOLES
NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA 4 PLACES
.220 .285
.068 .072 DIA
1.007
.090 .095 DIA
.163 .168 DIA
SECTION A-A
4 'S' HOLES
BB
X
A
C1 C2 C3 C4 C5 E1 E2 E3 F1 F2 G1 H1 K1 B1 B2 B3 B4 B5 B6 B7 B8 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 S1 S2 S3 S4 T1 T2 U1 U2 L2 M1 M2

MASTER

3	NAS 1222-06E	INSERT SCREW-LOCKING	2
1	1007003-1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007007	
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX±.005 XX±.02 ANGLES ±½°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 11

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN W. Horgan DATE 2-4-63
CHECKED W. J. Gifford 2 FEB 63
APPROVAL [illegible] 2-13-63
APPROVAL
NASA APPROVAL [illegible] 2-13-63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
D C DIFFERENTIAL AMPLIFIER
AND PRECISION VOLTAGE REFERENCE

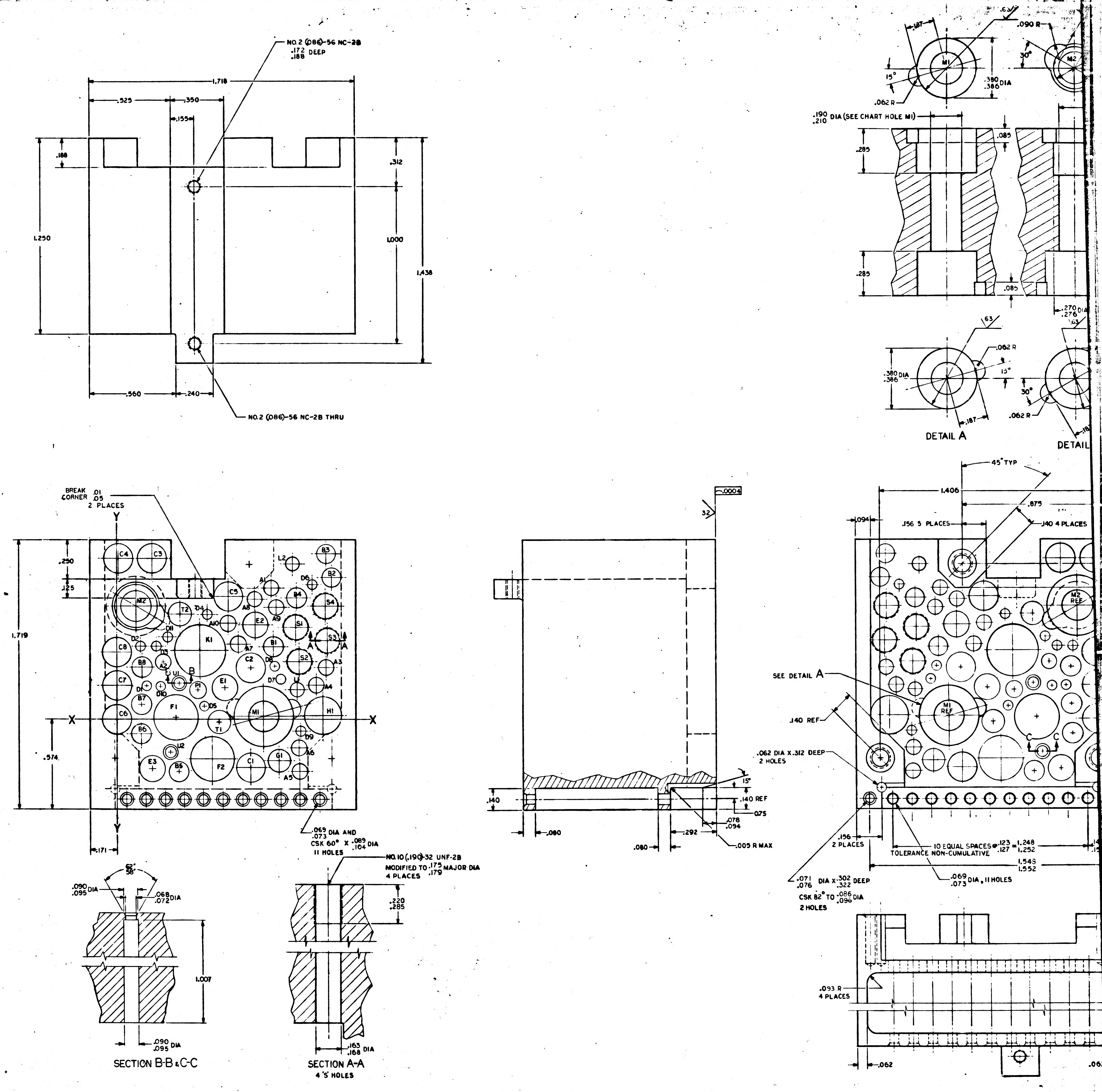
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007003
SCALE 5/1
SHEET 1

E2 1007003

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	1.002	.834	.006	.099 .103	12
A2	.299	.366			
A3	1.353	.328			
A4	1.290	.216			
A5	1.182	-.330			
A6	1.178	-.183			
A7	.788	.477			
A8	.893	.762			
A9	1.035	.712			
A10	.720	.610			
B1	1.015	.462	.006	.127 .131	8
B2	1.390	.903			
B3	1.353	1.055			
B4	1.164	.772			
B5	.400	-.332			
B6	.155	-.092			
B7	.158	.096			
B8	.164	.330			
C1	.867	-.307	.006	.181 .185	8
C2	.868	.326			
C3	.228	1.024			
C4	.011	1.024			
C5	.722	.781			
C6	.000	.000			
C7	.000	.214			
C8	.000	.426			
D1	.192	.214	.006	.058 .062	11
D2	.150	.462			
D3	.255	.462			
D4	.586	.664			
D5	.566	.084			
D6	1.267	.857			
D7	1.062	.257			
D8	1.024	.338			
D9	1.189	-.074			
D10	.284	.210			
D11	.328	.522			
E1	.699	.202	.006	.165 .169	3
E2	.897	.600			
E3	.228	-.315			
F1	.382	.011	.006	.282 .289	2
F2	.617	-.252			
G1	1.051	-.263	.006	.143 .147	1
H1	1.333	.024	.006	.237 .241	1
K1	.538	.436	.006	.329 .336	1
L1	1.166	.190	.006	.092 .096	2
L2	1.138	.988			
M1	.949	.017	.006	SEE DETAIL A	1
M2	.123	.720	.006	SEE DETAIL B	1
P1	.526	.188	.006	.105 .109	1
S1	1.159	.584	.006	SEE SECTION A-A	4
S2	1.181	.366			
S3	1.363	.500			
S4	1.349	.722			
T1	.662	-.009	.006	.146 .150	2
T2	.410	.670			
U1	.404	.232	.006	SEE SECTION B-B&C-C	2
U2	.346	-.208			

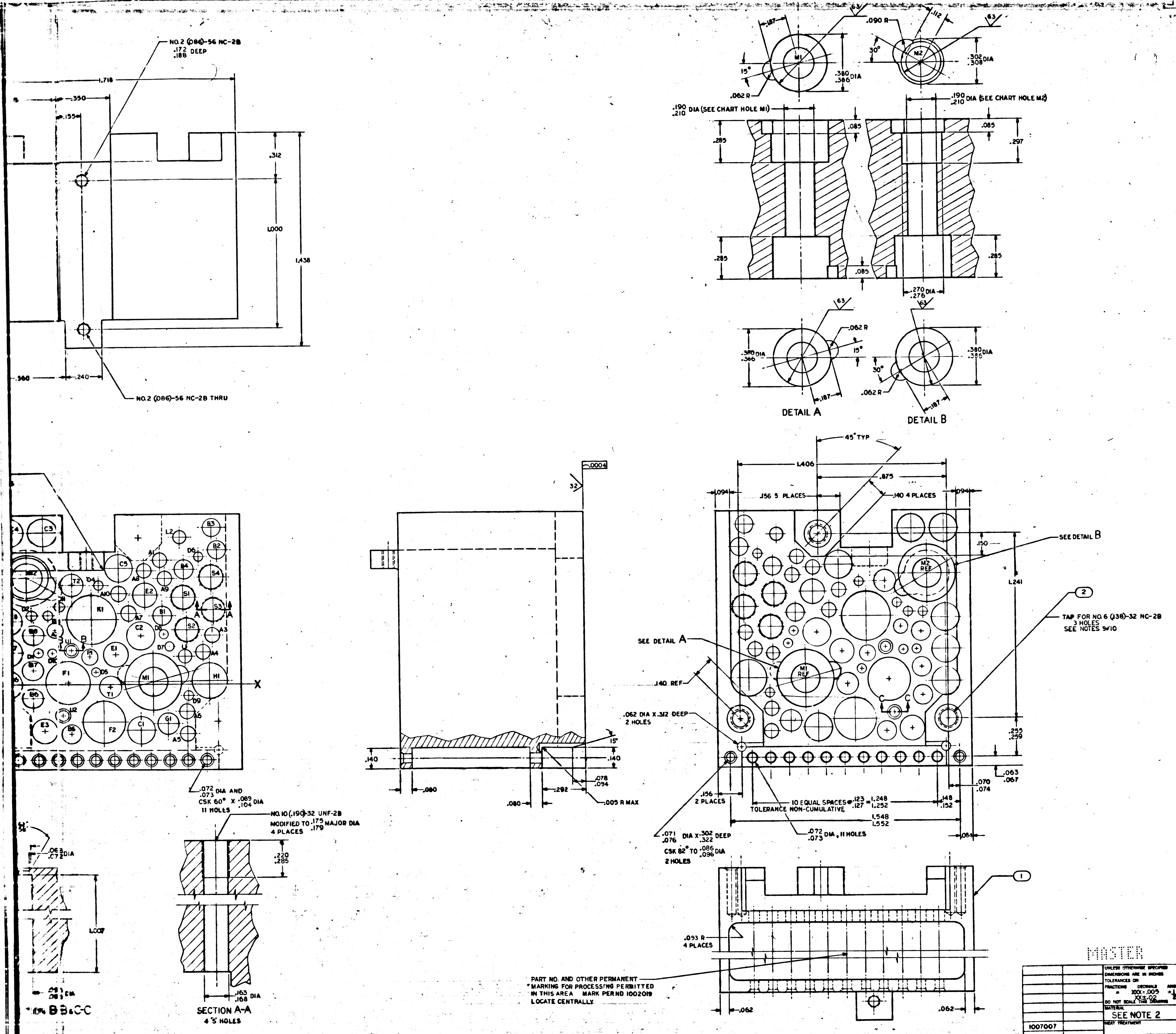
NOTES

1-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2-MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3-UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4-TRUE POSITIONING AS SHOWN IN CHART
5-FLATNESS TO BE WITHIN .010
6-UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7-ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8-REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9-COAT THREAD AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER
10-INSTALL FIND NO.2 PER MS-33646, EXCEPT DIM. F TO BE .594, BREAK OFF DRIVING TANG
11-FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-3171A, TYPE IV


NO.2 (.086)-56 NC-2B .172 .188 DEEP
1.718
.525
.350
.155
.188
.312
1.250
1.000
1.438
.560
.240
NO.2 (.086)-56 NC-2B THRU
BREAK CORNER .01 .05 2 PLACES
Y
X
.250
.125
1.719
.574
.171
.069 .073 DIA AND CSK 60° X .089 .104 DIA 11 HOLES
.0004
32
15°
.140
.140 REF
.075
.078 .094
.080
.292
.005 R MAX
SECTION B-B & C-C
.090 .095 DIA
.068 .072 DIA
1.007
.090 .095 DIA
SECTION A-A
4 'S' HOLES
NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA 4 PLACES
.220 .285
.163 .168 DIA
.187
.63
.090 R
30°
15°
.380 .386 DIA
.062 R
.190 .210 DIA (SEE CHART HOLE M1)
.085
.285
.270 .276 DIA
DETAIL A
DETAIL
45° TYP
1.406
.875
.094
.156 5 PLACES
.140 4 PLACES
M2 REF
M1 REF
SEE DETAIL A
.140 REF
.062 DIA X .312 DEEP 2 HOLES
.156 2 PLACES
10 EQUAL SPACES @ .123 .127 = 1.248 1.252
TOLERANCE NON-CUMULATIVE
1.545 1.552
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .090 DIA 2 HOLES
.069 .073 DIA, 11 HOLES
.093 R 4 PLACES
.062

E1 1007003

(H)	A	REVISED PER TDRR 00873		
	B	REVISED PER TDRR 01180	5-8-63	DT WK
(M)	C	REVISED PER TDRR 01872	7-2-63	JJM WK
	D	REVISED PER TDRR 03851		WK
	E	REVISED PER TDRR 03853		WK



NO.2 (.086)-56 NC-2B .172 .188 DEEP
1.718
.350
.155
.312
1.000
1.438
.380
.240
NO.2 (.086)-56 NC-2B THRU
.187
63
.090 R
.112
M1
M2
15°
30°
.380 .386 DIA
.302 .308 DIA
.062 R
.190 .210 DIA (SEE CHART HOLE M1)
.190 .210 DIA (SEE CHART HOLE M2)
.085
.285
.297
.270 .276 DIA
DETAIL A
DETAIL B
45° TYP
1.406
.875
.094
.156 5 PLACES
.140 4 PLACES
SEE DETAIL B
.150
1.241
2
TAP FOR NO.6 (.138)-32 NC-2B
3 HOLES
SEE NOTES 9&10
SEE DETAIL A
.140 REF
.062 DIA X .312 DEEP
2 HOLES
M1 REF
M2 REF
.255 .259
.063 .067
.070 .074
.156 2 PLACES
10 EQUAL SPACES @ .123 .127 = 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148 .152
1.548 1.552
.084
.071 .076 DIA X .302 .322 DEEP
CSK 82° TO .086 .090 DIA
2 HOLES
.072 .073 DIA, 11 HOLES
1
.093 R
4 PLACES
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA MARK PER NO 1002019 LOCATE CENTRALLY
.062
.0004
32
.140
.080
.292
15°
.078 .094
.005 R MAX
K1 M1 F1 F2 C1 C2 C3 C5 E1 E2 E3 G1 H1 S1 S2 S3 S4 B1 B2 B3 B6 B7 B8 T1 T2 A1 A3 A4 A5 A6 A8 A9 A10 D4 D5 D6 D7 D8 D9 L2 U1 U2 P1 M2
A A B C X
.072 .073 DIA AND CSK 60° X .089 .104 DIA
11 HOLES
NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA
4 PLACES
.220 .285
.163 .168 DIA
SECTION A-A
4 'S' HOLES
.063 .072 DIA
1.007
B-B & C-C

3	MS21209-C0 620	INSERT SCREW-LOCKING	2
1	1007003-1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

MASTER

1007007	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .02 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN W. Horgan DATE 12-4-62
CHECKED W. J. Gifford 2 FEB 63
APPROVAL 2-12-63
APPROVAL
NASA APPROVAL 2-18-63
MIT APPROVAL 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
D C DIFFERENTIAL AMPLIFIER AND PRECISION VOLTAGE REFERENCE

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007003
SCALE 5:1
SHEET 1 OF 1

PHOTOGRAPHIC SCALE ONLY

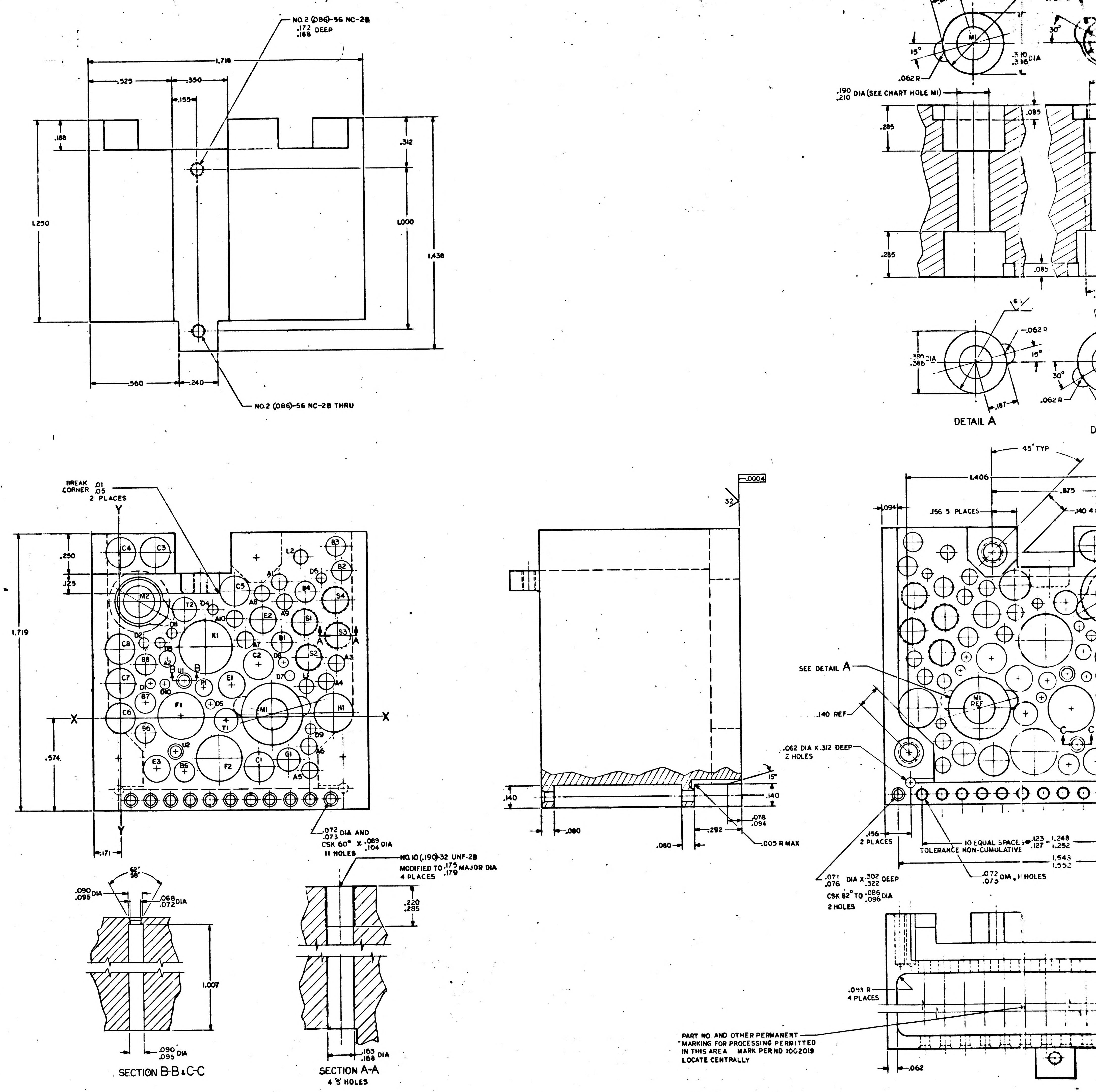
F2 1007003

1007003 E

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖-DIA	HOLE DIA	QTY
A1	1.002	.834	.006	.099 .103	12
A2	.299	.366			
A3	1.353	.328			
A4	1.290	.216			
A5	1.182	-.330			
A6	1.178	-.183			
A7	.788	.477			
A8	.893	.762			
A9	1.035	.712			
A10	.720	.610			
B1	1.015	.462	.006	.127 .131	8
B2	1.390	.903			
B3	1.353	1.055			
B4	1.164	.772			
B5	.400	-.332			
B6	.155	-.092			
B7	.158	.096			
B8	.164	.330			
C1	.867	-.307	.006	.181 .185	8
C2	.868	.326			
C3	.228	1.024			
C4	.011	1.024			
C5	.722	.781			
C6	.000	.000			
C7	.000	.214			
C8	.000	.426			
D1	.192	.214	.006	.058 .062	11
D2	.150	.462			
D3	.255	.462			
D4	.586	.664			
D5	.566	.084			
D6	1.267	.857			
D7	1.062	.257			
D8	1.024	.338			
D9	1.189	-.074			
D10	.284	.210			
D11	.328	.522			
E1	.699	.202	.006	.165 .169	3
E2	.897	.600			
E3	.228	-.315			
F1	.382	.011	.006	.282 .289	2
F2	.617	-.252			
-					
G1	1.051	-.263	.006	.143 .147	1
H1	1.333	.024	.006	.237 .241	1
K1	.538	.436	.006	.329 .336	1
L1	1.166	.190	.006	.092 .096	2
L2	1.138	.988			
M1	.949	.017	.006	SEE DETAIL A	1
M2	.123	.720	.006	SEE DETAIL B	1
P1	.526	.188	.006	.105 .109	1
S1	1.159	.584	.006	SEE SECTION A-A	4
S2	1.181	.366			
S3	1.363	.500			
S4	1.349	.722			
T1	.662	-.009	.006	.146 .150	2
T2	.410	.670			
			.006	SEE SECTION B-B&C-C	2
U1	.404	.232			
U2	.346	-.208			

NOTES

1-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2-MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3-UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4-TRUE POSITIONING AS SHOWN IN CHART
5-FLATNESS TO BE WITHIN .010
6-UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7-ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8-REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9-COAT THREAD AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER
10-INSTALL FIND NO.2 PER MS-33646, EXCEPT DIM. F TO BE .594, BREAK OFF DRIVING TANG
11-FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-3171A, TYPE IV

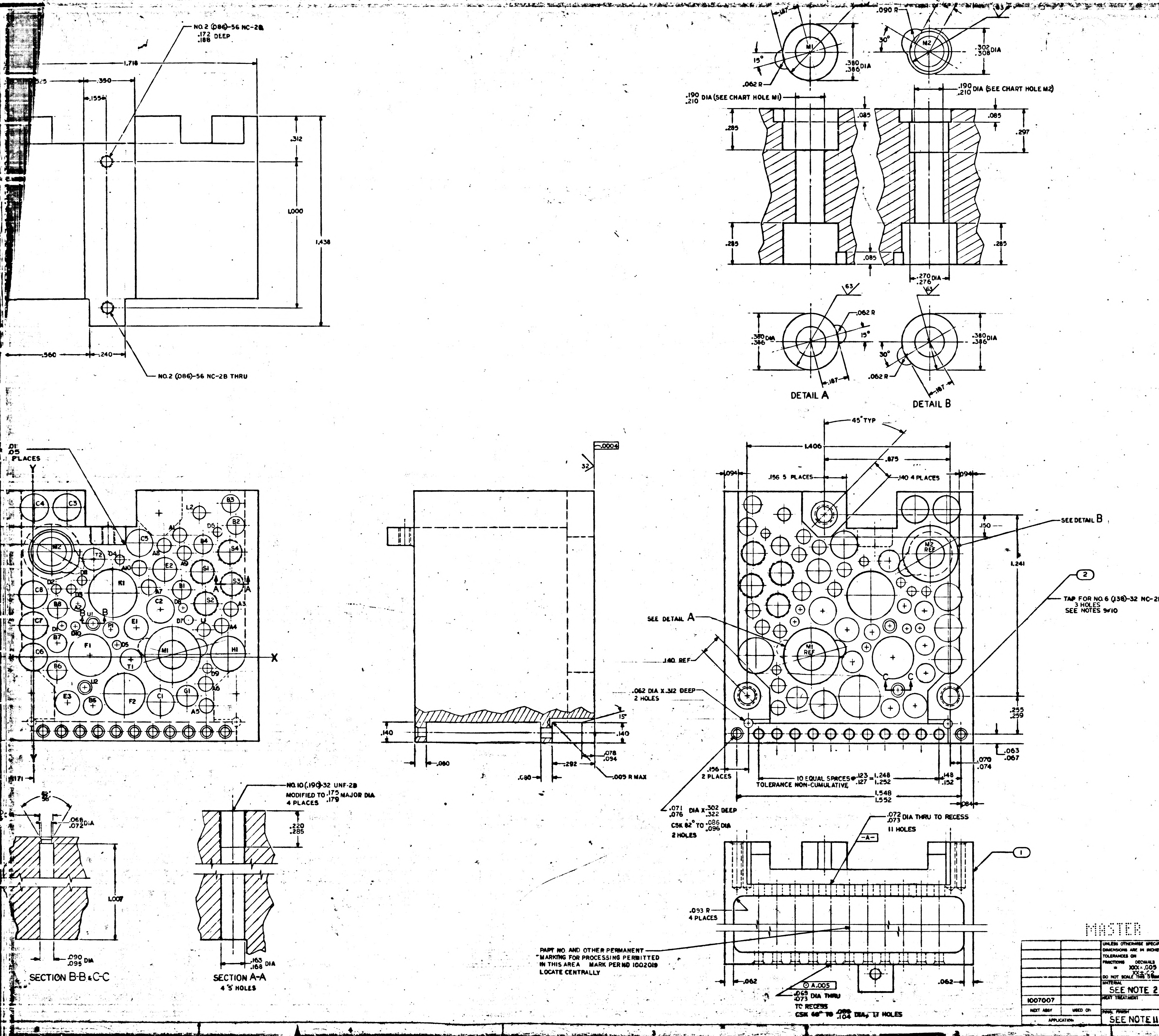

NO.2 (.086)-56 NC-2B .172 .188 DEEP
1.718
.525
.350
.155
.188
.312
1.250
1.000
1.438
.560
.240
NO.2 (.086)-56 NC-2B THRU
BREAK CORNER .01 .05 2 PLACES
Y
.250
.125
1.719
.574
X
.171
.072 .073 DIA AND CSK 60° X .089 .104 DIA 11 HOLES
NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA 4 PLACES
.090 .095 DIA
.068 .072 DIA
1.007
.220 .285
.163 .168 DIA
SECTION B-B & C-C
SECTION A-A
4 'S' HOLES
.0004
32
.140
.080
.292
.078 .094
.005 R MAX
15°
.190 .210 DIA (SEE CHART HOLE M1)
.187
.062 R
.310 .316 DIA
30°
.285
.085
.380 .386 DIA
DETAIL A
45° TYP
1.406
.875
.094
.156 5 PLACES
SEE DETAIL A
.140 REF
.062 DIA X .312 DEEP 2 HOLES
.156 2 PLACES
10 EQUAL SPACE @ .123 .127 = 1.248 1.252
TOLERANCE NON-CUMULATIVE
1.543 1.552
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2 HOLES
.072 .073 DIA, 11 HOLES
.093 R 4 PLACES
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA MARK PER ND 1062019 LOCATE CENTRALLY
.062

PHOTOGRAPHIC SCALE ONLY

F1

1007003

B	REVISED PER TDRR 01180			
C	REVISED PER TDRR 01872	2-3-63		
D	REVISED PER TDRR 03851			
E	REVISED PER TDRR 03853			
F	REVISED PER TDRR 05435			


NO.2 (.086)-56 NC-2B
.172 .188 DEEP
1.718
.350
.155
.312
1.000
1.438
.560
.240
NO.2 (.086)-56 NC-2B THRU
.187
.090 R
M1
M2
15°
30°
.380 .386 DIA
.302 .308 DIA
.062 R
.190 .210 DIA (SEE CHART HOLE M1)
.190 .210 DIA (SEE CHART HOLE M2)
.085
.285
.297
.270 .276 DIA
63
DETAIL A
DETAIL B
.01 .05 PLACES
Y
X
C4
C3
L2
B3
B2
M2
C5
A1
D5
B4
S4
E2
A9
S1
S3
R1
B1
C8
C2
S2
A3
B8
E1
D7
A4
C7
B7
F1
D5
M1
H1
C6
T1
B6
D9
E3
B5
F2
C1
G1
A5
.0004
32
15°
.140
.080
.292
.078 .094
.009 R MAX
45° TYP
1.406
.875
.094
.156 5 PLACES
.140 4 PLACES
.150
SEE DETAIL B
1.241
M2 REF
M1 REF
②
TAP FOR NO.6 (.138)-32 NC-2B
3 HOLES
SEE NOTES 9&10
SEE DETAIL A
.140 REF
.062 DIA X .312 DEEP
2 HOLES
.255 .259
.063 .067
.070 .074
.156
2 PLACES
10 EQUAL SPACES @ .123 .127 = 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148 .152
1.548 1.552
.084
.071 .076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 HOLES
.072 .073 DIA THRU TO RECESS
11 HOLES
-A-
①
.093 R
4 PLACES
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA MARK PER NO 1002019 LOCATE CENTRALLY
.062
⊙ A.005
.069 .073 DIA THRU
TC RECESS
CSK 60° TO .099 .104 DIA, 11 HOLES
.171
82° 98°
.090 .095
.068 .072 DIA
1.007
.090 .095 DIA
SECTION B-B & C-C
NO.10 (.190)-32 UNF-2B
MODIFIED TO .175 .179 MAJOR DIA
4 PLACES
.220 .285
.163 .168 DIA
SECTION A-A
4 'S HOLES

MASTER

3	MS21209-C0 620	INSERT SCREW-LOCKING	2
1	1007003-1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1007007	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ±.005 XX ±.02 ANGLES ±½°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN W. Horgan DATE 2-4-63
CHECKED W. J. Gifford 2 FEB 63
APPROVAL 2-13-63
APPROVAL
NASA APPROVAL 2-19-63
MIT APPROVAL 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
D C DIFFERENTIAL AMPLIFIER
AND PRECISION VOLTAGE REFERENCE

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007003
SCALE 4:1
WT
SHEET 1 OF 1

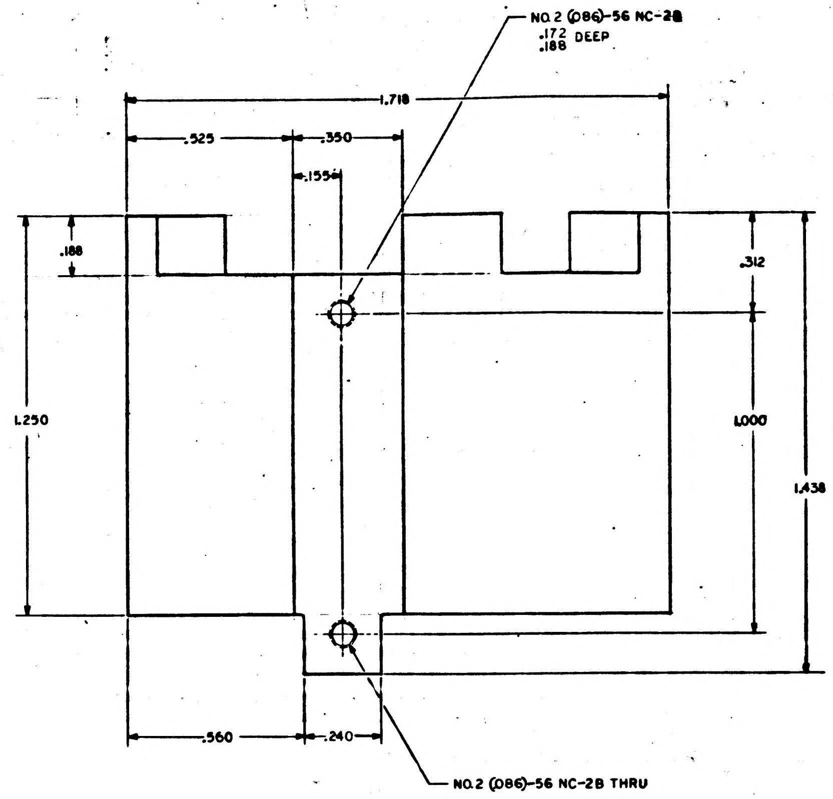
1007003 F

PHOTOGRAPHIC SCALE ONLY

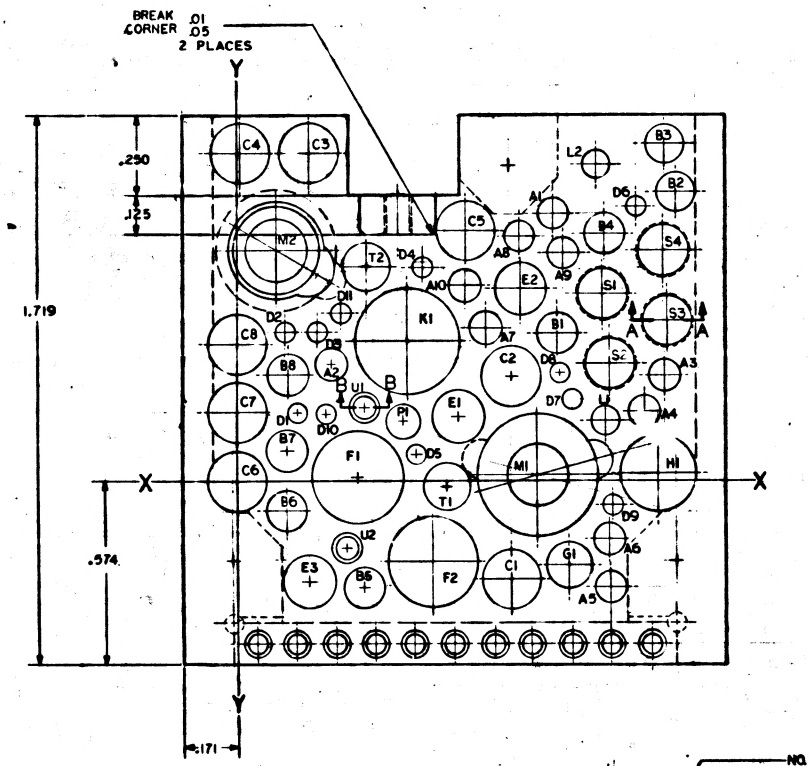
SEE NOTE 12

HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
A1	1.002	.834		.099 .103	12
A2	.299	.366			
A3	1.353	.328			
A4	1.290	.216			
A5	1.182	-.330			
A6	1.178	-.183			
A7	.788	.477			
A8	.893	.762			
A9	1.035	.712			
A10	.720	.610			
B1	1.015	.462		.127 .131	8
B2	1.390	.903			
B3	1.353	1.055			
B4	1.164	.772			
B5	.400	-.332			
B6	.155	-.092			
B7	.158	.096			
B8	.164	.330			
C1	.867	-.307		.181 .185	8
C2	.868	.326			
C3	.228	1.024			
C4	.011	1.024			
C5	.722	.781			
C6	.000	.000			
C7	.000	.214			
C8	.000	.426			
D1	.192	.214		.058 .062	11
D2	.150	.462			
D3	.255	.462			
D4	.586	.664			
D5	.566	.084			
D6	1.267	.857			
D7	1.062	.257			
D8	1.024	.338			
D9	1.189	-.074			
D10	.284	.210			
D11	.328	.522			
E1	.699	.202		.165 .169	3
E2	.897	.600			
E3	.228	-.315			
F1	.382	.011		.282 .289	2
F2	.617	-.252			
G1	1.051	-.263		.143 .147	1
H1	1.333	.024		.237 .241	1
K1	.538	.436		.329 .336	1
L1	1.166	.190		.092 .096	2
L2	1.136	.988			
M1	.949	.017		SEE DETAIL A	1
M2	.123	.720		SEE DETAIL B	1
P1	.526	.188		.105 .109	1
S1	1.159	.584		SEE SECTION A-A	4
S2	1.181	.366			
S3	1.363	.500			
S4	1.349	.722			
T1	.662	-.009		.146 .150	2
T2	.410	.670			
U1	.404	.232		SEE SECTION B-B&C-C	2
U2	.346	-.208			

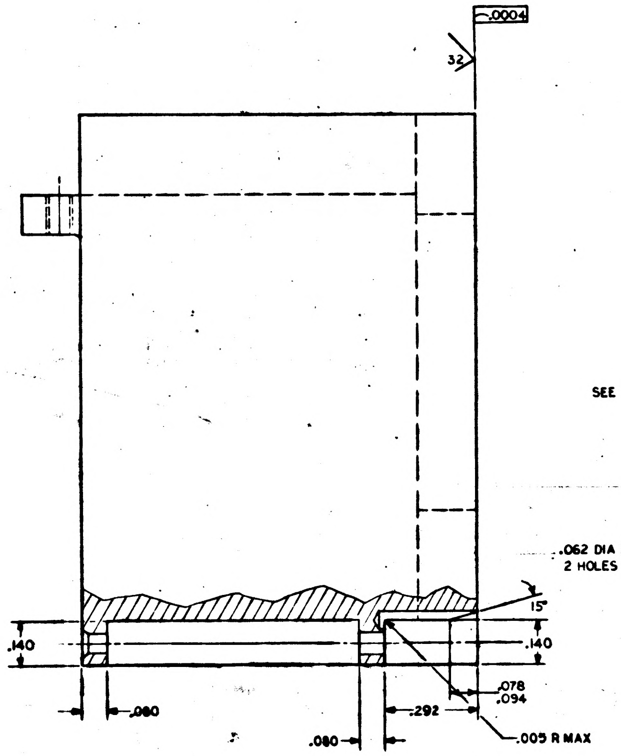
NOTES
1-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2-MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3-UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
~~4-TRUE POSITIONING AS SHOWN IN CHART~~
5-FLATNESS TO BE WITHIN .010
6-UNLESS OTHERWISE SPECIFIED 125/ ALL OVER
7-ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8-REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9-COAT THREAD AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER
10-INSTALL FIND NO.2 PER MS-33646, ~~[illegible]~~, BREAK OFF DRIVING TANG
11-FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-3171A, TYPE III
12-~~THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN AN~~ ADJACENT HOLE OR AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART.



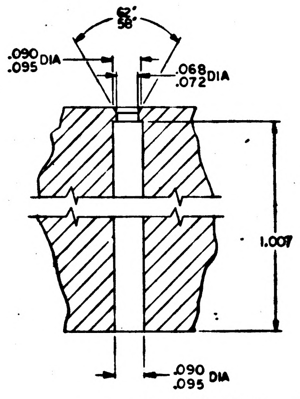
NO.2 (.086)-56 NC-2B
.172 .188 DEEP
1.718
.525
.350
.155
.188
.312
1.250
1.000
1.438
.560
.240
NO.2 (.086)-56 NC-2B THRU



BREAK CORNER .01 .05 2 PLACES
Y
X
.250
.125
1.719
.574
.171
M1
M2
K1
F1
F2
H1

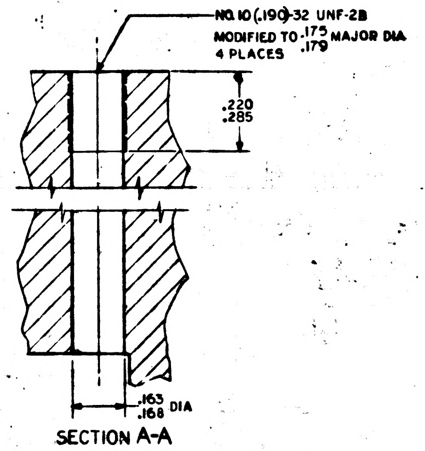


.0004
32
15°
.140
.140
.080
.080
.292
.078 .094
.005 R MAX



62° 58°
.090 .095 DIA
.068 .072 DIA
1.007
.090 .095 DIA

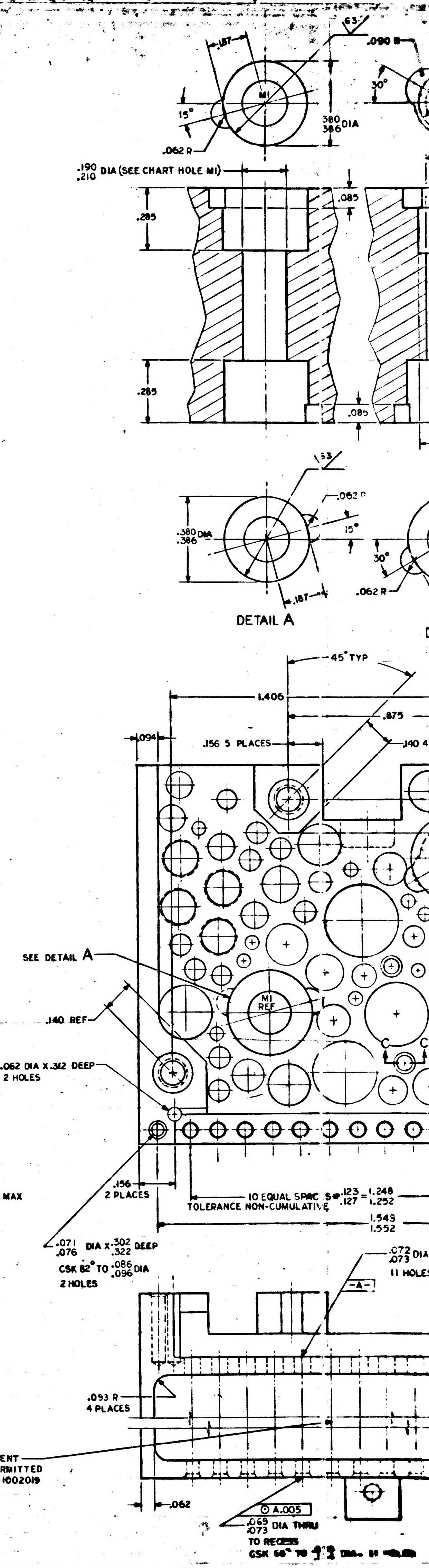
SECTION B-B & C-C



NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA 4 PLACES
.220 .285
.163 .168 DIA

SECTION A-A
4 'S' HOLES

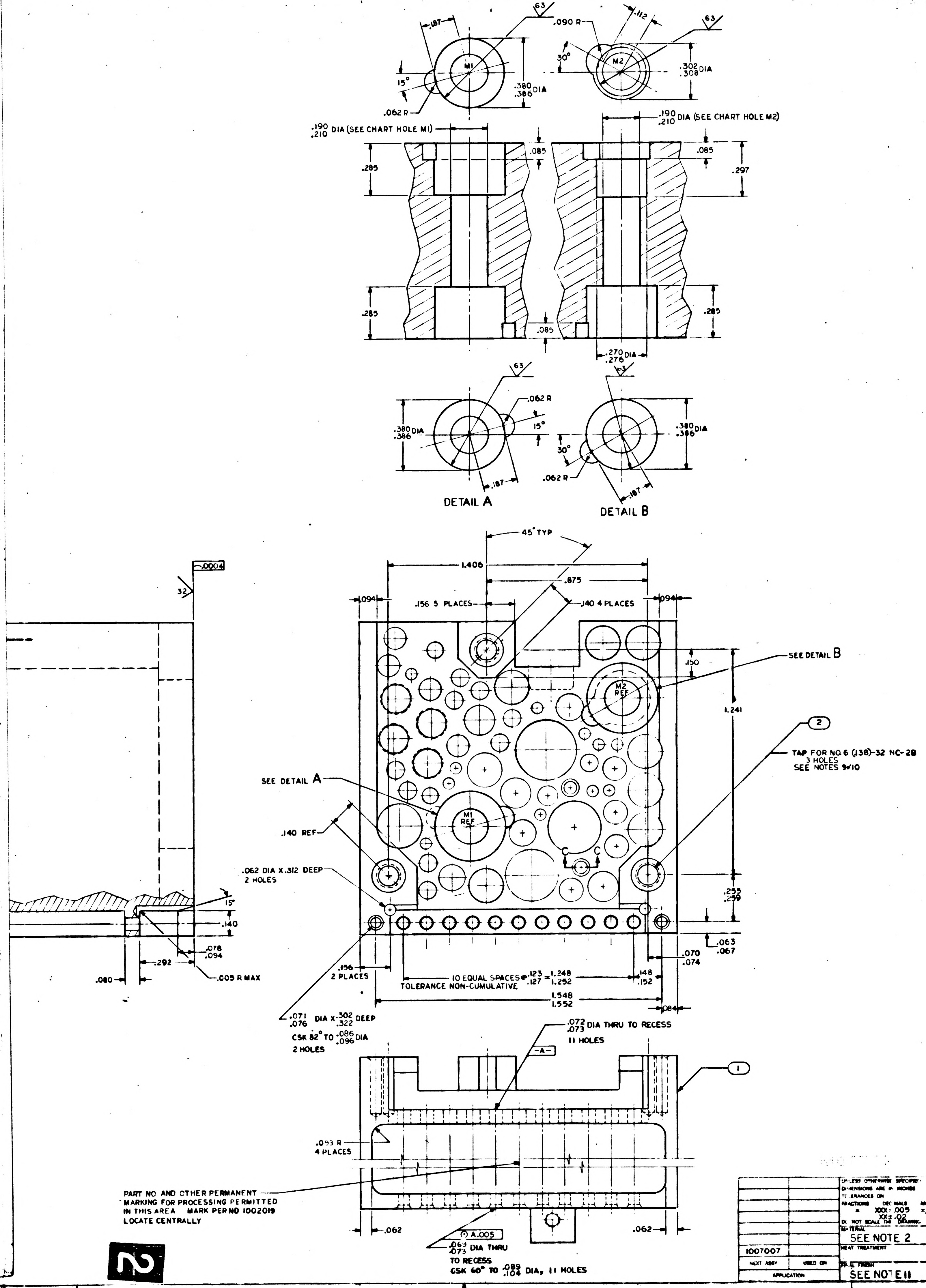
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA MARK PER ND 1002019 LOCATE CENTRALLY



.187
.090
30°
15°
M1
.380 .386 DIA
.062 R
.190 .210 DIA (SEE CHART HOLE M1)
.085
.285
.285
.085
53
.062 R
15°
30°
.380 .386 DIA
.187
.062 R
DETAIL A
45° TYP
1.406
.875
.094
.156 5 PLACES
.140
SEE DETAIL A
M1 REF
.140 REF
.062 DIA X .312 DEEP 2 HOLES
.156 2 PLACES
10 EQUAL SPAC S @ .123 .127 = 1.248 1.252
TOLERANCE NON-CUMULATIVE
1.549 1.552
.071 .076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 HOLES
.072 .073 DIA
11 HOLES
-A-
.093 R 4 PLACES
.062
A .005
.069 .073 DIA THRU
TO RECESS
CSK 60° TO

00 7 0 0 3

		REVISIONS TDRR 00981		
	SYM	DESCRIPTION	DATE	APPROVAL
(M)	A	REVISED PER TDRR 00873	4/17/63	A.T. WK
	B	REVISED PER TDRR 01180	6-8-63	AT WK
(M)	C	REVISED PER TDRR 01872	7-2-63	JJM WK
	D	REVISED PER TDRR 03851		WK
(M)	E	REVISED PER TDRR 03853		WK
(M)	F	REVISED PER TDRR 05435	12-31-63	WK
	G	REVISED PER TDRR 07126	31 MAR 64	JHR



63
.187
.090 R
.112
M1
M2
15°
30°
.380 .386 DIA
.302 .308 DIA
.062 R
.190 .210 DIA (SEE CHART HOLE M1)
.190 .210 DIA (SEE CHART HOLE M2)
.285
.085
.297
.270 .276 DIA
DETAIL A
DETAIL B
45° TYP
1.406
.875
.094
.156 5 PLACES
.140 4 PLACES
SEE DETAIL B
.150
1.241
M2 REF
M1 REF
2
TAP FOR NO.6 (.138)-32 NC-2B 3 HOLES SEE NOTES 9&10
SEE DETAIL A
.140 REF
.062 DIA X .312 DEEP 2 HOLES
C
.255 .259
.063 .067
.070 .074
.156 2 PLACES
10 EQUAL SPACES @ .123 .127 = 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148 .152
1.548 1.552
.084
.071 .076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 HOLES
.072 .073 DIA THRU TO RECESS
11 HOLES
-A-
1
.0004
32
15°
.140
.078 .094
.292
.080
.005 R MAX
.093 R 4 PLACES
.062
A .005
.069 .073 DIA THRU TO RECESS
CSK 60° TO .089 .104 DIA, 11 HOLES
PART NO AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA MARK PER ND 1002019 LOCATE CENTRALLY
2

3	MS21209-C0 620	INSERT SCREW-LOCKING	2
1	1007003 - 1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS XXX ±.005 XX ±.02 ANGLES ± 1/2° DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB Cambridge Mass Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
		MATERIAL SEE NOTE 2	DRAWN W. Horgan DATE 2-11-63 CHECKED W. J. Gifford 2FEB63 APPROVAL D.A. Test 2-12-63 APPROVAL	HEATSINK D C DIFFERENTIAL AMPLIFIER AND PRECISION VOLTAGE REFERENCE
1007007		HEAT TREATMENT	NASA APPROVAL W. J. Rhine 2-18-63	CODE IDENT NO / SIZE J / NASA DRAWING NO 1007003
NEXT ASSY	USED ON			
APPLICATION		FINAL FINISH SEE NOTE 11	MIT APPROVAL W Kuff 13 Feb 63	SCALE 5:1 / WT / SHEET 1 OF 1

G 1007003

1007003 F

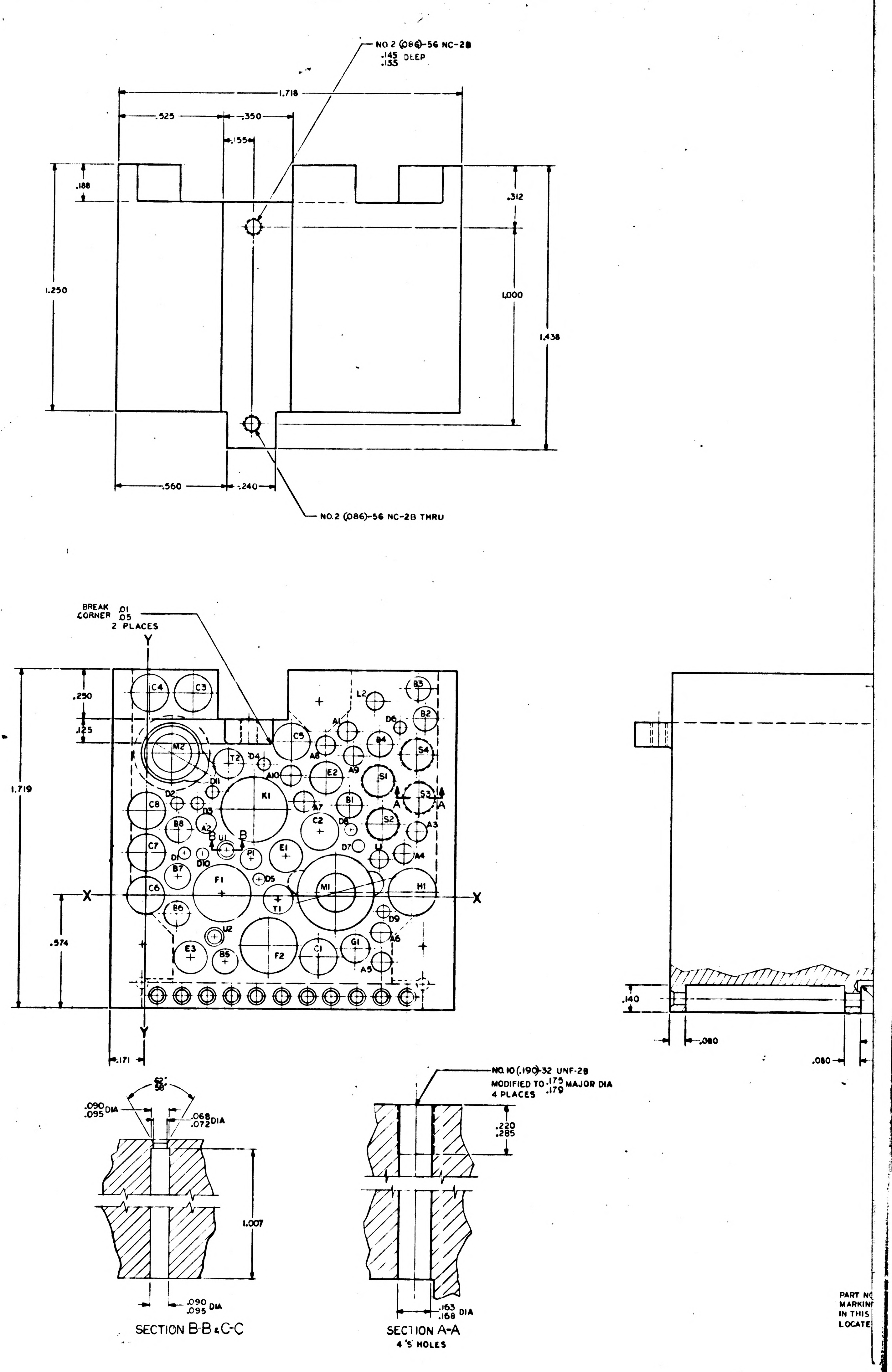
(2)

SEE NOTE 12

HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
A1	1.002	.834		.099 .103	12
A2	.299	.366			
A3	1.353	.328			
A4	1.290	.216			
A5	1.182	-.330			
A6	1.178	-.183			
A7	.788	.477			
A8	.893	.762			
A9	1.035	.712			
A10	.720	.610			
B1	1.015	.462		.127 .131	8
B2	1.390	.903			
B3	1.353	1.055			
B4	1.164	.772			
B5	.400	-.332			
B6	.155	-.092			
B7	.158	.096			
B8	.164	.330			
C1	.867	-.307		.181 .185	8
C2	.868	.326			
C3	.228	1.024			
C4	.011	1.024			
C5	.722	.781			
C6	.000	.000			
C7	.000	.214			
C8	.000	.426			
D1	.192	.214		.058 .062	11
D2	.150	.462			
D3	.255	.462			
D4	.586	.664			
D5	.566	.084			
D6	1.267	.857			
D7	1.062	.257			
D8	1.024	.338			
D9	1.189	-.074			
D10	.284	.210			
D11	.328	.522			
E1	.699	.202		.165 .169	3
E2	.897	.600			
E3	.228	-.315			
F1	.382	.011		.282 .289	2
F2	.617	-.252			
G1	1.051	-.263		.143 .147	1
H1	1.333	.024		.237 .241	1
K1	.538	.436		.329 .336	1
L1	1.166	.190		.092 .096	2
L2	1.138	.988			
M1	.949	.017		SEE DETAIL A	1
M2	.123	.720		SEE DETAIL B	1
P1	.526	.188		.105 .109	1
S1	1.159	.584		SEE SECTION A-A	4
S2	1.181	.366			
S3	1.363	.500			
S4	1.349	.722			
T1	.662	-.009		.146 .150	2
T2	.410	.670			
U1	.404	.232		SEE SECTION B-B&C-C	2
U2	.346	-.208			

NOTES

1-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2-MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3-UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
~~4-TRUE POSITIONING AS SHOWN IN CHART~~
5-FLATNESS TO BE WITHIN .010
6-UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7-ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8-REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9-COAT THREAD AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER
10-INSTALL FIND NO.2 PER MS-33646, ~~EXCEPT DIM. P TO BE .004~~, BREAK OFF DRIVING TANG
11-FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-A-8625, TYPE II
12. THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN AN ADJACENT HOLE OR AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART.

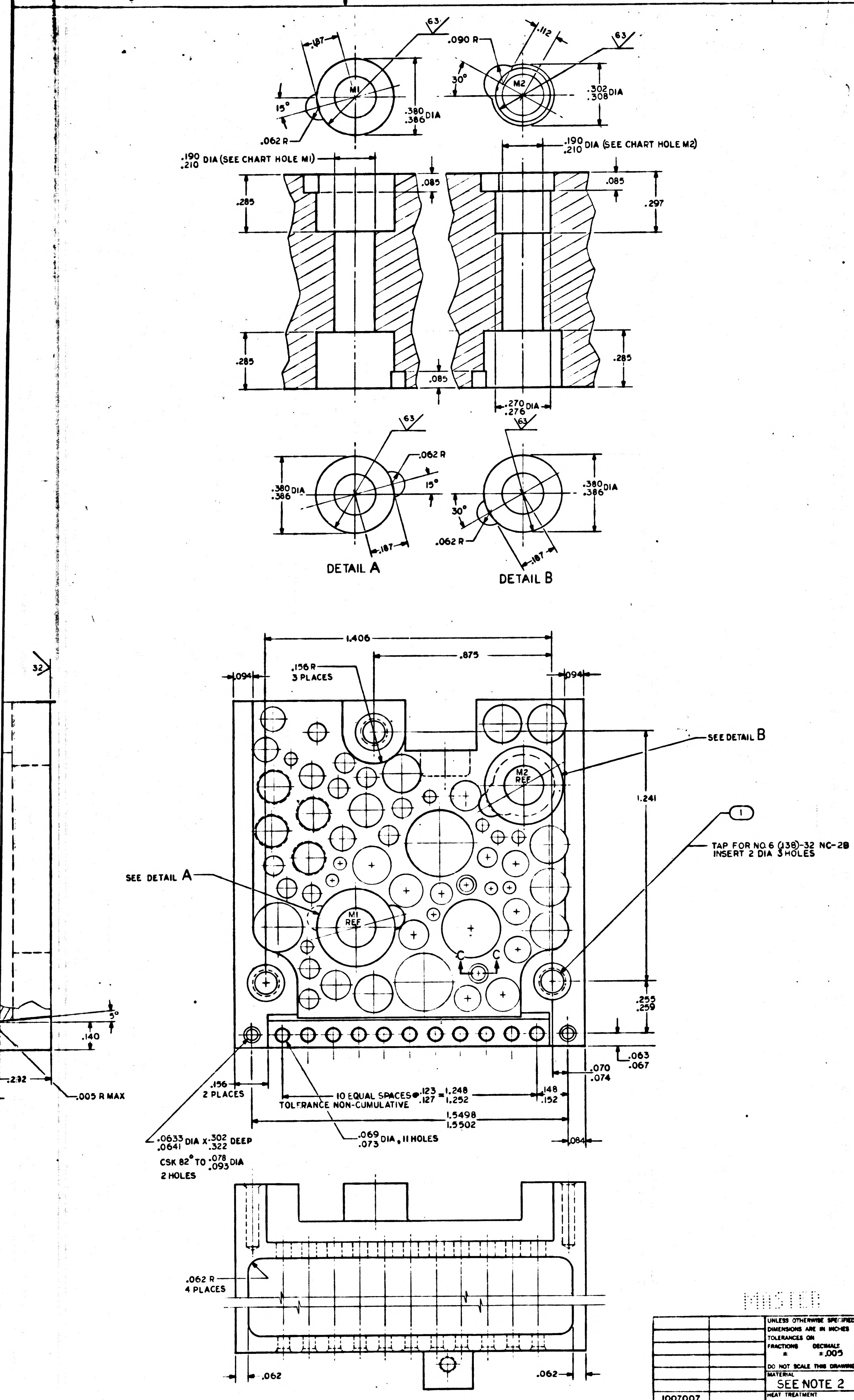


NO.2 (086)-56 NC-2B .145 .135 DEEP
1.718
.525
.350
.155
.188
.312
1.250
1.000
1.438
.560
.240
NO.2 (086)-56 NC-2B THRU
BREAK CORNER .01 .05 2 PLACES
Y
X
.250
.125
1.719
.574
.171
C4 C3 C5 L2 B3 B2 D6 A1 B4 S4 A8 A9 E2 S1 S3 A M2 T2 D4 A10 D11 K1 B1 D2 D3 C8 A7 C2 D8 S2 A3 B8 A2 U1 B P1 E1 D7 A4 C7 D1 D10 B7 F1 D5 M1 H1 C6 T1 B6 D9 U2 E3 B5 F2 C1 G1 A6 A5
.090 .095 DIA
62° 58°
.068 .072 DIA
1.007
.090 .095 DIA
SECTION B-B & C-C
NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA 4 PLACES
.220 .285
.163 .168 DIA
SECTION A-A 4'S HOLES
.140
.080
.080
PART NO MARKING IN THIS LOCATE

1007003

REVISIONS YDRR 00381

SYM	DESCRIPTION	DATE	APPROVAL



.187
63
.090 R
.112
63
M1
M2
15°
30°
.380 DIA
.386
.302 DIA
.308
.062 R
.190 DIA (SEE CHART HOLE M1)
.210
.190 DIA (SEE CHART HOLE M2)
.210
.085
.285
.297
.285
.085
.285
.270 DIA
.276
63
63
.062 R
.380 DIA
.386
15°
.380 DIA
.386
30°
.062 R
.187
.187
DETAIL A
DETAIL B
1.406
.875
.094
.094
.156 R
3 PLACES
SEE DETAIL B
M2 REF
1.241
1
TAP FOR NO.6 (.138)-32 NC-2B
INSERT 2 DIA 3 HOLES
SEE DETAIL A
M1 REF
C
C
32
5°
.140
.232
.005 R MAX
.255
.259
.063
.067
.070
.074
.156
2 PLACES
10 EQUAL SPACES @ .123 = 1.248
.127 1.252
TOLERANCE NON-CUMULATIVE
.148
.152
1.5498
1.5502
.0633 DIA X .302 DEEP
.0641 .322
CSK 82° TO .078 DIA
.093
2 HOLES
.069 DIA, 11 HOLES
.073
.084
.062 R
4 PLACES
.062
.062

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
3	NAS 1222-06E	INSERT SCREW-LOCKING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007007	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±½°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN W. Horgan DATE 12-11-62
CHECKED W. J. Gifford 2 FEB 63
APPROVAL D. A. Tost 2-13-63
APPROVAL

NASA APPROVAL 2-13-63
MIT APPROVAL 13 Feb 63

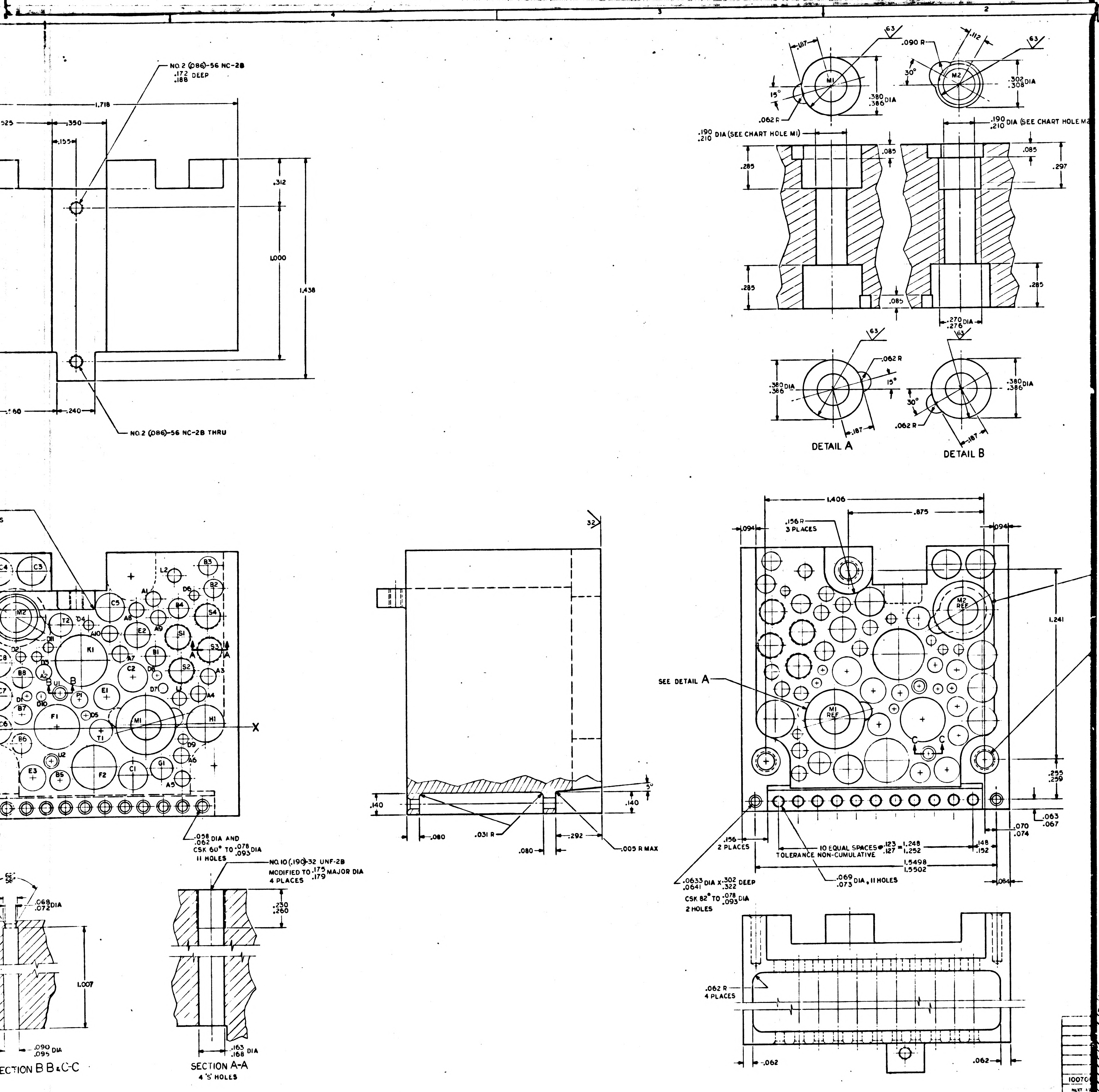
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
D C DIFFERENTIAL AMPLIFIER
AND PRECISION VOLTAGE REFERENCE

CODE IDENT NO | SIZE J | NASA DRAWING NO. 1007003

SCALE 5:1 | WT | SHEET 1 OF 1

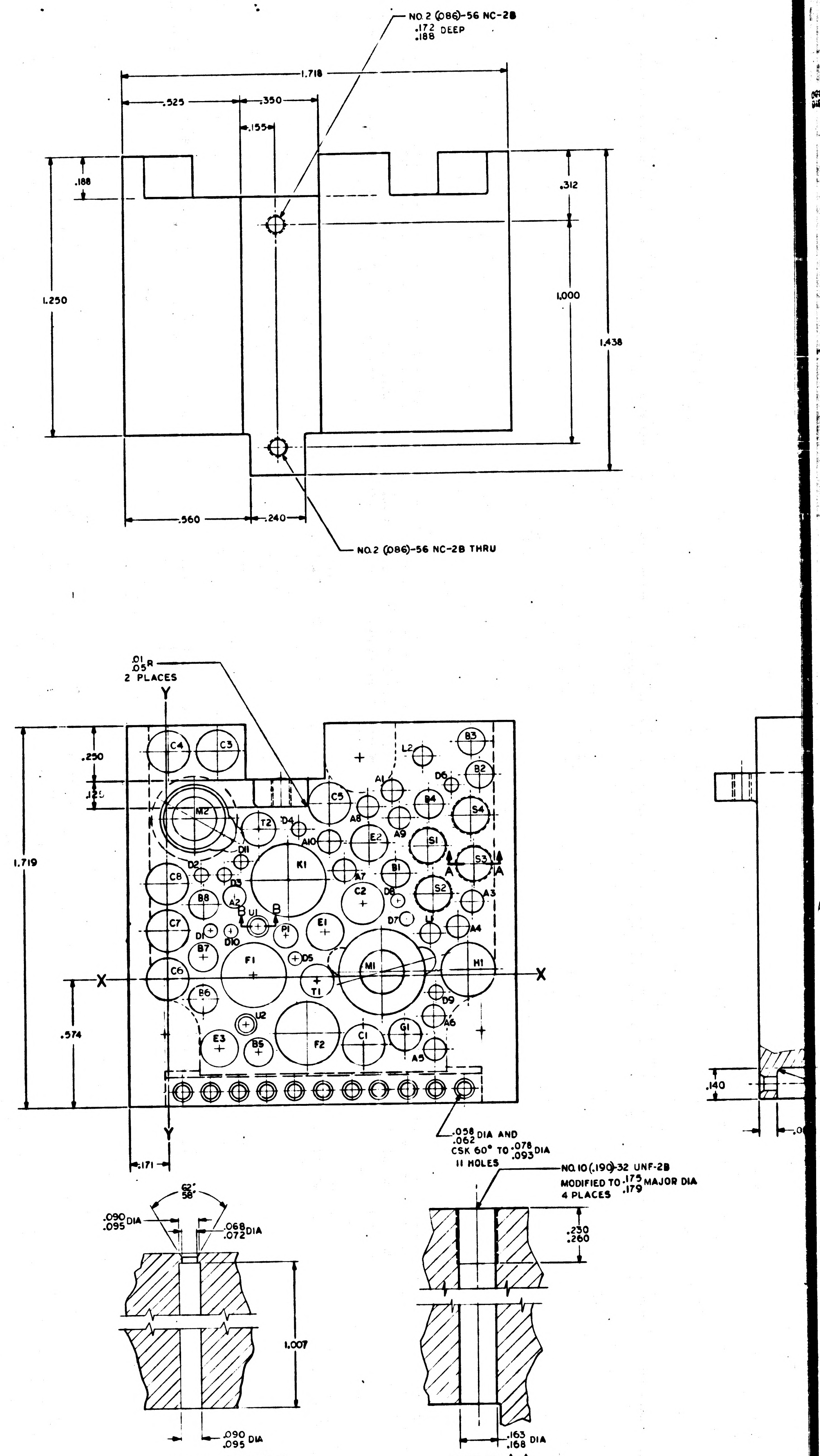
1007003


NO.2 (086)-56 NC-2B .172 .188 DEEP
1.718
.525
.350
.155
.312
1.000
1.438
.160
.240
NO.2 (086)-56 NC-2B THRU
.063 DIA (SEE CHART HOLE M1)
.190 .210 DIA (SEE CHART HOLE M1)
.190 .210 DIA (SEE CHART HOLE M2)
63
.090 R
.112
.187
15°
30°
.062 R
M1
M2
.380 .386 DIA
.302 .308 DIA
.285
.085
.297
.270 .276 DIA
DETAIL A
DETAIL B
1.406
.875
.094
.156 R 3 PLACES
1.241
SEE DETAIL A
M1 REF
M2 REF
C
.255 .259
.063 .067
.070 .074
.148 .152
.156 2 PLACES
10 EQUAL SPACES @ .123 .127 = 1.248 1.252
TOLERANCE NON-CUMULATIVE
1.5498 1.5502
.084
.069 .073 DIA, 11 HOLES
.0633 .0641 DIA X .302 .322 DEEP
CSK 82° TO .078 .093 DIA
2 HOLES
.062 R 4 PLACES
.062
32
5°
.140
.080
.031 R
.292
.005 R MAX
X
A
B
A1 A2 A3 A4 A5 A6 A7 A8 A9 A10
B1 B2 B3 B4 B5 B6 B7 B8
C1 C2 C3 C4 C5 C6 C7 C8
D1 D2 D4 D5 D6 D7 D8 D9 D10 D11
E1 E2 E3
F1 F2
G1
H1
K1
L2
M1 M2
P1
S1 S2 S3 S4
T1 T2
U1 U2
.058 .062 DIA AND
CSK 60° TO .078 .093 DIA
11 HOLES
NO.10 (.190)-32 UNF-2B
MODIFIED TO .175 .179 MAJOR DIA
4 PLACES
.230 .260
.163 .168 DIA
SECTION A-A
4 'S' HOLES
.068 .072 DIA
1.007
.090 .095 DIA
SECTION B-B & C-C
1007001
2
3
4
5

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	1.002	.834	.006	.099 .103	12
A2	.299	.366			
A3	1.353	.328			
A4	1.290	.216			
A5	1.182	-.330			
A6	1.178	-.183			
A7	.788	.477			
A8	.893	.762			
A9	1.035	.712			
A10	.720	.610			
B1	1.015	.462	.006	.127 .131	8
B2	1.390	.903			
B3	1.353	1.055			
B4	1.164	.772			
B5	.400	-.332			
B6	.155	-.092			
B7	.158	.096			
B8	.164	.330			
C1	.867	-.307	.006	.181 .185	8
C2	.868	.326			
C3	.228	1.024			
C4	.011	1.024			
C5	.722	.781			
C6	.000	.000			
C7	.000	.214			
C8	.000	.426			
D1	.192	.214	.006	.058 .062	11
D2	.150	.462			
D3	.255	.462			
D4	.586	.664			
D5	.566	.084			
D6	1.267	.857			
D7	1.062	.257			
D8	1.024	.338			
D9	1.189	-.074			
D10	.284	.210			
D11	.328	.522			
E1	.699	.202	.006	.165 .169	3
E2	.897	.600			
E3	.228	-.315			
F1	.382	.011	.006	.282 .289	2
F2	.617	-.252			
G1	1.051	-.263	.006	.143 .147	1
H1	1.333	.024	.006	.237 .241	1
K1	.538	.436	.006	.329 .336	1
L1	1.166	.190	.006	.092 .096	2
L2	1.138	.988			
M1	.949	.017	.006	SEE DETAIL A	1
M2	.123	.720	.006	SEE DETAIL B	1
P1	.526	.188	.006	.105 .109	1
S1	1.159	.584	.006	SEE SECTION A-A	4
S2	1.181	.366			
S3	1.363	.500			
S4	1.349	.722			
T1	.662	-.009	.006	.146 .150	2
T2	.410	.670			
U1	.404	.232	.006	SEE SECTION B-B&C-C	2
U2	.346	-.208			

NOTES

1-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2-MATERIAL: ALUMINUM 6061-T6 PER QQ-A-325
3-UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4-TRUE POSITIONING AS SHOWN IN CHART
5-FLATNESS TO BE WITHIN .010
6-UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7-ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8-REMOVE ALL BURRS AND BREAK SHARP EDGES .005 -.015
9-COAT THREAD AND FIND NO.1 WITH MIL P-8585 WET ZINC CHROMATE PRIMER
10-INSTALL FIND NO.1 PER MS-33537, EXCEPT DIM. F TO BE .594, BREAK OFF DRIVING TANG
11-FINISH: ANODIZE PER MIL-A-8625, DYED BLACK-PLUG INSERT HOLES


NO.2 (.086)-56 NC-2B
.172 .188 DEEP
1.718
.525
.350
.155
.188
.312
1.250
1.000
1.438
.560
.240
NO.2 (.086)-56 NC-2B THRU
.01 .05 R
2 PLACES
Y
X
.250
.125
1.719
.574
.171
C4
C3
L2
B3
B2
D6
A1
C5
B4
S4
M2
T2
D4
A8
A9
A10
E2
S1
D11
K1
B1
S3
A
D2
A7
C8
D3
B8
A2
C2
D8
S2
A3
B
U1
C7
D1
D10
P1
E1
D7
L1
A4
B7
D5
F1
M1
H1
C6
T1
B6
D9
U2
A6
E3
B5
F2
C1
G1
A5
.058 .062 DIA AND
CSK 60° TO .078 .093 DIA
11 HOLES
NO.10 (.190)-32 UNF-2B
MODIFIED TO .175 .179 MAJOR DIA
4 PLACES
.140
62° 58°
.090 .095 DIA
.068 .072 DIA
1.007
.090 .095 DIA
.230 .260
.163 .168 DIA

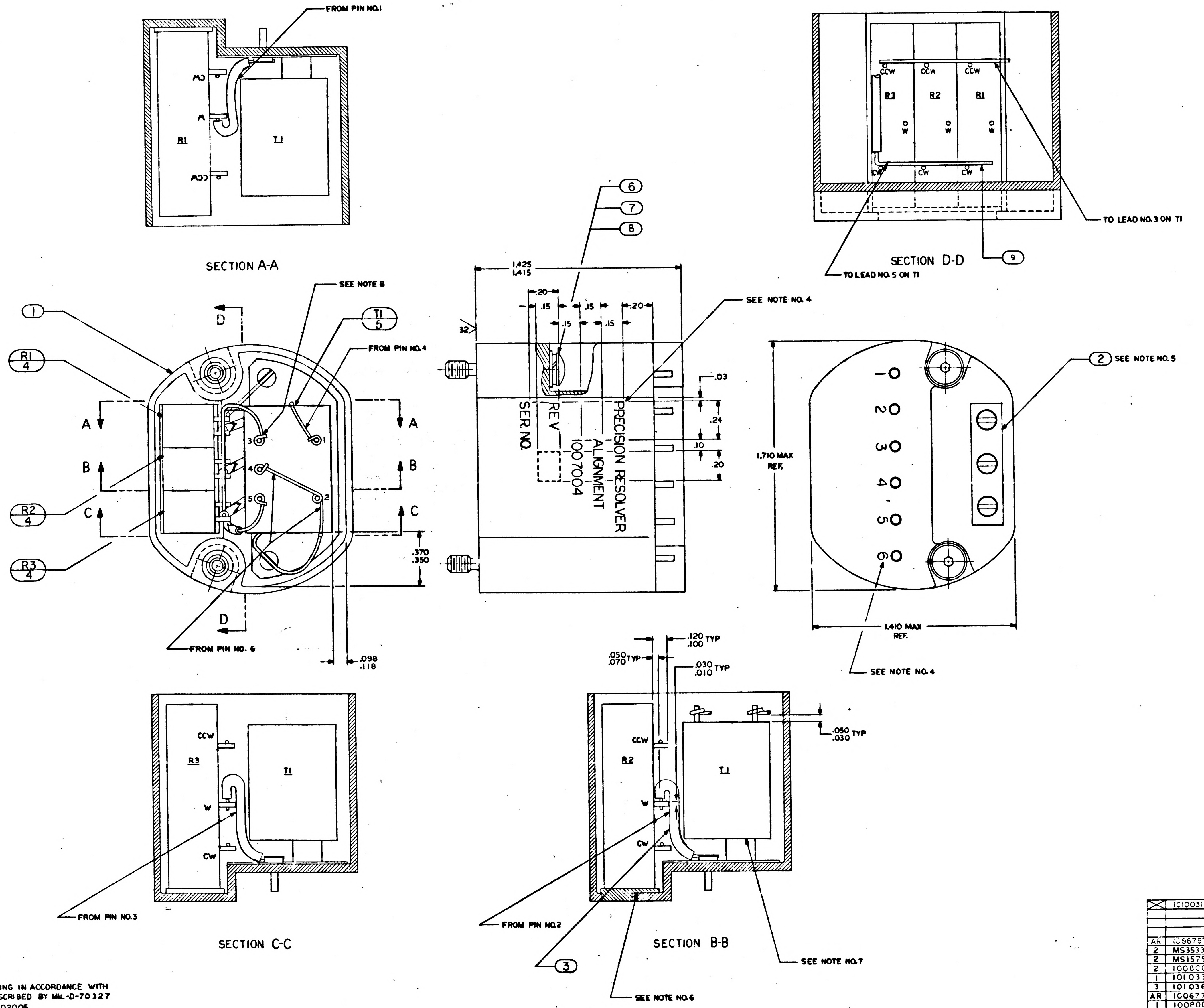
SECTION B-B & C-C

SECTION A-A
4 'S' HOLES

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00560

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01185	5-4-63	S.C.S.


FROM PIN NO.1
CCW
W
CCW
R1
T1
SECTION A-A
CCW
CCW
CCW
R3
R2
R1
W
W
W
CW
CW
CW
TO LEAD NO.3 ON T1
TO LEAD NO.5 ON T1
SECTION D-D
9
6
7
8
1.425
1.415
.20
.15
.15
.15
.15
.20
32
SER. NO.
REV
PRECISION RESOLVER
ALIGNMENT
1007004
SEE NOTE NO. 4
.03
.24
.10
.20
SEE NOTE 8
T1
5
FROM PIN NO.4
1
R1
4
R2
4
R3
4
D
D
A
A
B
B
C
C
1
2
3
4
5
6
.370
.350
FROM PIN NO. 6
.098
.118
1.710 MAX
REF.
2
SEE NOTE NO.5
1
2
3
4
5
6
1.410 MAX
REF.
SEE NOTE NO.4
.120
.100
TYP
.050
.070
TYP
.030
.010
TYP
.050
.030
TYP
CCW
R3
T1
W
CW
FROM PIN NO.3
SECTION C-C
CCW
R2
T1
W
CW
FROM PIN NO.2
3
SECTION B-B
SEE NOTE NO.6
SEE NOTE NO.7

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER-ND-1002005
3. ENCAPSULATE PER ND 1002106
4. MARK .100/.060 HIGH BLACK PER ND-1002019
5. BOND FIND NO.4 TO FIND NO. 2 PER ND-1002004
6. BOND FIND NO.2 TO FIND NO. 1 PER ND-1002004
7. BOND FIND NO.5 TO FIND NO. 1 PER ND-1002004
8. SOLDER PER ND 1002071 USING ND 1002075

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1C10031	SCHEMATIC, PRECISION RES. ALIG.	☒
	—		
AR	1C06757-1	WIRE, ELECTRICAL	9
2	MS35337-78	WASHER, LOCK	8
2	MS15795-303	WASHER, FLAT	7
2	1008C02-1	SCREW, EXT REL BODY	6
1	1010333	TRANSFORMER	5
3	1010360-2	RESISTOR, VARIABLE	4
AR	1C06776-20	INSULATION SLEEVING	3
1	1008008	SPACER	2
1	1007005	HOUSING, MODULE SUB-ASS'Y	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1000201	DL1000201
1000001	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL ______
HEAT TREATMENT ______
FINAL FINISH ______

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO
CONTRACT
DRAWN DATE 12-14-62
CHECKED
APPROVAL 3-6-63
APPROVAL 3-6-63
NASA APPROVAL 13 March 1963
MIT APPROVAL 13 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

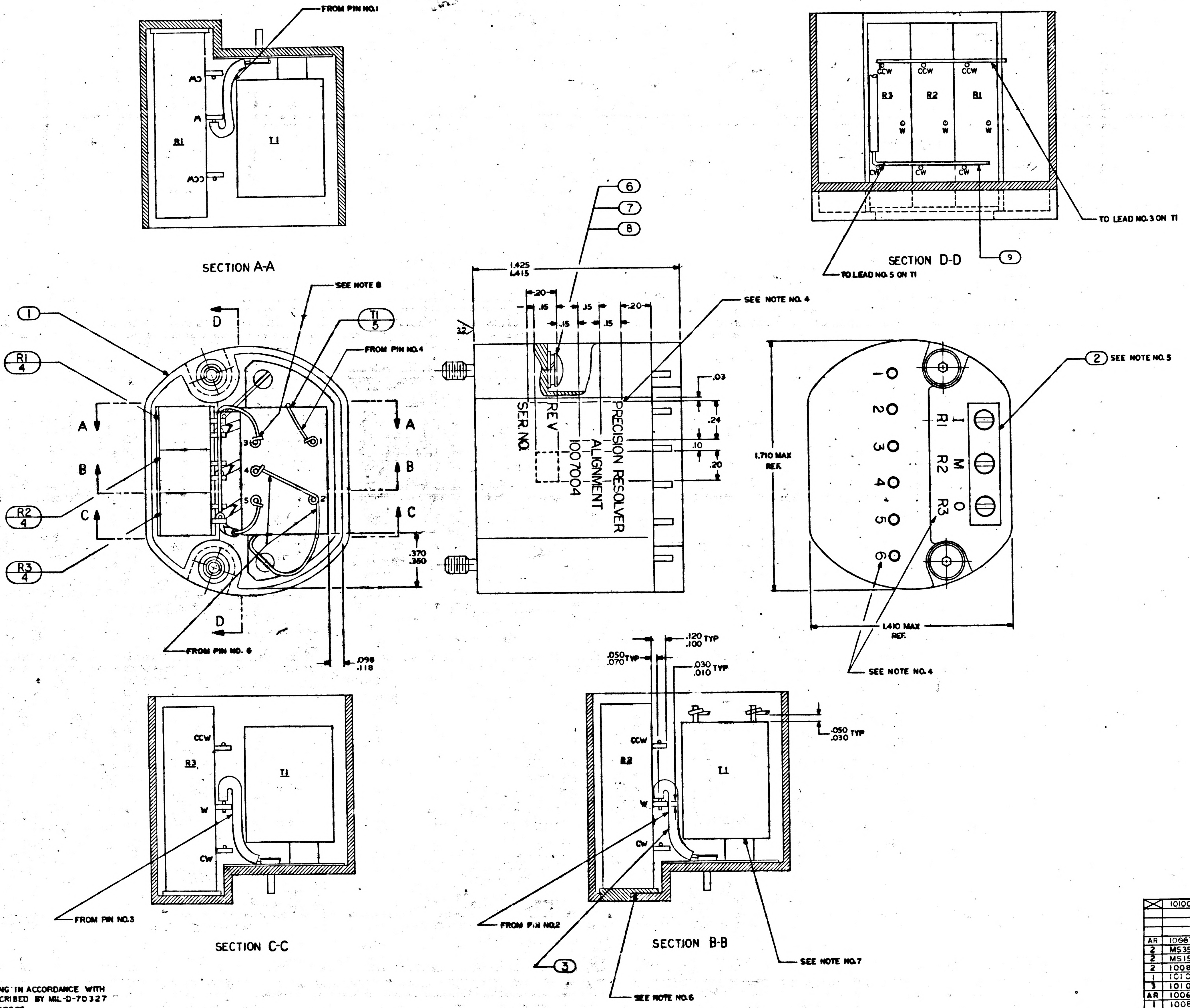
PRECISION RESOLVER
ALIGNMENT ASS'Y
GIMBAL MOUNTED

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007004
SCALE 4/1
WT
SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

REVISIONS 70128 00560

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01185	5/6/63	R.C.S.
B	REVISED PER TDRR 02461	8-26-63	R.C.S.


FROM PIN NO.1
CCW
W
CW
R1
T1
SECTION A-A
CCW
R3
R2
R1
W
CW
TO LEAD NO.3 ON T1
TO LEAD NO.5 ON T1
SECTION D-D
9
6
7
8
1.425
1.415
.20
.15
.15
.15
.15
.20
32
SEE NOTE NO. 4
PRECISION RESOLVER
ALIGNMENT
1007004
REV
SER.NO.
.03
.24
.10
.20
SEE NOTE 8
T1
5
FROM PIN NO.4
1
R1
4
R2
4
R3
4
D
A
B
C
.370
.350
FROM PIN NO. 6
.098
.118
2 SEE NOTE NO.5
1.710 MAX
REF.
1 R1
M R2
0 R3
1.410 MAX
REF.
SEE NOTE NO.4
.120
.100 TYP
.050
.070 TYP
.030
.010 TYP
.050
.030 TYP
CCW
R3
T1
W
CW
FROM PIN NO.3
SECTION C-C
CCW
R2
T1
W
CW
FROM PIN NO.2
3
SEE NOTE NO.6
SEE NOTE NO.7
SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND-1002005
3. ENCAPSULATE PER ND1002106
4. MARK .100/.060 HIGH BLACK PER ND-1002019
5. BOND FIND NO.4 TO FIND NO. 2 PER ND-1002004
6. BOND FIND NO.2 TO FIND NO. 1 PER ND-1002004
7. BOND FIND NO.5 TO FIND NO. 1 PER ND-1002004
8. SOLDER PER ND 1002071 USING ND 1002075

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010031	SCHEMATIC, PRECISION RES. ALIG.	☒
AR	1006757-1	WIRE, ELECTRICAL	9
2	MS35337-78	WASHER, LOCK	8
2	MS15795-303	WASHER, FLAT	7
2	1008002-1	SCREW, EXT REL BODY	6
1	1010333	TRANSFORMER	5
3	1010360-2	RESISTOR, VARIABLE	4
AR	1006776-20	INSULATION SLEEVING	3
1	1008008	SPACER	2
1	1007005	HOUSING, MODULE SUB-ASS'Y	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000201	DL1000201
1000001	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO.
CONTRACT
DRAWN DATE 12-14-62
CHECKED
APPROVAL 3-6-63
APPROVAL 3-6-63
NASA APPROVAL
MIT APPROVAL 13 Aug 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PRECISION RESOLVER
ALIGNMENT ASS'Y
GIMBAL MOUNTED

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007004
SCALE 4/1
WT
SHEET 1 OF 1

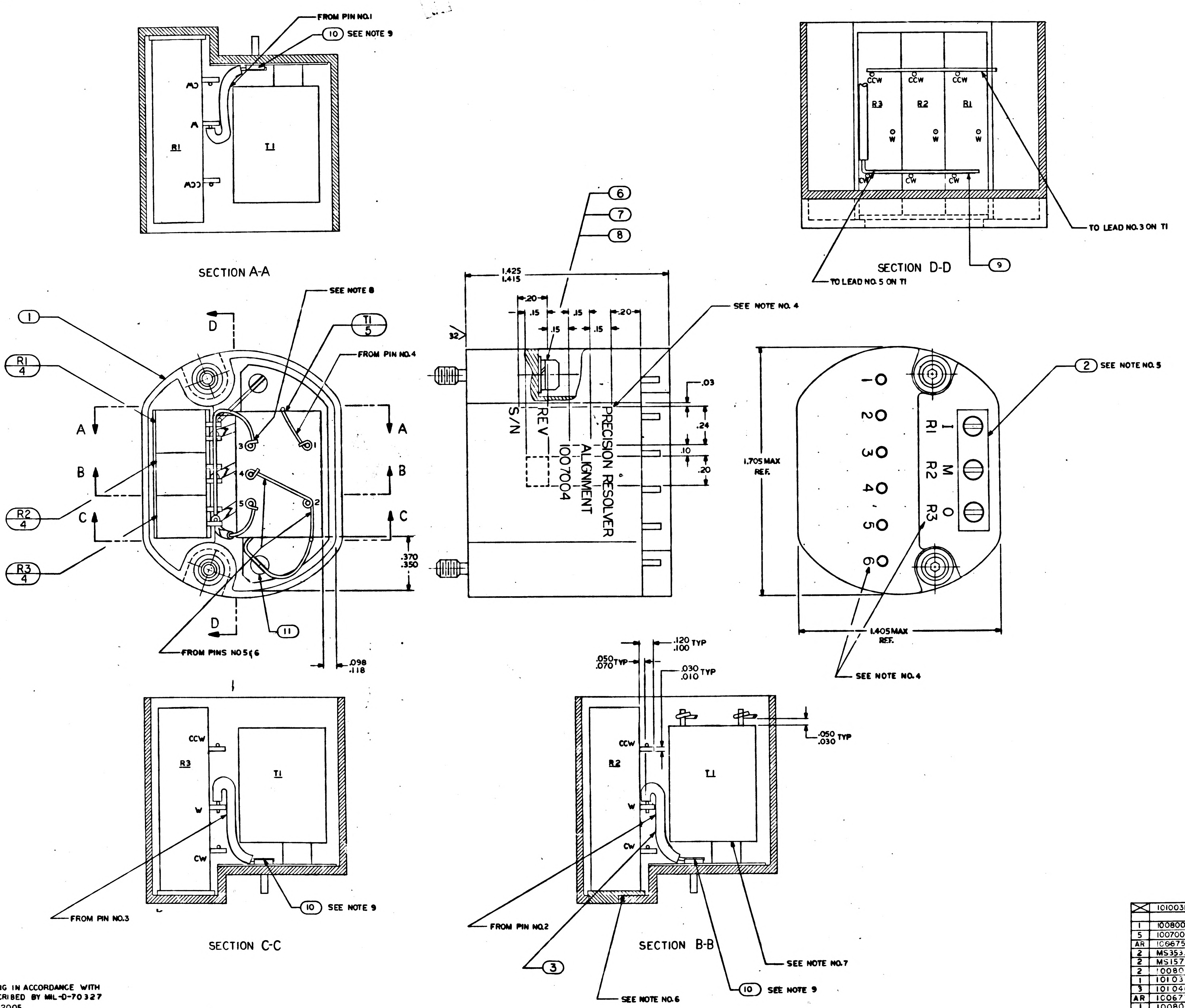
1007004 B

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00560

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01185	5/6/63	S.C.S.
B	REVISED PER TDRR 02861	8-26-63	S.C.S.
C	REVISED PER TDRR 04300		WK



FROM PIN NO.1
⑩ SEE NOTE 9
CW
A
R1
T1
CCW
SECTION A-A
⑥
⑦
⑧
1.425
1.415
.20
.15
.15
.20
.15
.15
32
S/N
REV
PRECISION RESOLVER
ALIGNMENT
1007004
SEE NOTE NO. 4
.03
.24
.10
.20
CCW
CCW
CCW
R3
R2
R1
W
W
W
CW
CW
CW
TO LEAD NO.3 ON T1
TO LEAD NO. 5 ON T1
SECTION D-D
⑨
SEE NOTE 8
①
D
T1
5
R1
4
FROM PIN NO.4
A
A
B
B
C
C
R2
4
R3
4
3
1
4
5
2
.370
.350
D
⑪
FROM PINS NO 5 & 6
.098
.118
② SEE NOTE NO. 5
1
2
3
4
5
6
R1
M
R2
O
R3
1.705 MAX
REF.
1.405 MAX
REF.
SEE NOTE NO. 4
.120 TYP
.100
.050
.070 TYP
.030
.010 TYP
.050
.030 TYP
CCW
R3
T1
W
CW
FROM PIN NO.3
⑩ SEE NOTE 9
SECTION C-C
CCW
R2
T1
W
CW
FROM PIN NO.2
③
SECTION B-B
SEE NOTE NO.7
SEE NOTE NO.6
⑩ SEE NOTE 9

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER-ND-1002005
3. ENCAPSULATE PER ND 1002106
4. MARK .100/.060 HIGH BLACK PER ND-1002019 & STERIALIZE PER ND 1002023
5. BOND FIND NO.4 TO FIND NO. 2 PER ND-1002004
6. BOND FIND NO.2 TO FIND NO. 1 PER ND-1002004
7. BOND FIND NO.5 TO FIND NO. 1 PER ND-1002004
8. SOLDER PER ND 1002071 USING ND 1002075
9. INSTALL TERMINAL LUGS, 6 PLACES, [illegible] 1002004, TO FIND NO 1.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010031	SCHEMATIC, PRECISION RES. ALIG.	☒
1	1008000	TERMINAL, LUG	11
5	1007000-2	TERMINAL, LUG ASS'Y	10
AR	1006757-1	WIRE, ELECTRICAL	9
2	MS35337-78	WASHER, LOCK	8
2	MS15795-303	WASHER, FLAT	7
2	1008002-1	SCREW, EXT REL BODY	6
1	1010333	TRANSFORMER	5
3	1010469-2	RESISTOR, VARIABLE	4
AR	1006776-20	INSULATION SLEEVING	3
1	1008008	SPACER	2
1	1007005	HOUSING, MODULE SUB-ASS'Y	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000201	DL1000201
1000001	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN DATE 12-14-62
CHECKED
APPROVAL 3-6-63
APPROVAL 3-6-63
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PRECISION RESOLVER
ALIGNMENT ASS'Y
GIMBAL MOUNTED

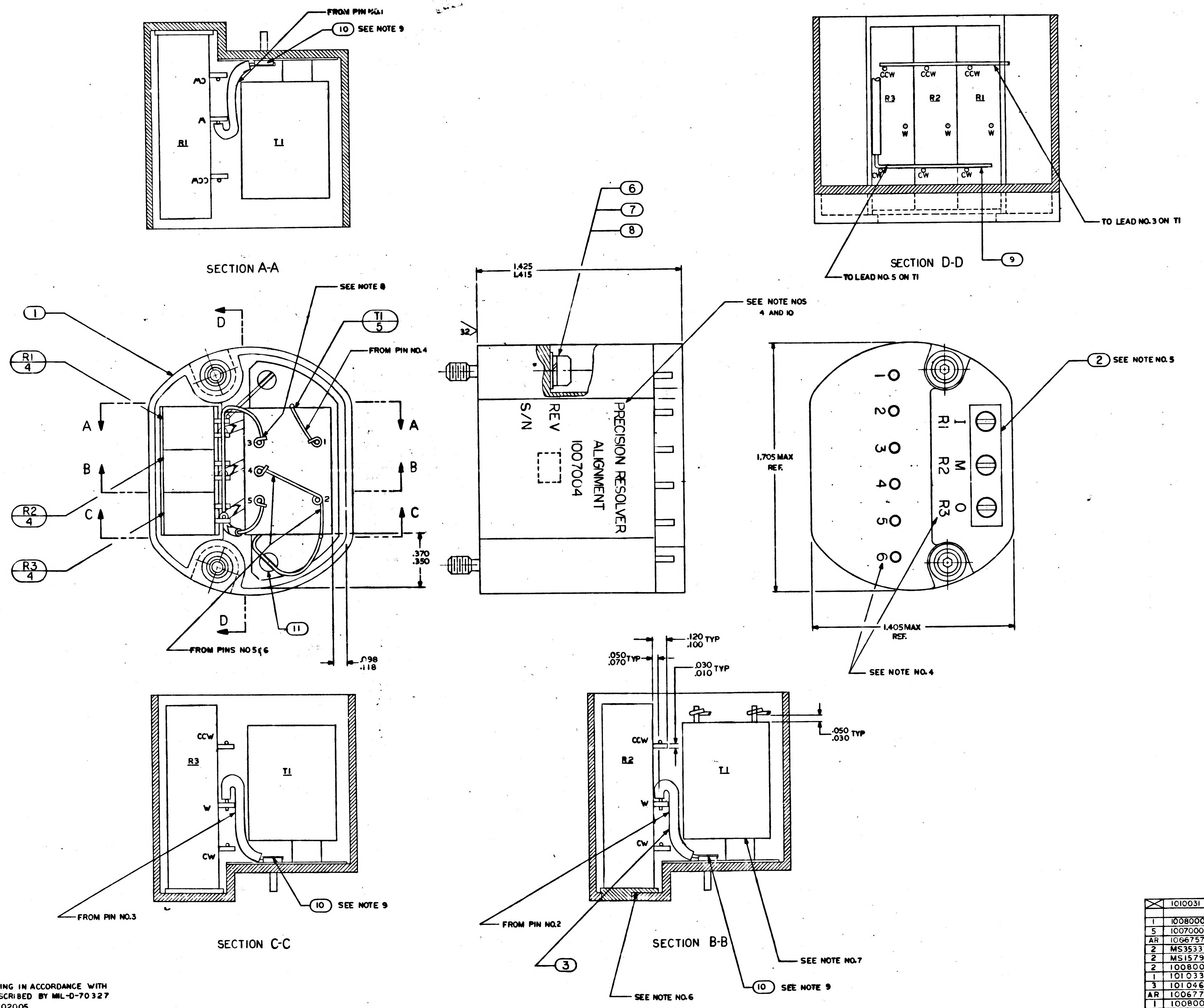
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007004
SCALE 4/1
WT
SHEET 1 OF 1

1007004 C

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 00560

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01185	5/6/63	B.C.S.
B	REVISED PER TDRR 02561	[illegible]	[illegible]
C	REVISED PER TDRR 04300	[illegible]	[illegible]
D	REVISED PER TDRR 05C92	[illegible]	[illegible]


FROM PIN NO.1
10 SEE NOTE 9
CW
A
CCW
R1
T1
SECTION A-A
CCW
CCW
CCW
R3
R2
R1
W
W
W
CW
CW
CW
TO LEAD NO.3 ON T1
9
SECTION D-D
TO LEAD NO.5 ON T1
6
7
8
1.425
1.415
32
SEE NOTE NOS 4 AND 10
PRECISION RESOLVER
ALIGNMENT
1007004
REV
S/N
SEE NOTE 8
1
D
T1
5
FROM PIN NO.4
R1
4
A
A
B
B
R2
4
C
C
R3
4
3
1
4
5
2
.370
.350
D
11
FROM PINS NO 5 & 6
.098
.118
2 SEE NOTE NO.5
1
2
3
4
5
6
R1
R2
R3
I
M
O
1.705 MAX REF.
1.405 MAX REF.
SEE NOTE NO.4
.120
.100 TYP
.050
.070 TYP
.030
.010 TYP
.050
.030 TYP
CCW
R3
T1
W
CW
FROM PIN NO.3
10 SEE NOTE 9
SECTION C-C
CCW
R2
T1
W
CW
FROM PIN NO.2
3
SECTION B-B
SEE NOTE NO.7
SEE NOTE NO.6
10 SEE NOTE 9

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER-ND-1002005
3. ENCAPSULATE PER ND 1002106
4. MARK .100/.140 HIGH BLACK PER ND-1002019 & SERIALIZE PER ND 1002023
5. BOND FIND NO.4 TO FIND NO.2 PER ND-1002004
6. BOND FIND NO.2 TO FIND NO.1 PER ND-1002004
7. BOND FIND NO.5 TO FIND NO.1 PER ND-1002004
8. SOLDER PER ND 1002071 USING ND 1002075
9. INSTALL TERMINAL LUGS, 6 PLACES, PER ND 1002004, TO FIND NO 1.
10. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
11. INSPECT PER PS 1007004
12. TEST PER FTM-1007004

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010031	SCHEMATIC, PRECISION RES. ALIG.	☒
1	1008000	TERMINAL LUG	11
5	1007000-2	TERMINAL, LUG ASS'Y	10
AR	1006757-1	WIRE, ELECTRICAL	9
2	MS35337-78	WASHER, LOCK	8
2	MS15795-303	WASHER, FLAT	7
2	1008002-1	SCREW, EXT REL BODY	6
1	1010333	TRANSFORMER	5
3	1010469-2	RESISTOR, VARIABLE	4
AR	1006776-20	INSULATION SLEEVING	3
1	1008008	SPACER	2
1	1007005	HOUSING, MODULE SUB-ASS'Y	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000201	DL1000201
1000001	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN DATE 12-14-62
CHECKED
APPROVAL 3-6-63
APPROVAL 3-6-63
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PRECISION RESOLVER
ALIGNMENT ASS'Y
GIMBAL MOUNTED

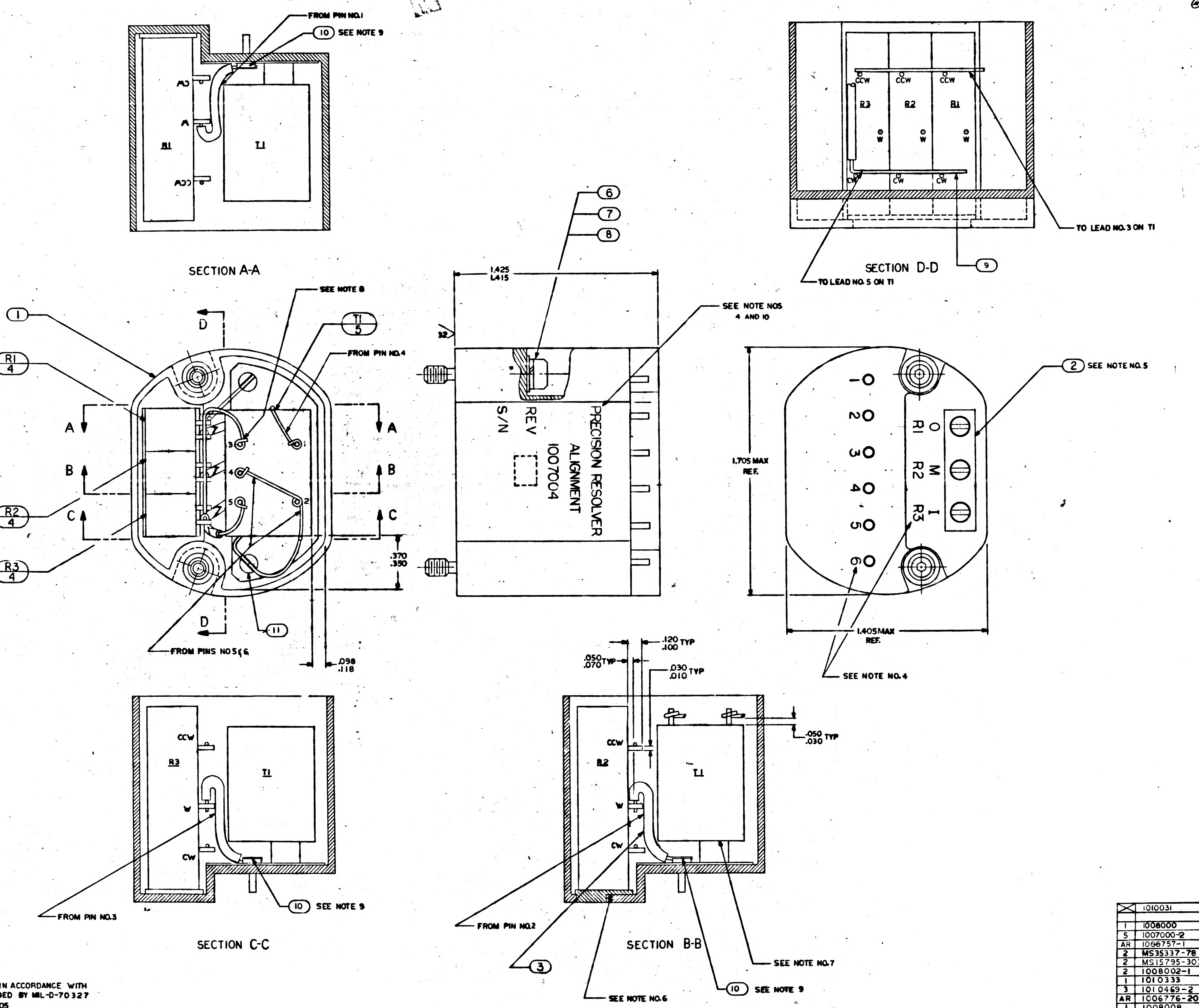
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007004
SCALE 4/1
WT
SHEET 1 OF 1

1007004 D

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00580

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01185	5/6/63	
B	REVISED PER TDRR 02461		
C	REVISED PER TDRR 04300		
D	REVISED PER TDRR 05032		
E	REVISED PER TDRR 062[illegible]2		


FROM PIN NO.1
10 SEE NOTE 9
CCW
W
CW
R1
T1
SECTION A-A
CCW
R3
R2
R1
W
CW
TO LEAD NO.3 ON T1
SECTION D-D
9
TO LEAD NO.5 ON T1
6
7
8
1.425
1.415
32
SEE NOTE NOS 4 AND 10
PRECISION RESOLVER ALIGNMENT 1007004
REV
S/N
SEE NOTE 8
1
T1 5
FROM PIN NO.4
R1 4
R2 4
R3 4
D
A
B
C
1
2
3
4
5
.370
.350
11
FROM PINS NO5 & 6
.098
.118
2 SEE NOTE NO.5
1.705 MAX REF.
O M I
R1 R2 R3
1 2 3 4 5 6
1.405 MAX REF.
SEE NOTE NO.4
.050
.070 TYP
.120 TYP
.100
.030 TYP
.010
.050 TYP
.030
CCW
R3
T1
W
CW
FROM PIN NO.3
10 SEE NOTE 9
SECTION C-C
R2
FROM PIN NO.2
3
SEE NOTE NO.6
SEE NOTE NO.7
10 SEE NOTE 9
SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND-1002005
3. ENCAPSULATE PER ND1002106
4. MARK .100/.140 HIGH BLACK PER ND-1002019 & SERIALIZE PER ND 1002023
5. BOND FIND NO.4 TO FIND NO.2 PER ND-1002004
6. BOND FIND NO.2 TO FIND NO.1 PER ND-1002004
7. BOND FIND NO.5 TO FIND NO.1 PER ND-1002004
8. SOLDER PER ND1002071 USING ND 1002075
9. INSTALL TERMINAL LUGS, 6 PLACES, PER ND1002004, TO FIND NO 1.
10. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
11. INSPECT PER PS 1007004
12. TEST PER FTM-1007004

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010031	SCHEMATIC, PRECISION RES. ALIG.	☒
1	1008000	TERMINAL LUG	11
5	1007000-2	TERMINAL LUG ASS'Y	10
AR	1006757-1	WIRE, ELECTRICAL	9
2	MS35337-78	WASHER, LOCK	8
2	MS15795-303	WASHER, FLAT	7
2	1008002-1	SCREW, EXT REL BODY	6
1	1010333	TRANSFORMER	5
3	1010469-2	RESISTOR, VARIABLE	4
AR	1006776-20	INSULATION SLEEVING	3
1	1008008	SPACER	2
1	1007005	HOUSING, MODULE SUB-ASS'Y	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000201	DL1000201
1000001	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN DATE 12-11-62
CHECKED
APPROVAL 3-6-63
APPROVAL 3-6-63
NASA APPROVAL
MIT APPROVAL 13 Aug 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PRECISION RESOLVER
ALIGNMENT ASS'Y
GIMBAL MOUNTED

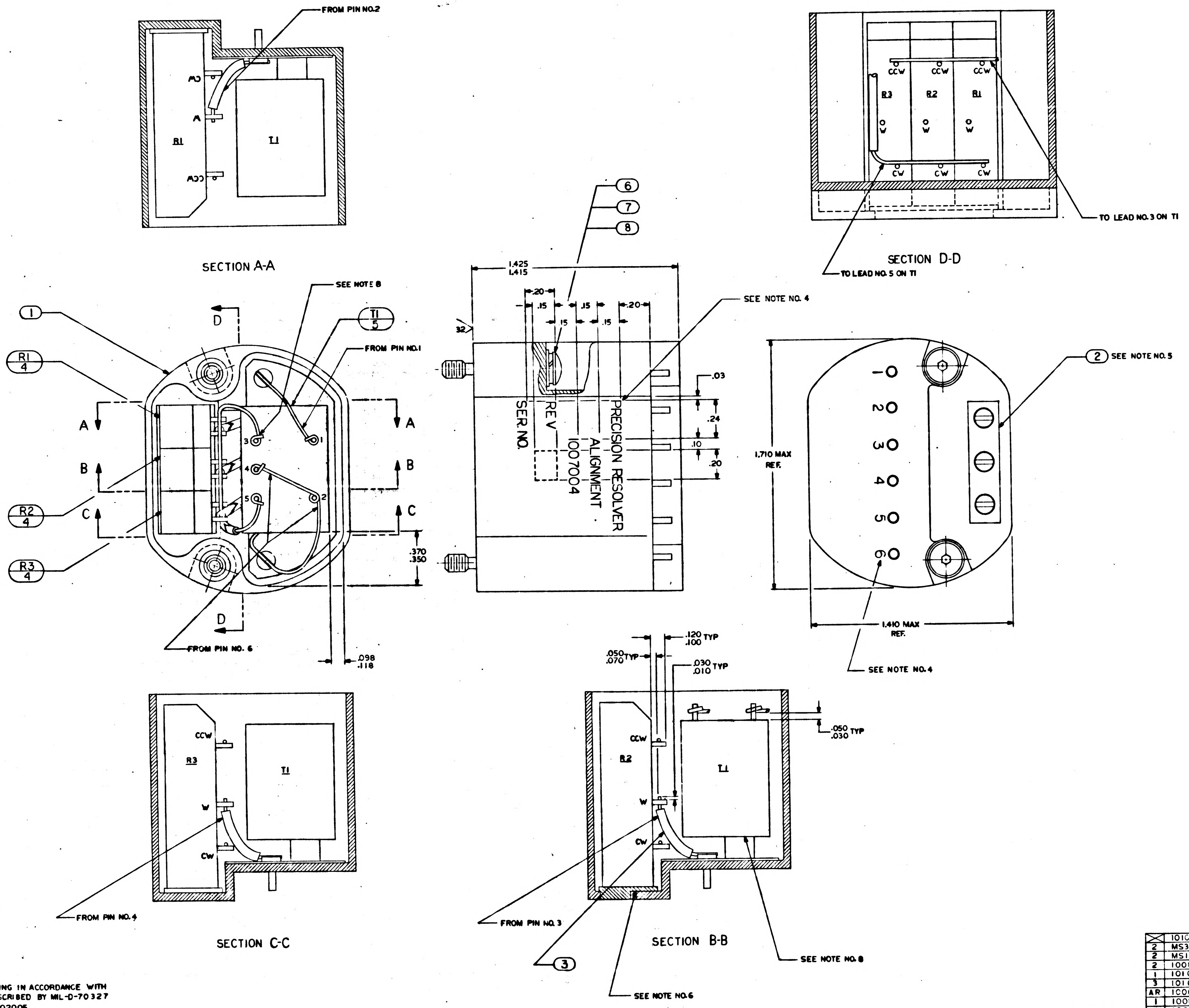
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007004
SCALE 4/1
WT
SHEET 1 OF 1

1007004 E

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

SYM	DESCRIPTION	DATE	APPROVAL
REVISIONS 70128 00380			


FROM PIN NO.2
CCW
W
CW
R1
T1
SECTION A-A
CCW
R3
R2
R1
W
CW
TO LEAD NO.3 ON T1
TO LEAD NO.5 ON T1
SECTION D-D
6
7
8
1.425
1.415
.20
.15
.15
.15
.15
.20
32
SEE NOTE NO. 4
PRECISION RESOLVER
ALIGNMENT
1007004
REV
SER. NO.
.03
.24
.10
.20
1.710 MAX REF.
1.410 MAX REF.
2 SEE NOTE NO. 5
SEE NOTE NO. 4
1
2
3
4
5
6
SEE NOTE 8
T1
5
FROM PIN NO.1
1
R1
4
R2
4
R3
4
A
B
C
D
.370
.350
.098
.118
FROM PIN NO. 6
.120
.100 TYP
.050
.070 TYP
.030
.010 TYP
.050
.030 TYP
CCW
W
CW
R3
T1
SECTION C-C
FROM PIN NO. 4
R2
FROM PIN NO. 3
3
SECTION B-B
SEE NOTE NO. 6
SEE NOTE NO. 8

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER-ND-1002005
3. ENCAPSULATE PER ND1002106
4. MARK .100/.060 HIGH BLACK PER ND-1002019
5. BOND FIND NO. 4 TO FIND NO. 2 PER ND-1002004
6. BOND FIND NO. 2 TO FIND NO. 1 PER ND-1002004
7. BOND FIND NO. 5 TO FIND NO. 1 PER ND-1002004
8. SOLDER PER MIL-S-6872

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010031	SCHEMATIC, PRECISION RES. ALIG.	☒
2	MS35337-78	WASHER, LOCK	8
2	MS15795-303	WASHER, FLAT	7
2	1008002-1	SCREW, EXT REL BODY	6
1	1010333	TRANSFORMER	5
3	1010360-2	RESISTOR, VARIABLE	4
AR	1006776-20	INSULATION SLEEVING	3
1	1008008	SPACER	2
1	1007005	HOUSING, MODULE SUB-ASS'Y	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000201	DL1000201
1000001	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN DATE 12-14-62
CHECKED
APPROVAL 3-6-63
APPROVAL S.C. Smith 3-6-63
NASA APPROVAL 13 March 1963
MIT APPROVAL 13 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PRECISION RESOLVER
ALIGNMENT ASS'Y
GIMBAL MOUNTED

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007004
SCALE 4/1
WT
SHEET 1 OF 1

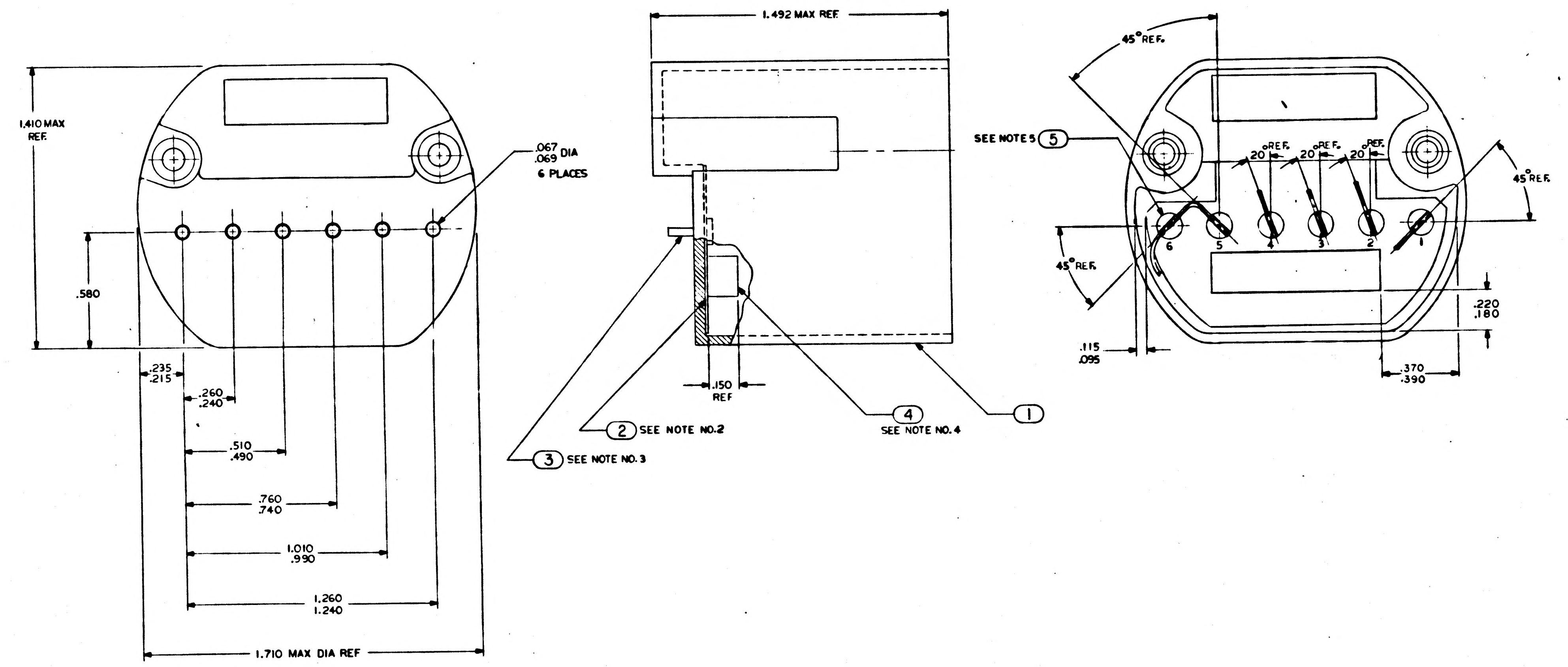
1007004

INCHES
0 1 2 3 4
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

(M)

REVISIONS TORR 00560			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TORR 01185	5/7/63	SCS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.069 DIA
6 PLACES
.580
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.260
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.490
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1.260
1.240
1.710 MAX DIA REF
1.492 MAX REF
.150
REF
2 SEE NOTE NO.2
3 SEE NOTE NO.3
4 SEE NOTE NO.4
1
45° REF.
SEE NOTE 5 5
20° REF.
20° REF.
20° REF.
45° REF.
45° REF.
6
5
4
3
2
1
.220
.180
.115
.095
.370
.390

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND FIND NO. 2 TO FIND NO.1 PER-ND-1002004
3. BOND FIND NO.3 TO FIND NO.1 AND FIND NO.2 PER ND-1002004
4. BOND FIND NO.4 TO FIND NO.2 PER ND-1002004
5. WELD PER ND-1002005, PRIOR TO INSERTION
6. TERMINAL NUMBERS ARE FOR REFERANCE ONLY

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
1	1008000	TERMINAL, LUG	5
1	1008011	SPACER, TRANSFORMER	4
5	1007000 -2	TERMINAL, LUG ASS'Y	3
1	1008009	BOARD, EPOXY	2
1	1008007	HOUSING, MODULE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007004	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN DATE 12-17-62
CHECKED
APPROVAL
APPROVAL 3-6-63
NASA APPROVAL 13 March 1963
MIT APPROVAL 13 March

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HOUSING, MODULE SUB-ASS'Y PRECISION RESOLVER ALIGNMENT

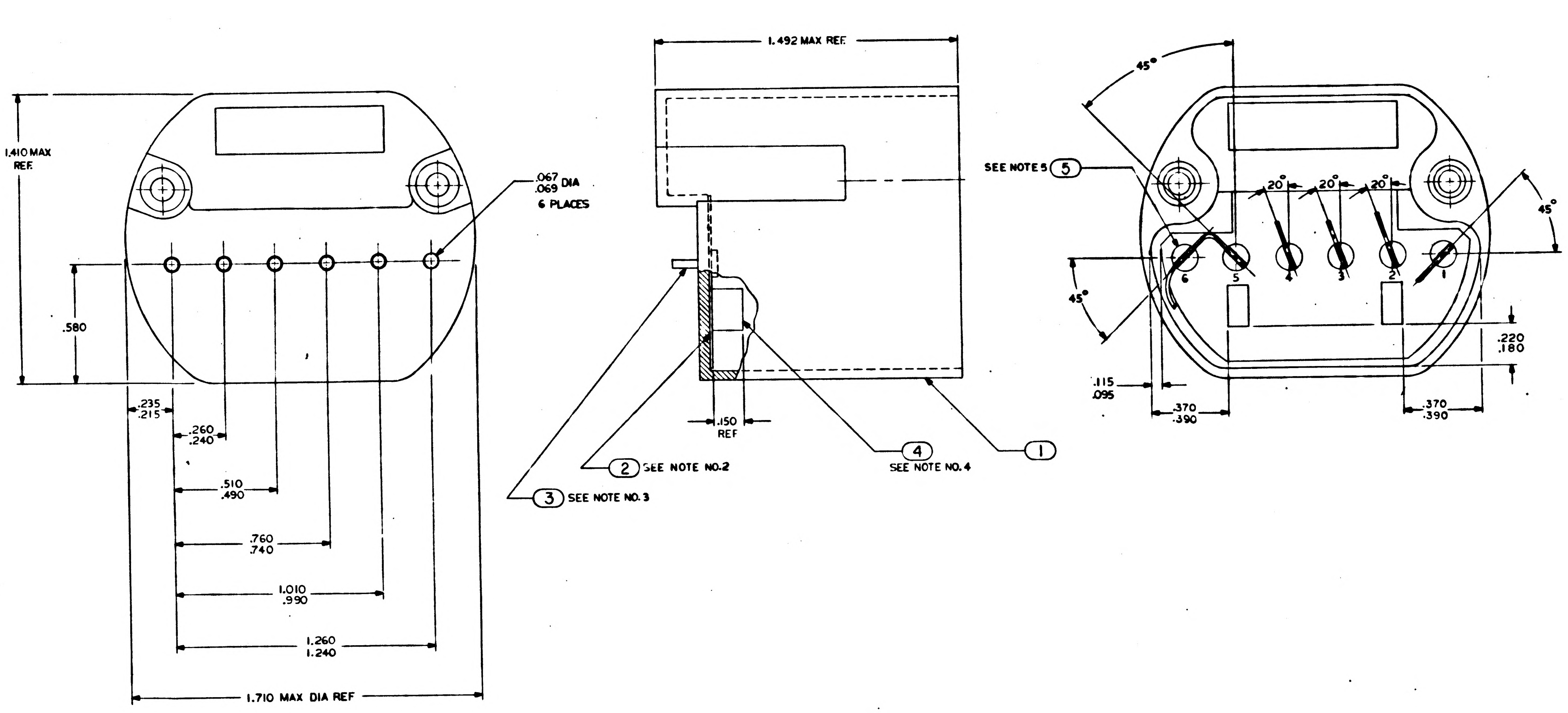
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007005
SCALE 4/1
WT
SHEET OF

1007005 A

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS ORR 00540

SYM	DESCRIPTION	DATE	APPROVAL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.069 DIA
6 PLACES
.580
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.260
.240
.510
.490
.760
.740
1.010
.990
1.260
1.240
1.710 MAX DIA REF
1.492 MAX REF
.150 REF
2 SEE NOTE NO.2
3 SEE NOTE NO.3
4 SEE NOTE NO.4
1
SEE NOTE 5 5
45°
20°
20°
20°
45°
45°
6
5
4
3
2
1
.220
.180
.115
.095
.370
.390
.370
.390

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND FIND NO. 2 TO FIND NO.1 PER-ND-1002004
3. BOND FIND NO.3 TO FIND NO.1 AND FIND NO.2 PER ND-1002004
4. BOND FIND NO.4 TO FIND NO.2 PER ND-1002004
5. WELD PER ND-1002005

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
1	1008000	TERMINAL, LUG	5
2	1008011	SPACER, TRANSFORMER	4
17	1007000-2	TERMINAL, LUG ASS'Y	3
1	1008009	BOARD, EPOXY	2
1	1008007	HOUSING, MODULE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007004	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± 2°
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
Cambridge Mass
DWG NO
CONTRACT
DRAWN DATE 12-17-62
CHECKED
APPROVAL
APPROVAL 3-6-63
NASA APPROVAL 13 March 1963
MIT APPROVAL 13 Mar

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HOUSING, MODULE SUB-ASS'Y
PRECISION RESOLVER ALIGNMENT

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007005
SCALE 4/1
WT
SHEET OF

1007005

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

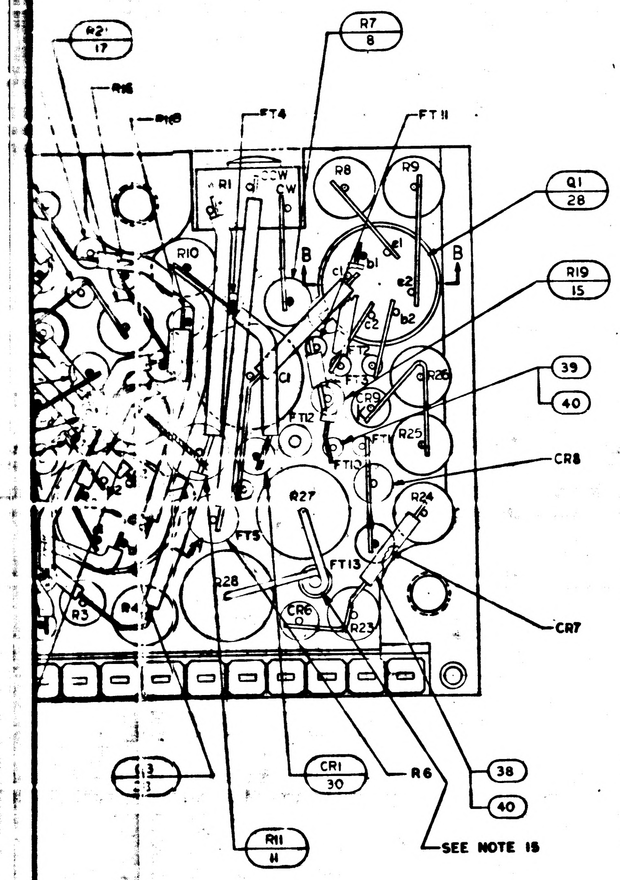
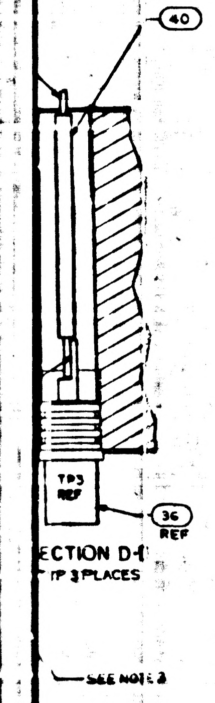


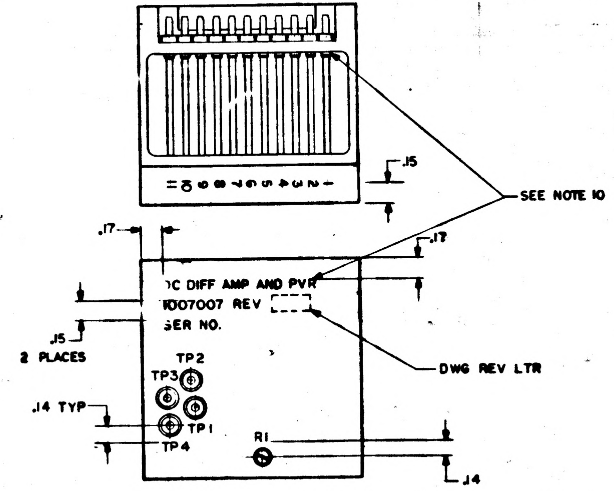
CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500



ECTION D-D
TP 3 PLACES



MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006787-2	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1010259	DIODE	35
1	1010260	DIODE	34
2	1010258	DIODE	33
2	1010257-2	DIODE	32
2	1010257-1	DIODE	31
1	1010280	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376-1	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 175K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 632M, 1/8W, 2	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN H. Hagan DATE 12-18-62
CHECKED W. E. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL W. G. Ellis 2-13-63
MIT APPROVAL 13 Feb 63

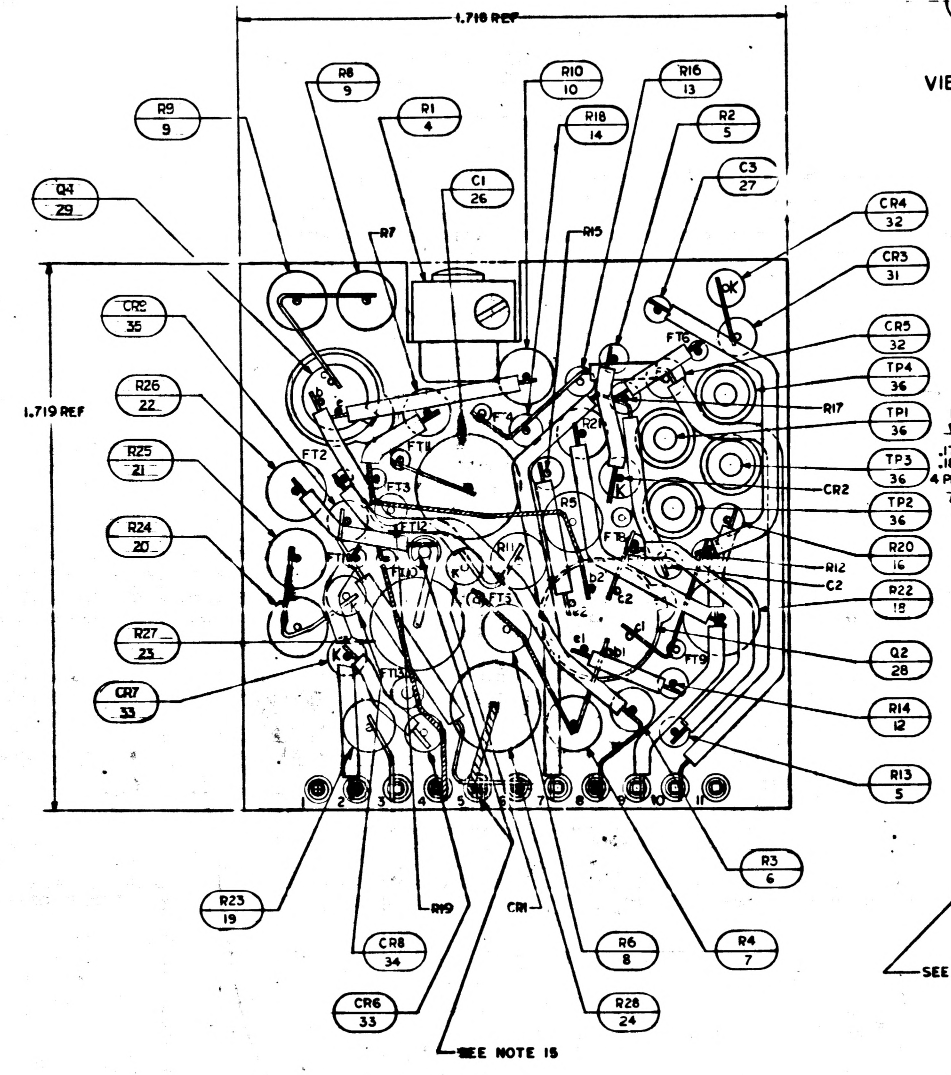
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER & PVR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007007
SCALE 5:1
WT
SHEET 1 OF 1

1007007 A

INCHES
PHOTOGRAPHIC SCALE ONLY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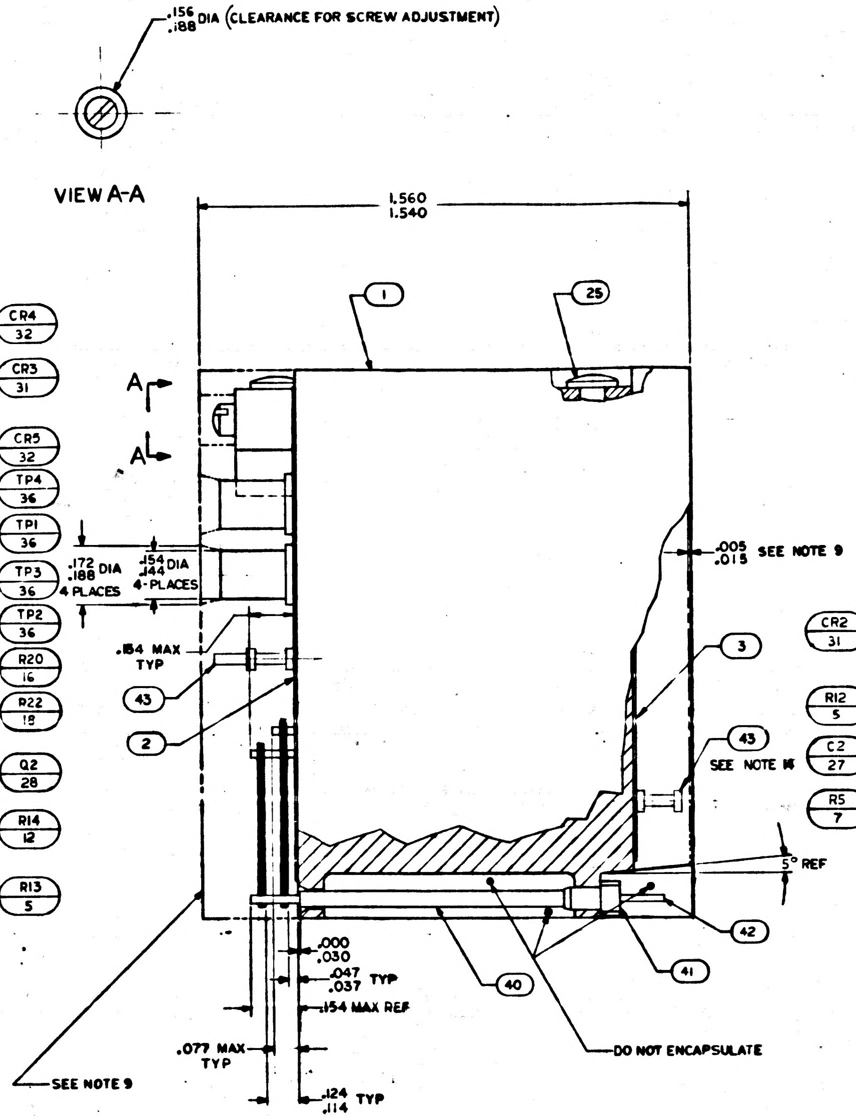
1.719 REF
R9 9
R8 9
R1 4
C1 26
R10 10
R18 14
R16 13
R2 5
C3 27
Q4 29
R7
R15
CR4 32
CR3 31
CR2 35
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R26 22
R25 21
R24 20
R27 23
CR7 33
R17
CR2
R20 16
R12
C2
R22 18
Q2 28
R14 12
R13 5
R3 6
R4 7
R23 19
R19
CR1
CR8 34
CR6 33
R6 8
R28 24
SEE NOTE 15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VIEW A-A
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1
25
A
A
.172 .188 DIA 4 PLACES
.154 .144 DIA 4-PLACES
.005 .015 SEE NOTE 9
.154 MAX TYP
43
2
3
43 SEE NOTE 16
5° REF
42
41
40
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.047 .037 TYP
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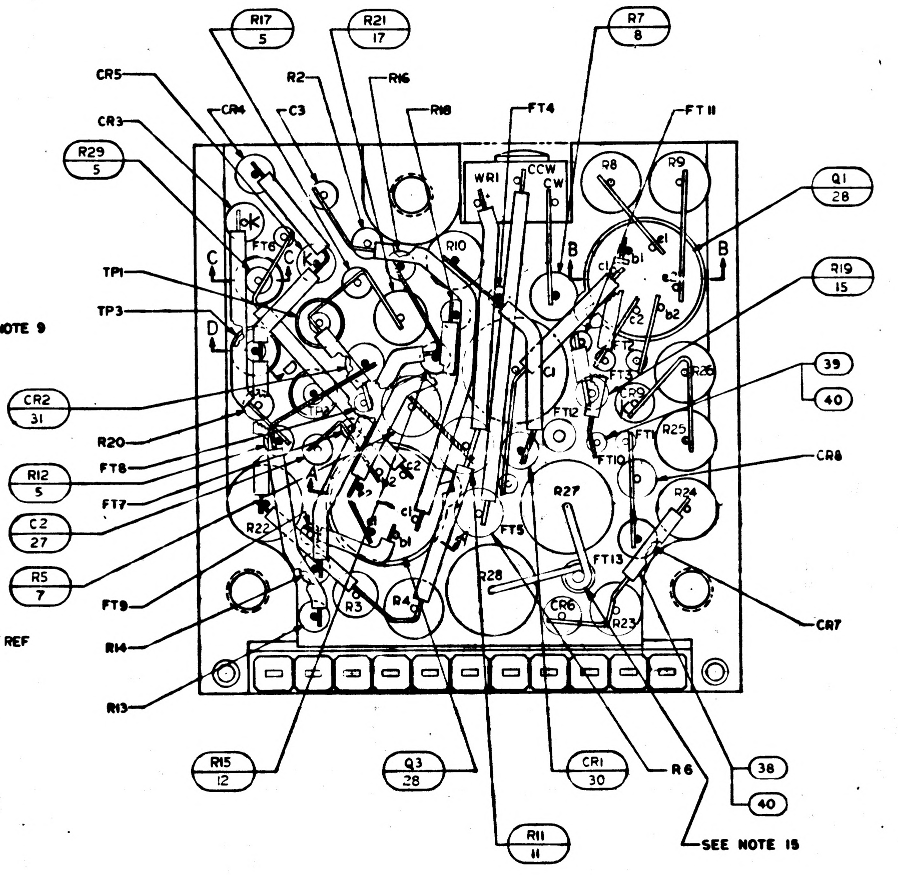
DO NOT ENCAPSULATE
SEE NOTE 9


R17 5
R21 17
R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29 5
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CCW
CW
R8
R9
Q1 28
TP1
TP3
R10
R19 15
39
40
CR2 31
R20
FT8
FT7
R12 5
C2 27
R5 7
FT9
R14
R13
CR8
R27
R22
R28
R25
R24
CR6
R23
CR7
R15 12
Q3 28
CR1 30
R6
38
40
R11 11
SEE NOTE 15

CHART A	
PART NO.	VALU
1010377 - 26	600 Ω
- 27	650
- 28	700 Ω
- 30	775 Ω
- 31	850
- 32	925
- 33	1000
- 34	1100
1010377 - 35	1200 Ω

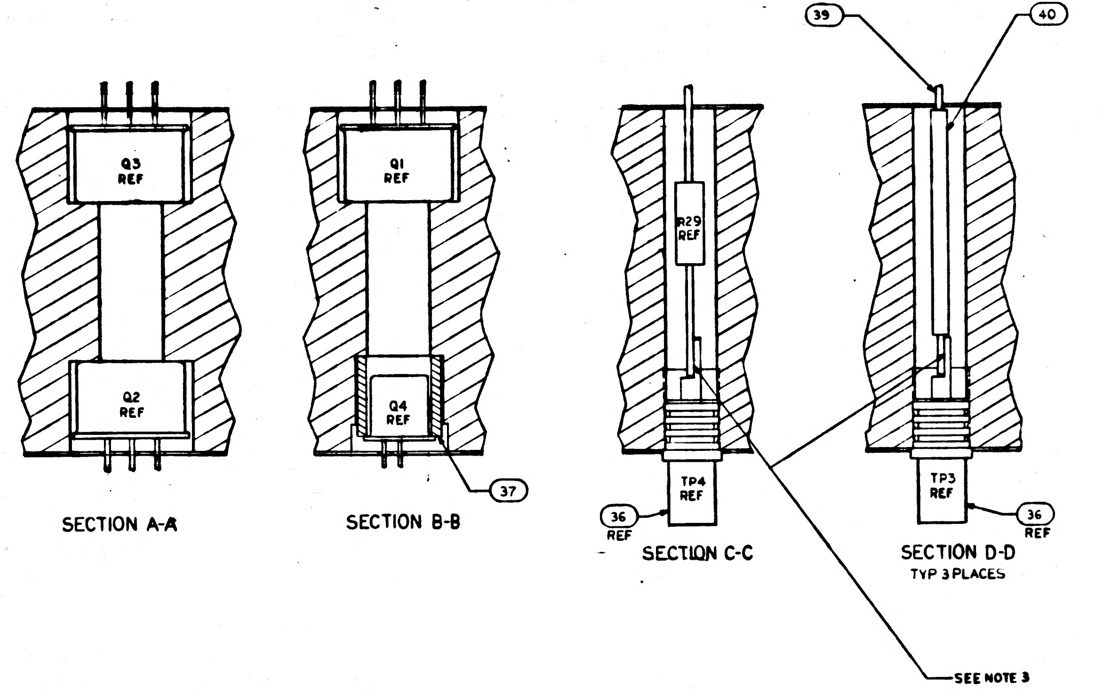
CHART B	
PART NO.	VALU
1010377 - 57	1 Ω
- 58	2 Ω
- 59	3 Ω
- 60	4 Ω
- 61	5 Ω
- 62	6 Ω
- 63	7 Ω
- 64	8 Ω
- 65	9 Ω
- 66	10 Ω
- 67	11 Ω
- 68	12 Ω
- 69	13 Ω
- 70	14 Ω
- 71	15 Ω
- 72	16 Ω
- 73	17 Ω
- 74	18 Ω
1010377 - 75	19 Ω

CHART C	
PART NO.	VALU
1010254 — 1	100
— 2	120
— 3	140
— 4	160
— 5	180
— 6	200
— 7	220
— 8	240
— 9	260
— 10	280
— 11	300
— 12	320
— 13	340
— 14	360
— 15	380
— 16	400
— 17	420
— 18	440
— 19	460
— 20	480
— 21	500

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
10.-MARK .100/.060 HIGH, WHITE, PER ND 1002019 APPROX AS SHOWN

11.-AT ELECTRICAL TEST, R 25 TO BE SELECTED FROM CHART A
12.-AT ELECTRICAL TEST, R 26 TO BE SELECTED FROM CHART B
13.-AT ELECTRICAL TEST, R 27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MSFC-PROC-158A

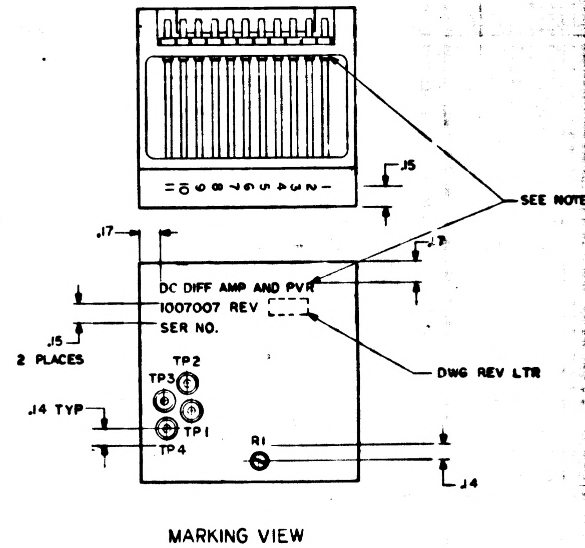

Q3 REF
Q2 REF
Q1 REF
Q4 REF
37
R29 REF
TP4 REF
36 REF
39
40
TP3 REF
36 REF
SEE NOTE 3

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D
TYP 3 PLACES


.15
SEE NOTE
.17
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15 2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1
.14
DWG REV LTR

MARKING VIEW
SCALE 2/1

APOLLO G&N SPECIFICATION
PS-1007007 A
31 January 1964

Class A Release
TDRR 06060

PROCUREMENT SPECIFICATION
FOR
ASSEMBLY, DC DIFFERENTIAL
AMPLIFIER AND PVR

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
11-18-64	A	14365	3, 5	W.K.	WJR

This specification consists of page i to iii and 1 to 6 inclusive.

3.3.7 Temperature Coefficient. Over an assembly temperature range from +45°C to +55°C, the output voltage shall change less than 3 ppm/degree C.

3.3.8 Output Voltage. The output voltage shall be 6.000000 vdc absolute to within a tolerance as specified in Table II when measured across the scale factor resistor as shown in Figure 3, FTM-1007007, under the conditions as specified in JDC-09336 of FTM-1007007.

3.3.9 Stability. With the temperature of the assembly stabilized at +50°C for 2 hours and the output and time voltages measured for 80 hours at intervals of 60±3 minutes, the time - stability of the output shall be equal to or less than 50 ppm/yr. to be demonstrated by the method described in JDC 09343, FTM-1007007.

3.4 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.4.1 Service Life.

3.4.1.1 Operating Life. The assembly shall meet the performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.4.1.2 Shelf Life. The assembly shall have a shelf life of at least 2 years, without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.4.1.3 Reliability. Design objectives require maximum reliability of the assembly during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 3.0 failures per million hours.

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01009	[illegible]	DJ WK
B	REVISED PER TDRR 01180	5-8-63	DJ WK

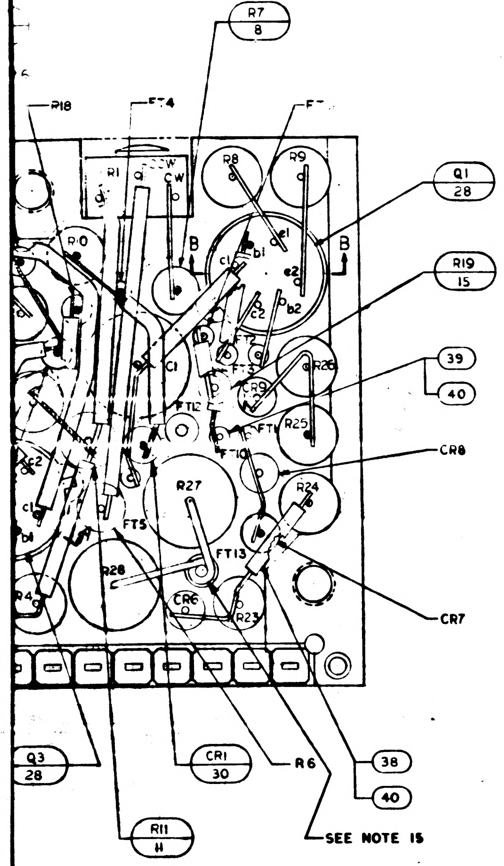


CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377 – 57	Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
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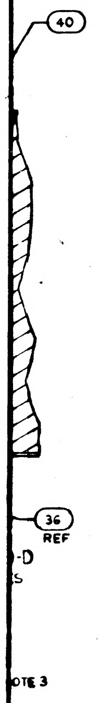
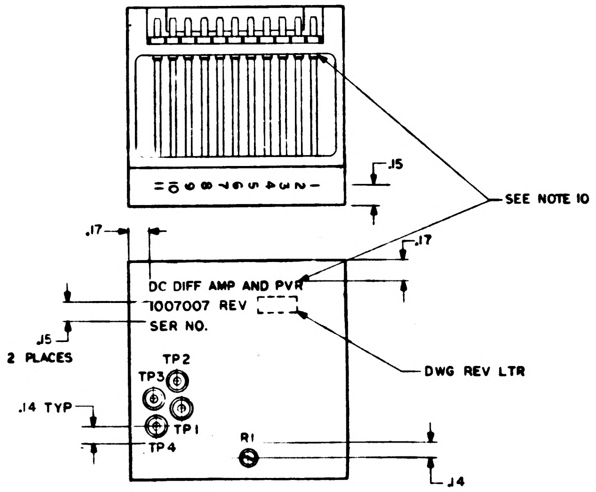
– 19	460
– 20	480
– 21	500





MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006787-2	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1010259	DIODE	35
1	1010260	DIODE	34
2	1010258	DIODE	33
2	1010257-2	DIODE	32
2	1010257-1	DIODE	31
1	1010280	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376-1	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10 %	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5 %	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1 %	24
1	SEE NOTE 17	RESISTOR, FIXED WW, 1/8 W, .02 %	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5 %	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1 %	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 175K, 1/8 W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN H. Hoagan DATE 12-18-62
CHECKED W. F. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL W. J. [illegible] 2-13-63
MIT APPROVAL 13 Feb 63

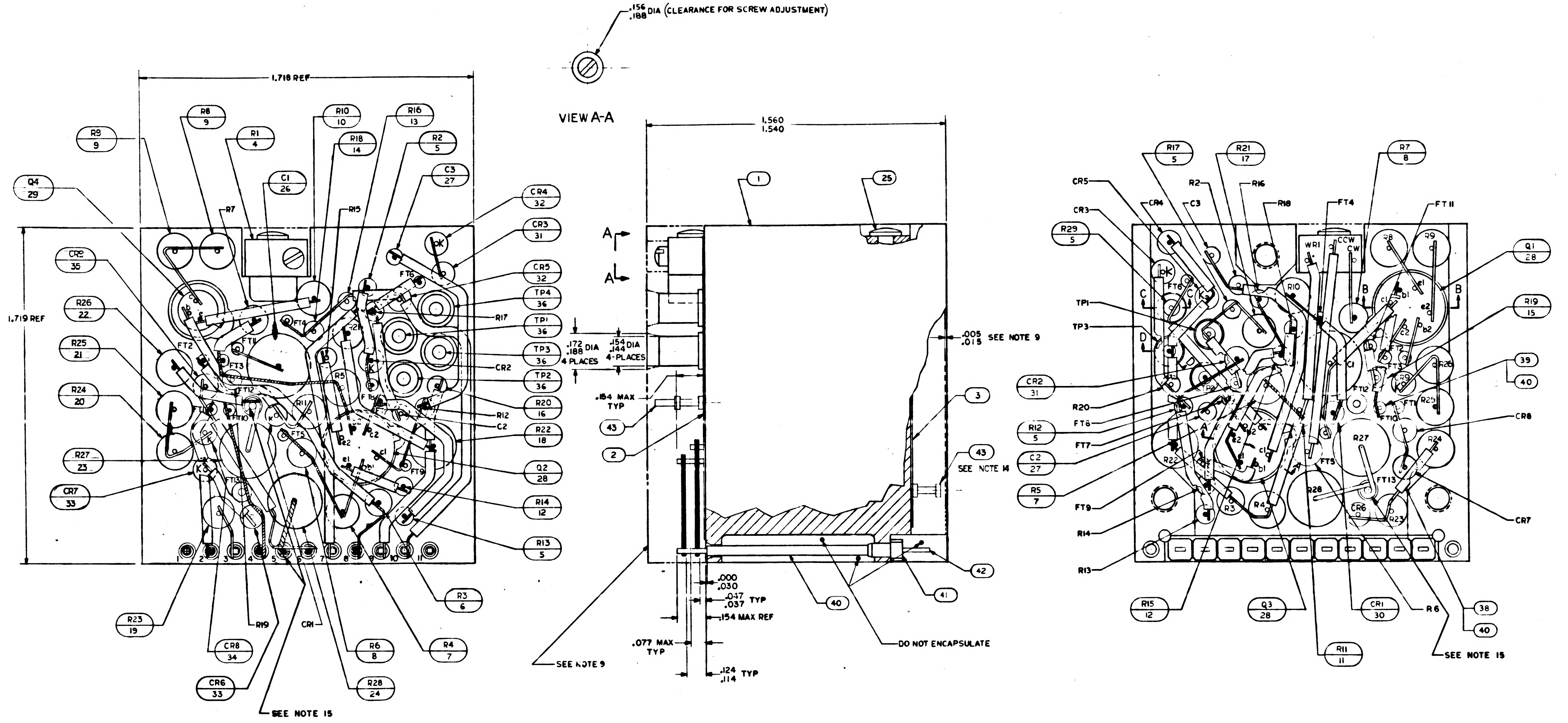
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER & PVR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007007
SCALE 5/1
WT
SHEET 1 OF 1

PHOTOGRAPHIC SCALE ONLY

[illegible]


.156
.188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.718 REF
1.719 REF
1.560
1.540
R8 9
R1 4
C1 26
R10 10
R18 14
R16 13
R2 5
C3 27
Q4 29
CR4 32
CR3 31
CR2 35
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R26 22
R25 21
R24 20
R27 23
CR7 33
R20 16
R22 18
Q2 28
R14 12
R13 5
R3 6
R4 7
R6 8
R28 24
R23 19
CR8 34
CR6 33
R19
CR1
R7
R15
R17
R12
C2
FT1
FT2
FT3
FT4
FT6
FT9
FT11
FT12
FT13
SEE NOTE 15
.172
.188 DIA
4 PLACES
.154
.144 DIA
4-PLACES
.154 MAX
TYP
.005
.015 SEE NOTE 9
SEE NOTE 14
SEE NOTE 9
.000
.030
.047
.037 TYP
.154 MAX REF
.077 MAX
TYP
.124
.114 TYP
DO NOT ENCAPSULATE
1
2
3
25
40
41
42
43
A
R17 5
R21 17
R7 8
R29 5
Q1 28
R19 15
39
40
CR2 31
R12 5
C2 27
R5 7
R15 12
Q3 28
CR1 30
R11 11
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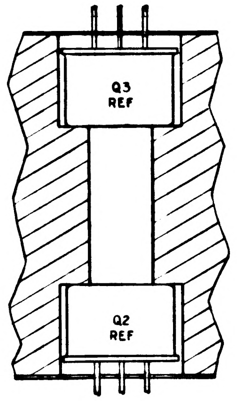
R6
CR8
CR7
FT7
FT8
R13
R14
TP1
TP3
WR1
CCW
CW
SEE NOTE 15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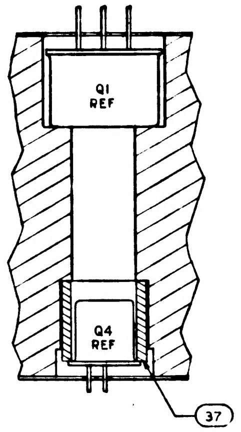
Q2
REF

SECTION A-A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Q4
REF
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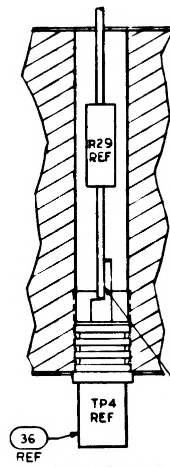
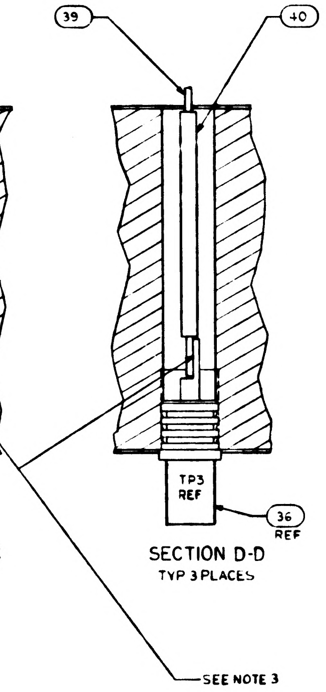
SECTION B-B


R29
REF
TP4
REF
36
REF

SECTION C-C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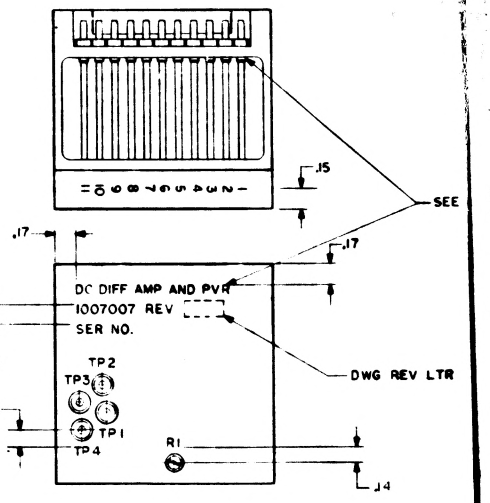
TP3
REF
36
REF
SEE NOTE 3

SECTION D-D
TYP 3 PLACES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.15
.17
.17
SEE
DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15
2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1
.14
DWG REV LTR

MARKING VIEW
SCALE 2/1

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
10.-MARK .100/.060 HIGH, WHITE, PER ND 1002019 APPROX AS SHOWN

11.-AT ELECTRICAL TEST, R 25 TO BE SELECTED FROM CHART A
12.-AT ELECTRICAL TEST, R 26 TO BE SELECTED FROM CHART B
13.-AT ELECTRICAL TEST, R 27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16. CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ______
17. R26 AND R27 TO BE SELECTED PER A.T.P ______

CHART
PART NO.
1010377 – 26
– 27
– 28
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
1010377 – [illegible]

CHART
PART NO.
1010377 – 57
– 58
– 59
– 60
– 61
– 62
– 63
– 64
– 65
– 66
– 67
– 68
– 69
– 70
– 71
– 72
– 73
– 74
1010377 – 75

CHART
PART NO.
1010254 – 1
– 2
– 3
– 4
– 5
– 6
– 7
– 8
– 9
– 10
– 11
– 12
– 13
– 14
– 15
– 16
– 17
– 18
– 19
– 20
– 21

34

1007007

PHOTOGRAPHIC SCALE ONLY

1007007 C

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01009		WR
B	REVISED PER TDRR 01180	5-8-63	DJ WR
C	REVISED PER TDRR 01313	5-22-63	WR

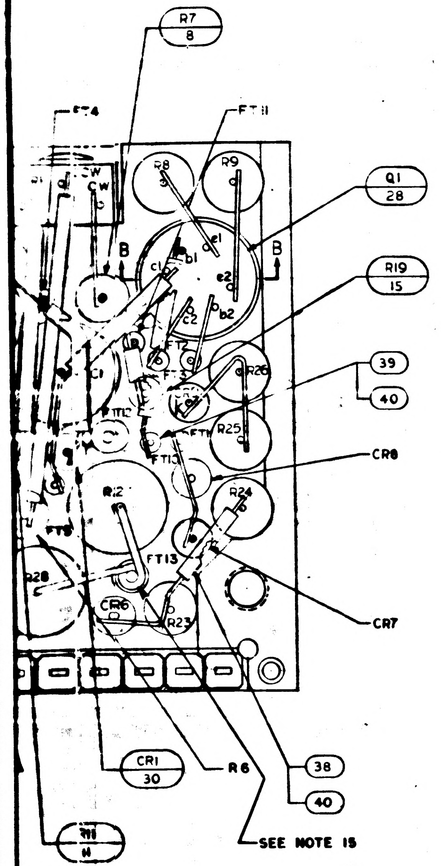
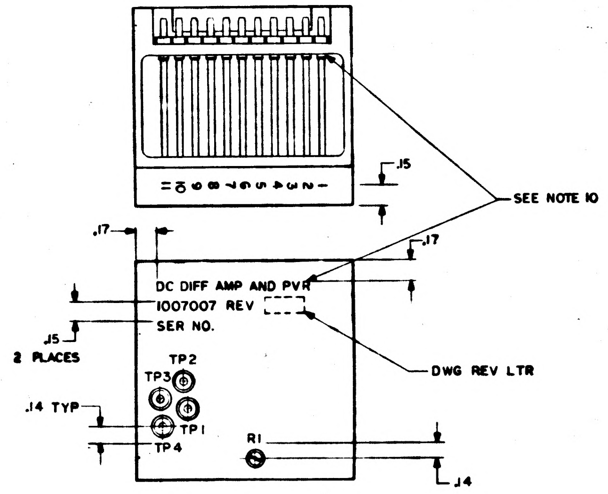


CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500



MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006787-2	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1010259	DIODE	35
1	1010260	DIODE	34
2	1010258	DIODE	33
2	1010372 -33	DIODE	32
2	1010372 -32	DIODE	31
1	1010372 - 3	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376 - 3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10 %	27
1	1010264 -24	CAPACITOR, MYLAR, .082 UF, 200V, 5 %	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254 -22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1 %	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02 %	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5 %	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1 %	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 2%	19
1	1010399 -49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 175K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 2%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG. NO. CONTRACT
DRAWN DATE
CHECKED 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL 5-13-63
MIT APPROVAL 12 Feb 63

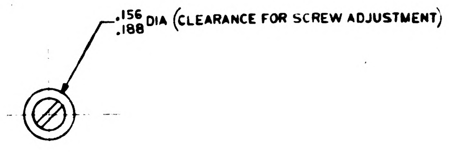
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007007
SCALE 2/1
WT
SHEET 1 OF 1

1007007 C

PHOTOGRAPHIC SCALE ONLY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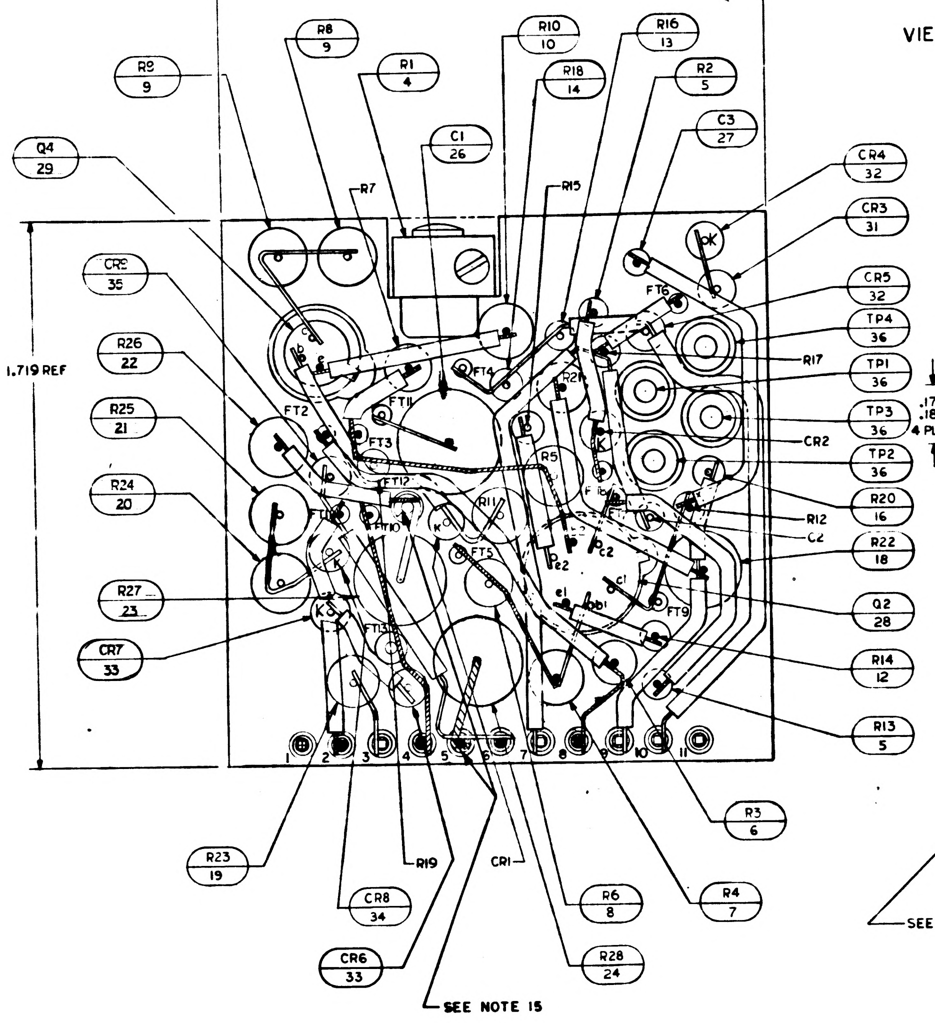
.188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)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CR3 31
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R17
CR2
R20 16
R12
C2
R22 18
Q2 28
R14 12
R13 5
R3 6
R4 7
R6 8
R28 24
CR1
R19
CR8 34
CR6 33
SEE NOTE 15
R23 19
CR7 33
R27 23
R24 20
R25 21
R26 22
CR9 35
Q4 29
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R15
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FT3
FT11
FT17
FT6
FT14
FT9
R5
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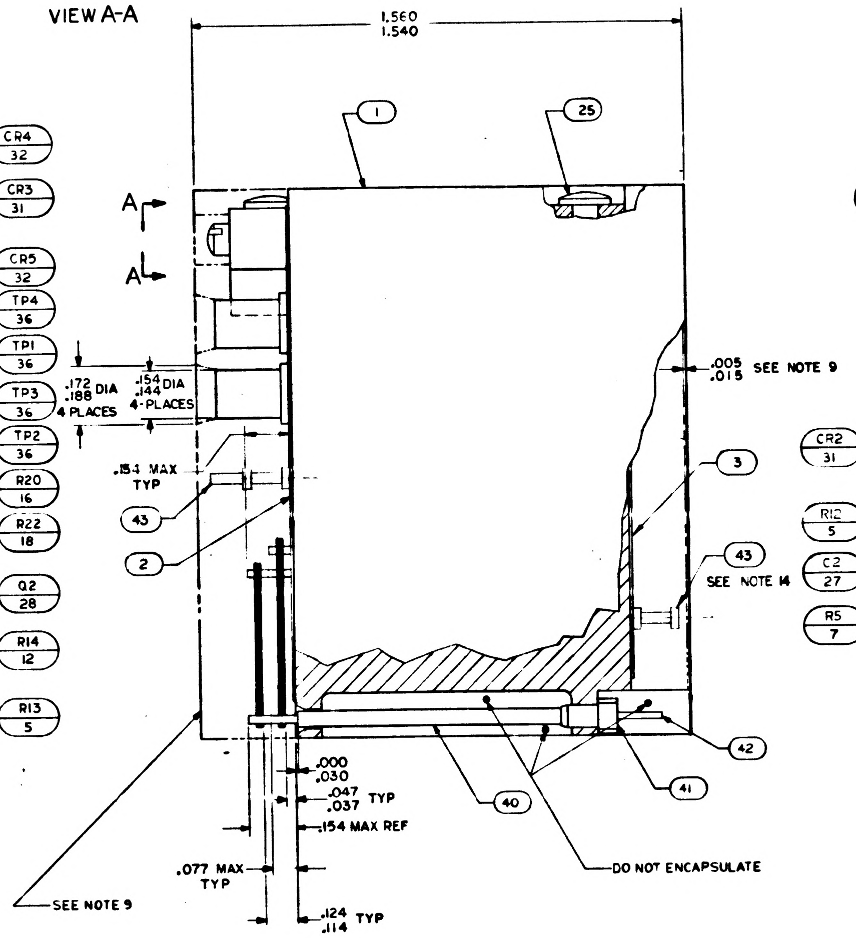
VIEW A-A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2
.005
.015 SEE NOTE 9
3
43
SEE NOTE 14
42
41
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.030
.047
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TYP
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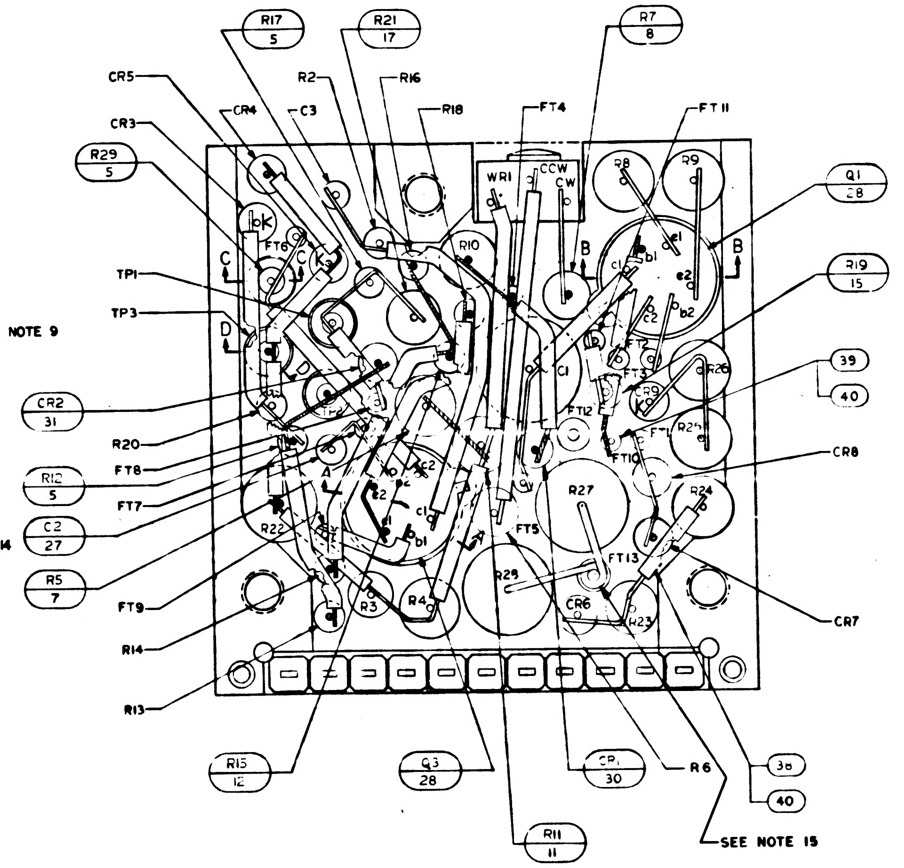
.114 TYP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R2
R16
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R19 15
39
40
CR8
TP1
TP3
CR2 31
R20
FT8
R12 5
FT7
C2 27
R5 7
FT9
R14
R13
R15 12
Q3 28
R11 11
CR 30
R6
38
40
SEE NOTE 15
CR7
WR1
CCW
CW
B
B
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D
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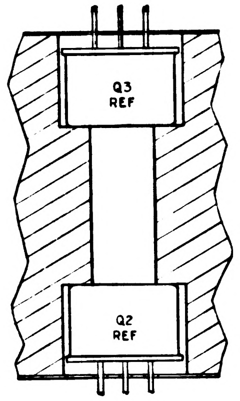
FT13
R3
R4
R22
CR6
R23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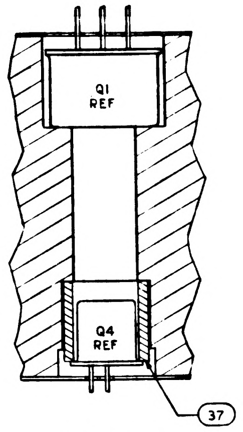
SECTION A-A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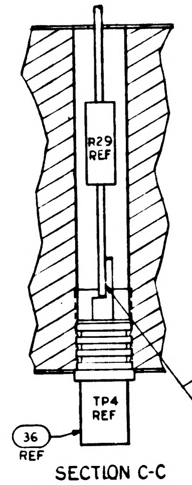
SECTION B-B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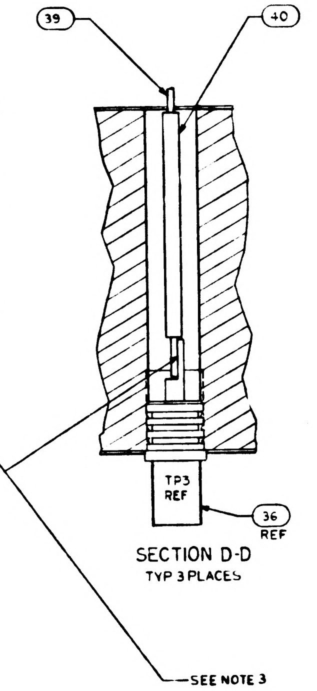
SECTION C-C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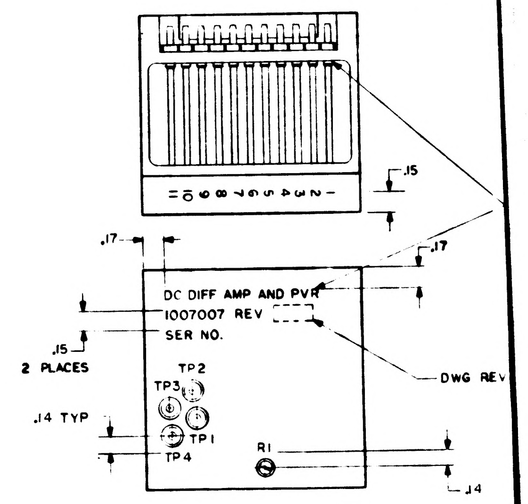
SEE NOTE 3

SECTION D-D
TYP 3 PLACES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DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15
2 PLACES
TP2
TP3
TP1
TP4
R1
.14 TYP
.14
DWG REV

MARKING VIEW
SCALE 2/1

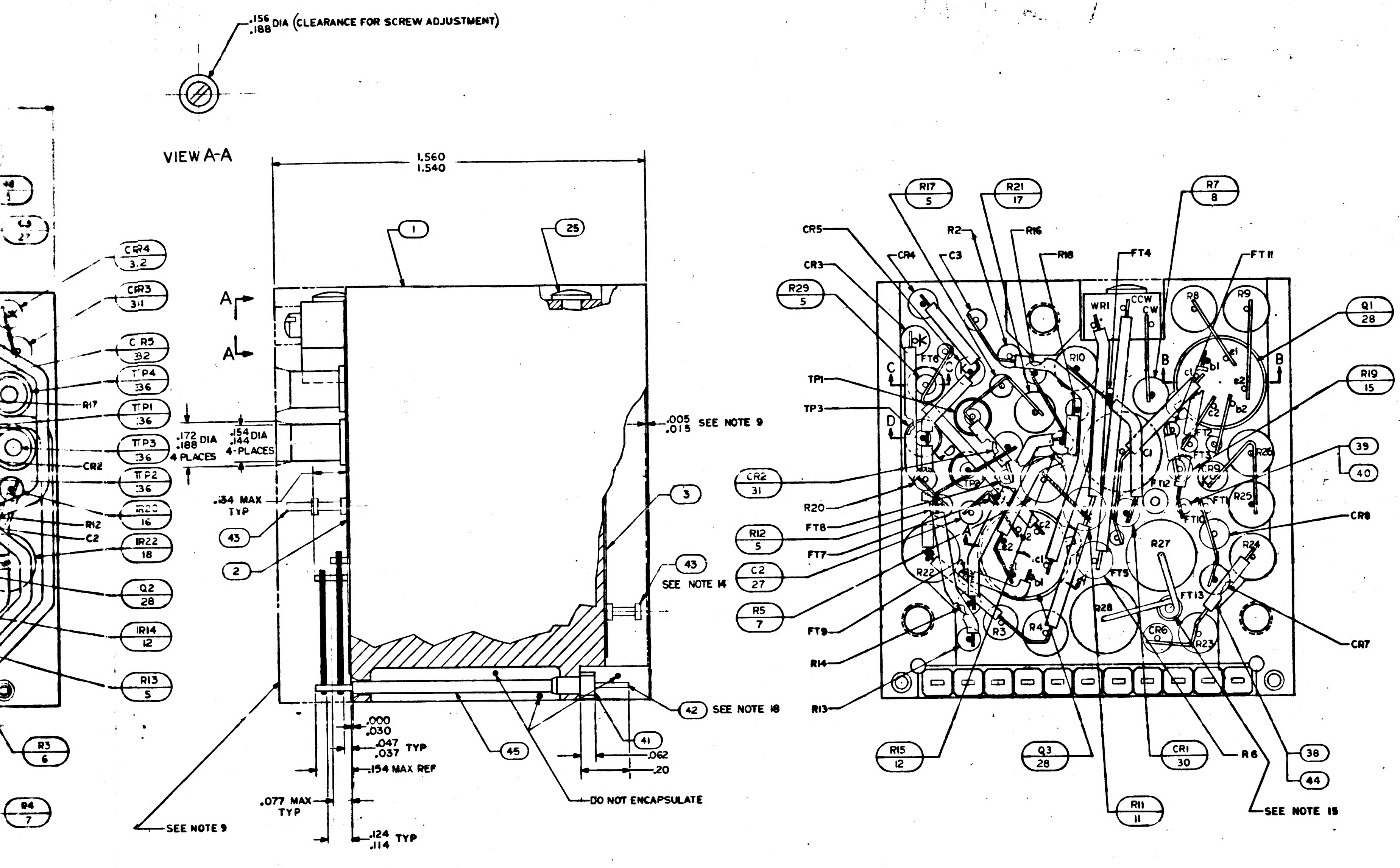
NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
10.-MARK .100/.060 HIGH, WHITE, PER ND 1002019 APPROX AS SHOWN

11.-AT ELECTRICAL TEST, R 25 TO BE SELECTED FROM CHART A
12.-AT ELECTRICAL TEST, R 26 TO BE SELECTED FROM CHART B
13.-AT ELECTRICAL TEST, R 27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16. CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ________
17. R26 AND R27 TO BE SELECTED PER A.T.P. ________

1007007 D

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01009		DJ WR
B	REVISED PER TDRR 01180	5-8-63	DJ WR
C	REVISED PER TDRR 01313	5-22-63	AVV WR
D	REVISED PER TDRR 01721	6-26-63	JJM WR


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.560 1.540
CR4 3.2
CR3 3-1
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R17
CR2
R12
C2
R22 18
Q2 28
R14 12
R13 5
R3 6
R4 7
A
.172 .188 DIA 4 PLACES
.154 .144 DIA 4-PLACES
.134 MAX TYP
.005 .015 SEE NOTE 9
SEE NOTE 14
SEE NOTE 18
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
.062
.20
DO NOT ENCAPSULATE
SEE NOTE 9
1
2
3
25
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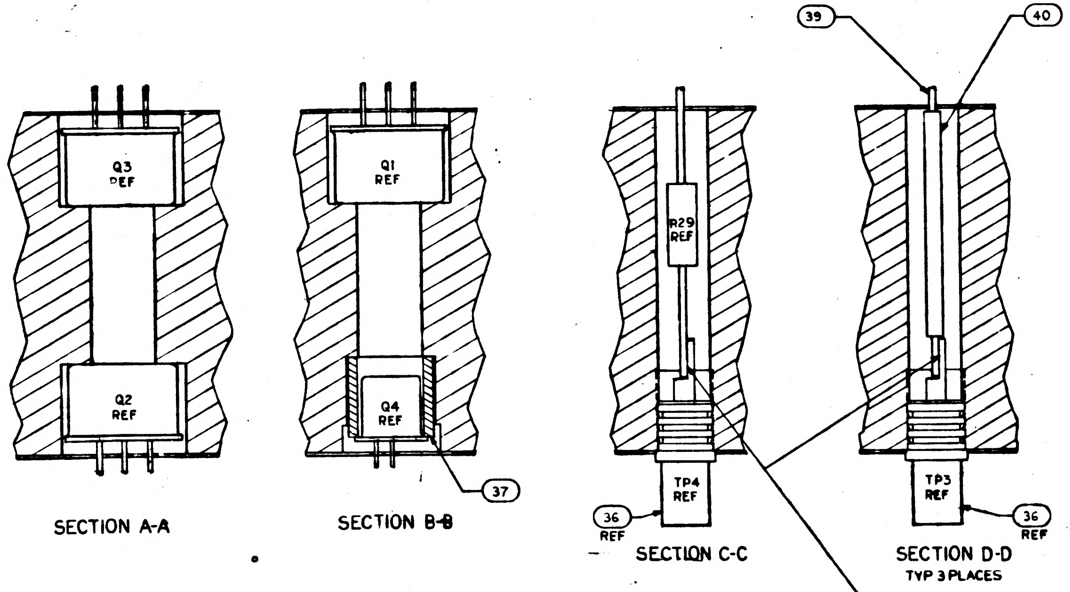
42
43
45
R17 5
R21 17
R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29 5
WR1
CCW
CW
R8
R9
Q1 28
R10
FT6
TP1
TP3
R19 15
CR2 31
R26
39
40
R20
FT8
FT7
R12 5
C2 27
R5 7
R25
CR8
R27
R24
R22
FT9
R28
FT13
CR7
R14
R3
R4
CR6
R23
R13
R15 12
Q3 28
CR1 30
R6
38
44
R11 11
SEE NOTE 15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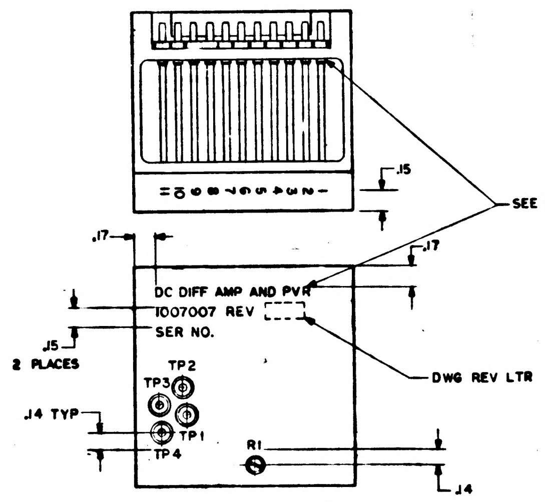
Q2 REF
Q4 REF
37
R29 REF
39
40
TP4 REF
TP3 REF
36 REF
36 REF
SEE NOTE 3

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D
TYP 3 PLACES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SEE NOTE 10
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.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
DWG REV LTR
.15
2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1
.14

MARKING VIEW
SCALE 2/1

CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377-57	1 Ω
-58	2 Ω
-59	3 Ω
-60	4 Ω
-61	5 Ω
-62	6 Ω
-63	7 Ω
-64	8 Ω
-65	9 Ω
-66	10 Ω
-67	11 Ω
-68	12 Ω
-69	13 Ω
-70	14 Ω
-71	15 Ω
-72	16 Ω
-73	17 Ω
-74	18 Ω
1010377-75	19 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1010259	DIODE	35
1	1010260	DIODE	34
2	1010258	DIODE	33
2	1010372-33	DIODE	32
2	1010372-32	DIODE	31
1	1010372-3	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10 %	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5 %	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1 %	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02 %	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5 %	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1 %	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 75K, 1/8 W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 5.32M, 1/8W	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

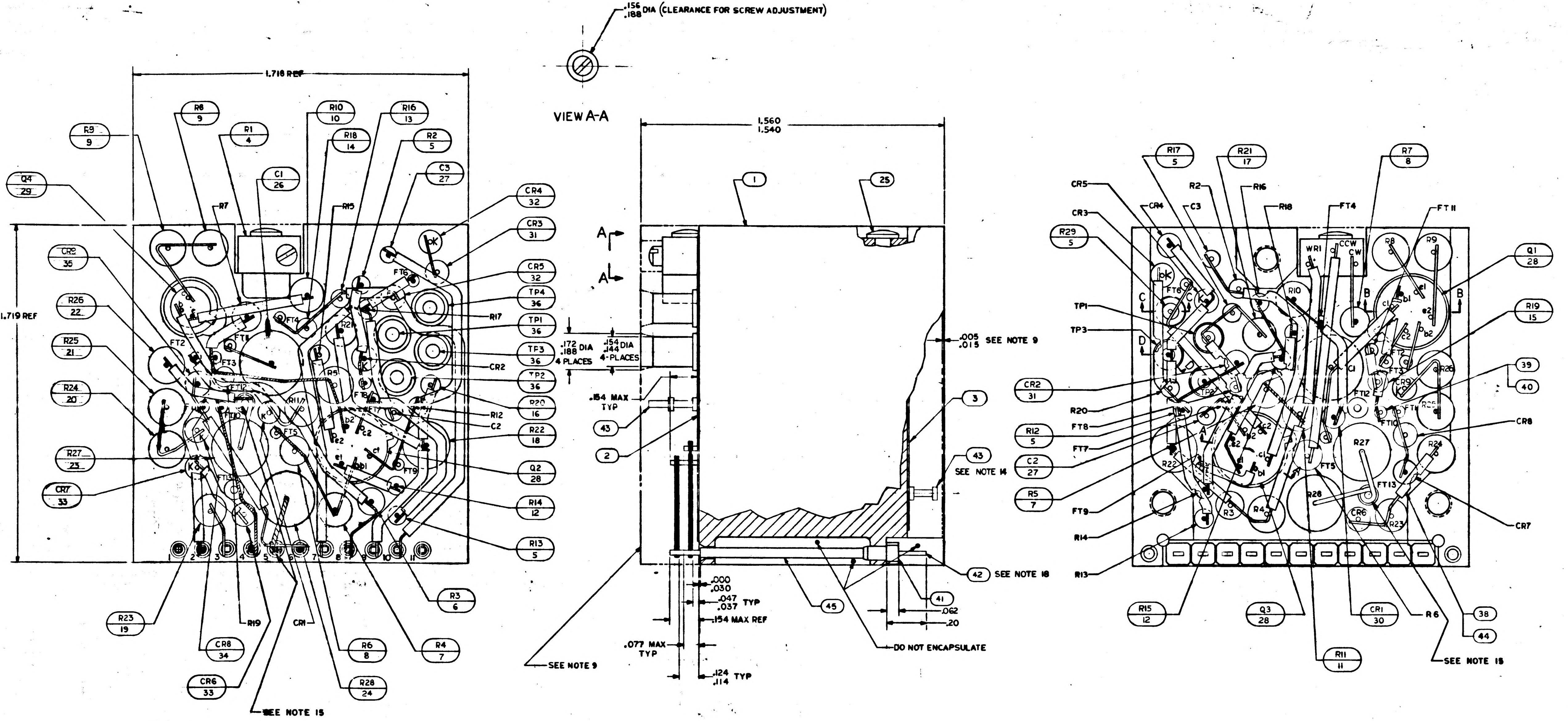
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN H. Ferguson DATE 12-18-62
CHECKED W. F. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL W G Rhine 2-13-63
12 Feb 63
MIT APPROV.

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER & PVR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007007

1007007 D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.188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
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1.719 REF
1.560
1.540
R9 9
R8 9
R1 4
R10 10
R16 13
R18 14
R2 5
C3 27
C1 26
Q4 29
R7
R15
CR4 32
CR3 31
CR2 35
CR5 32
TP4 36
TP1 36
TF3 36
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CR2
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C2
SEE NOTE 15
A
A
.172
.188 DIA
4 PLACES
.154
.144 DIA
4-PLACES
.005
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.154 MAX
TYP
1
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SEE NOTE 14
42 SEE NOTE 18
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.114 TYP
DO NOT ENCAPSULATE
SEE NOTE 9
R17 5
R21 17
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CR5
CR3
CR4
C3
R2
R16
R18
FT4
FT11
R29 5
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CCW
CW
Q1 28
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TP1
TP3
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FT8
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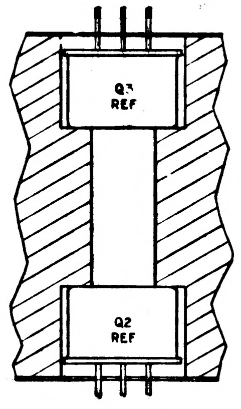
FT7
C2 27
R5 7
CR8
FT9
R14
R13
R15 12
Q3 28
R11 11
CR1 30
R6
38
44
CR7
SEE NOTE 15

VIEW A-A

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
10.-MARK .100/.060 HIGH, WHITE, PER ND 1002019 APPROX AS SHOWN

11.-AT ELECTRICAL TEST, R 25 TO BE SELECTED FROM CHART A
12.-AT ELECTRICAL TEST, R 26 TO BE SELECTED FROM CHART B
13.-AT ELECTRICAL TEST, R 27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16. CR6,CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ________
17. R26 AND R27 TO BE SELECTED PER A.T.P ________
18 MUST MEET REQUIRMENTS OF ND 1002136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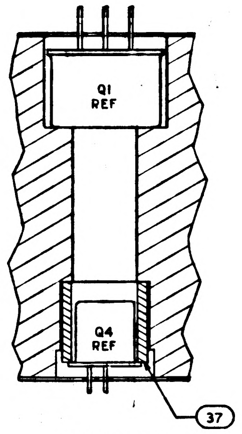
SECTION A-A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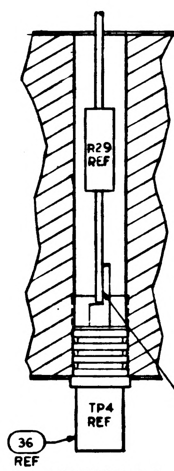
SECTION B-B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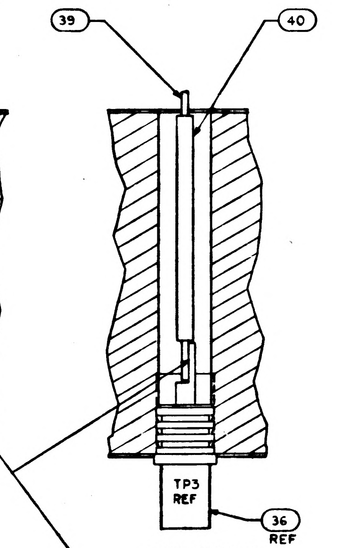
SECTION C-C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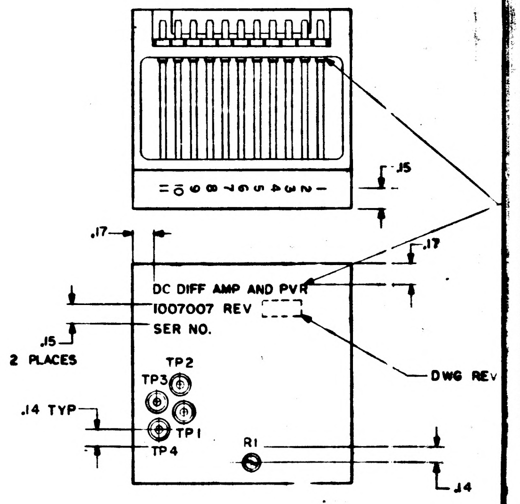
SECTION D-D
TYP 3 PLACES

SEE NOTE 3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DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15
2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1
.14
DWG REV

MARKING VIEW
SCALE 2/1

CHAR
PART N
1010377 – 2
– 2
– [illegible]
– [illegible]
– 3
– 3
– 3
– 3
1010377 –

CHAR
P-PT
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-73
-74
1010377-75

CHAR
PART N
1010254–
–
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Ⓜ	A	REVISED PER TDRR 01009		WR
Ⓜ	B	REVISED PER TDRR 01180	3-6-63	DT WR
Ⓜ	C	REVISED PER TDRR 01313	5-22-63	WR
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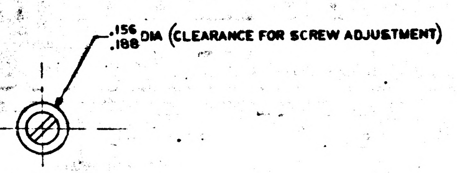
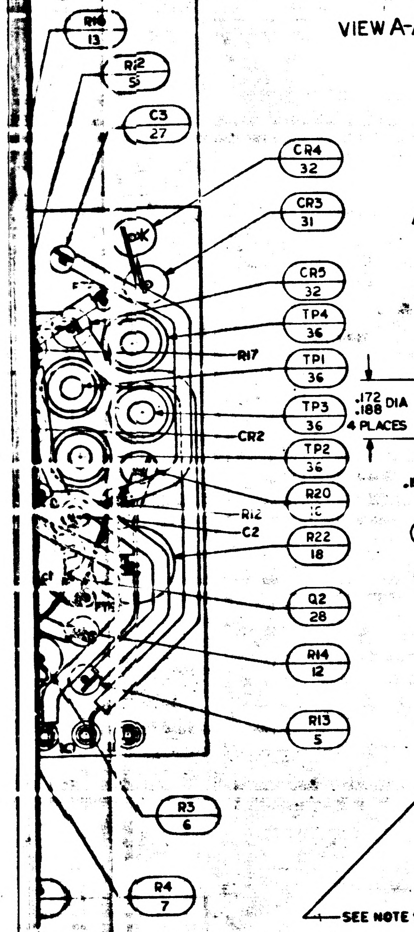
Ⓜ	E	REVISED PER TDRR 02068	7-17-63	



.156
.188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)

VIEW A-A



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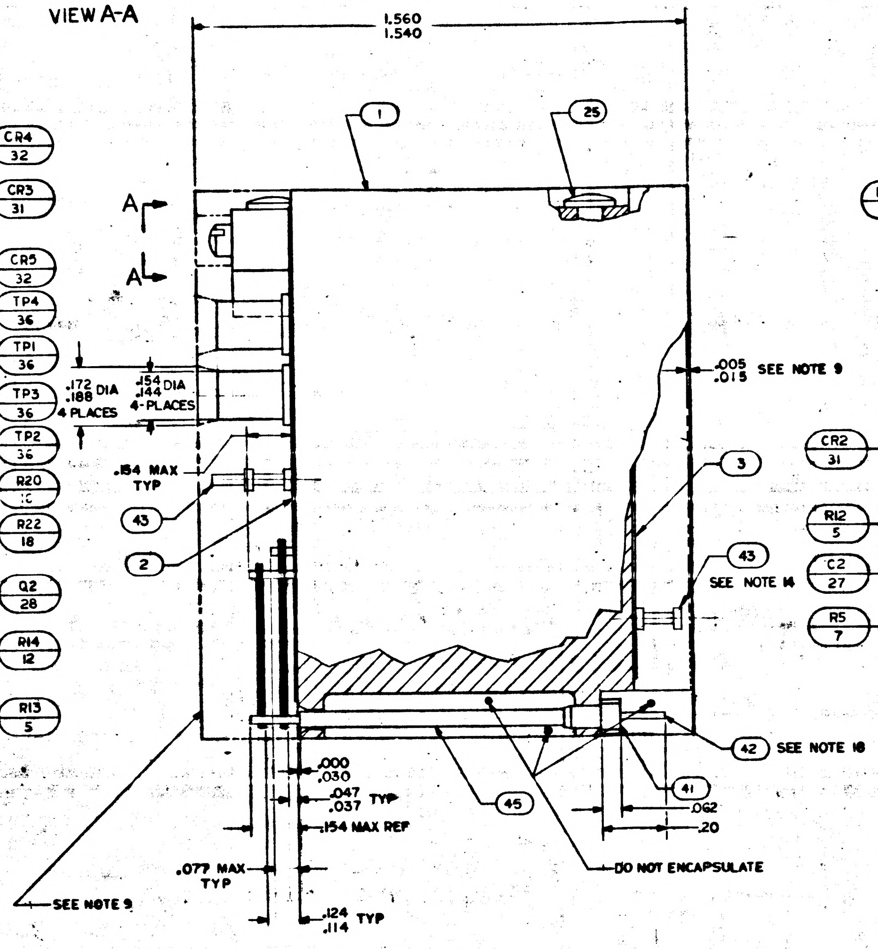

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DO NOT ENCAPSULATE
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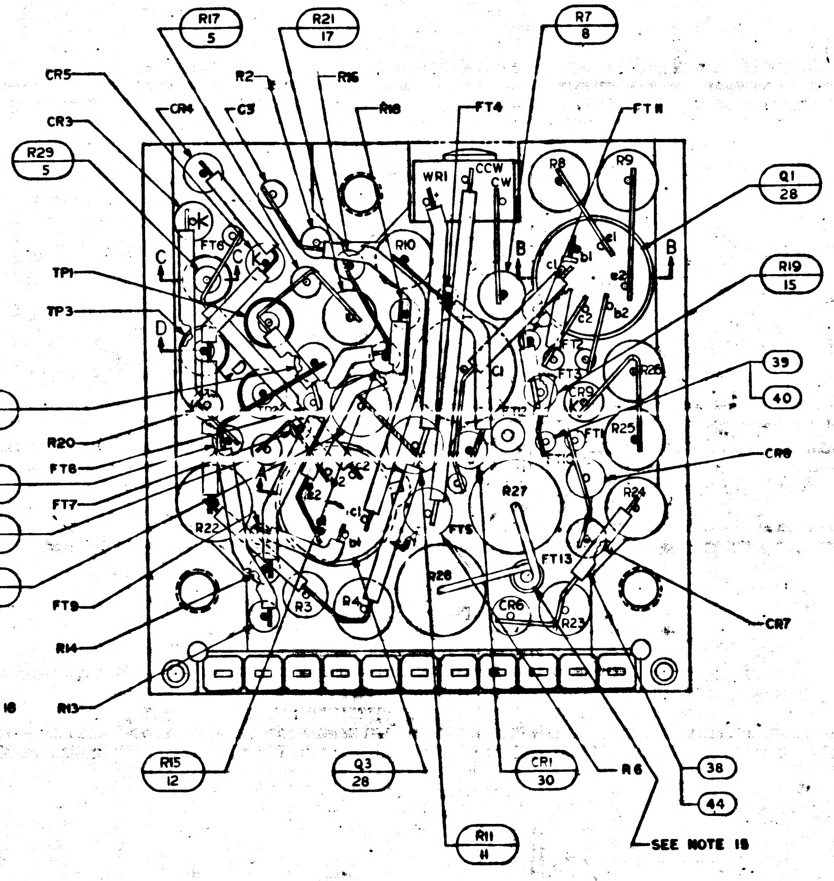
.114 TYP
SEE NOTE 9



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R2
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R18
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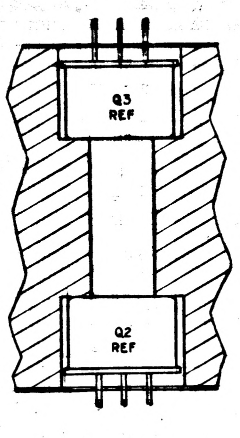
R29 5
WR1
CCW
CW
R8
R9
Q1 28
TP1
TP3
R10
R19 15
C
D
B
B
39
40
CR2 31
R20
FT8
R12 5
FT7
C2 27
R5 7
FT9
R14
R13
R25
CR8
R27
R24
R22
R26
R28
CR6
R3
R4
FT13
R23
CR7
R15 12
Q3 28
CR1 30
R6
38
44
R11 11
SEE NOTE 15

CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

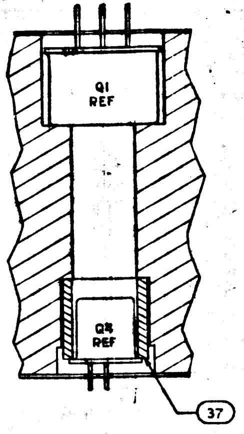
CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500



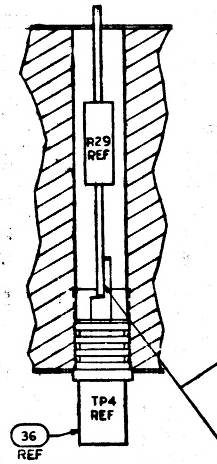
Q3 REF
Q2 REF

SECTION A-A



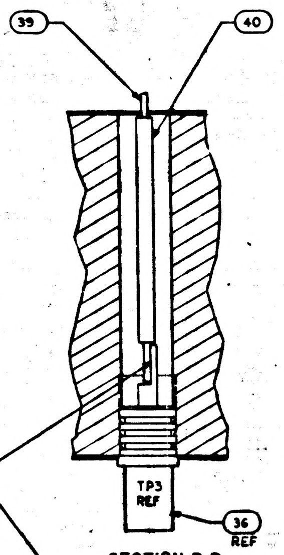
Q1 REF
Q3 REF
37

SECTION B-B



R29 REF
TP4 REF
36 REF

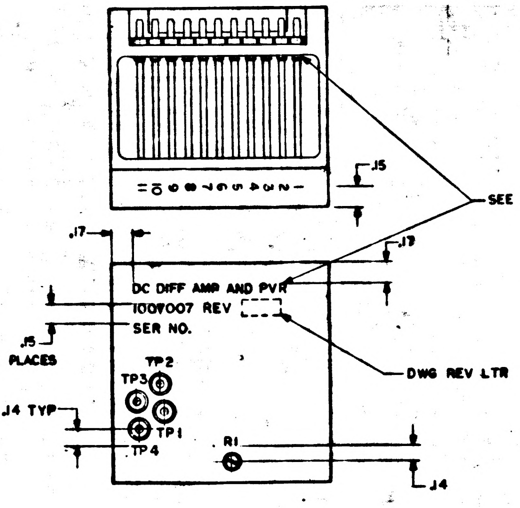
SECTION C-C



39
40
TP3 REF
36 REF

SECTION D-D
TYP 3 PLACES

SEE NOTE 3



.15
SEE NOTE 10
.17
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
DWG REV LTR
.15
2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1
.14

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1010259	DIODE	35
1	1010260	DIODE	34
2	1010258	DIODE	33
2	1010372 -33	DIODE	32
2	1010372-32	DIODE	31
1	1010372 - 3	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376 - 3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10 %	27
1	1010264 -24	CAPACITOR, MYLAR, .082 UF, 200V, 5 %	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254 -22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1 %	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02 %	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5 %	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1 %	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 2%	19
1	1010399 -49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 75K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 5.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN DATE
CHECKED W. J. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL 2-13-63
MIT APPROVAL 13 Feb 63

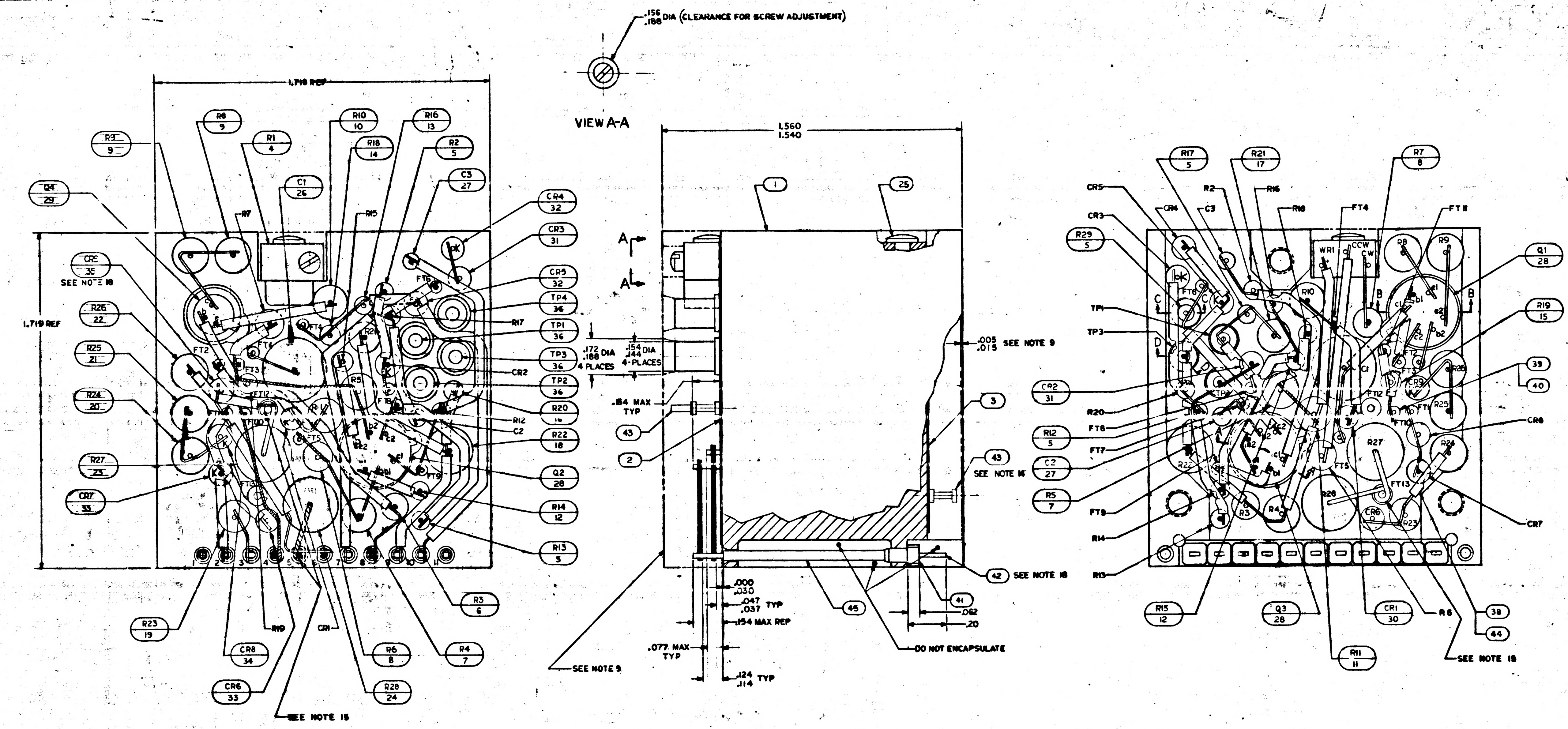
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

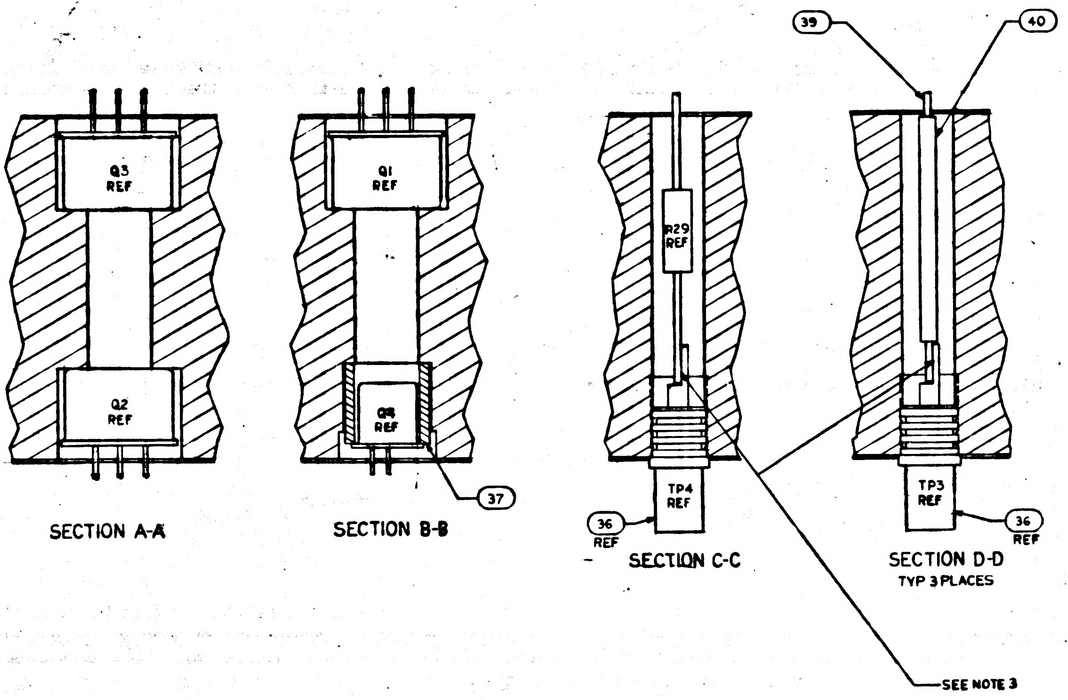
ASSEMBLY DC DIFFERENTIAL AMPLIFIER & PVR

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007007
SCALE 5/1 | WT | SHEET 1 OF 1

1007007 E

F-2


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.719 REF
1.560 1.540
R3 9
R8 9
R1 4
R10 10
R18 14
R16 13
R2 5
C1 26
C3 27
Q4 29
CR4 32
CR3 31
CR5 32
CR2 35 SEE NOTE 19
R26 22
R25 21
R24 20
R27 23
CR7 33
TP4 36
TP1 36
TP3 36
TP2 36
R20 16
R22 18
Q2 28
R14 12
R13 5
R3 6
R4 7
R6 8
R28 24
R23 19
CR8 34
CR6 33
CR1
R19
SEE NOTE 15
.172 .188 DIA 4 PLACES
.154 .144 DIA 4 PLACES
.154 MAX TYP
.005 .015 SEE NOTE 9
SEE NOTE 14
42 SEE NOTE 18
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
.062
.20
DO NOT ENCAPSULATE
SEE NOTE 9
R17 5
R21 17
R7 8
R29 5
Q1 28
R19 15
CR2 31
R12 5
C2 27
R5 7
R15 12
Q3 28
R11 11
CR1 30
SEE NOTE 18

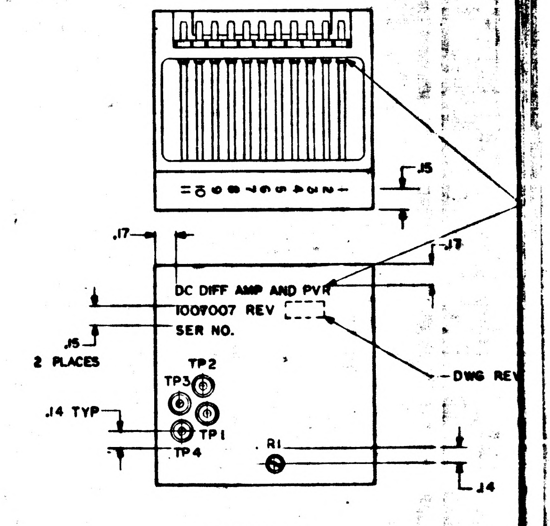

39
40
Q3 REF
Q2 REF
Q1 REF
Q4 REF
37
R29 REF
TP4 REF
36 REF
TP3 REF
36 REF
SEE NOTE 3

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D
TYP 3 PLACES


.15
.17
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15 2 PLACES
TP2
TP3
TP1
TP4
R1
.14 TYP
.14
DWG REV

MARKING VIEW
SCALE 2/1

NOTES:

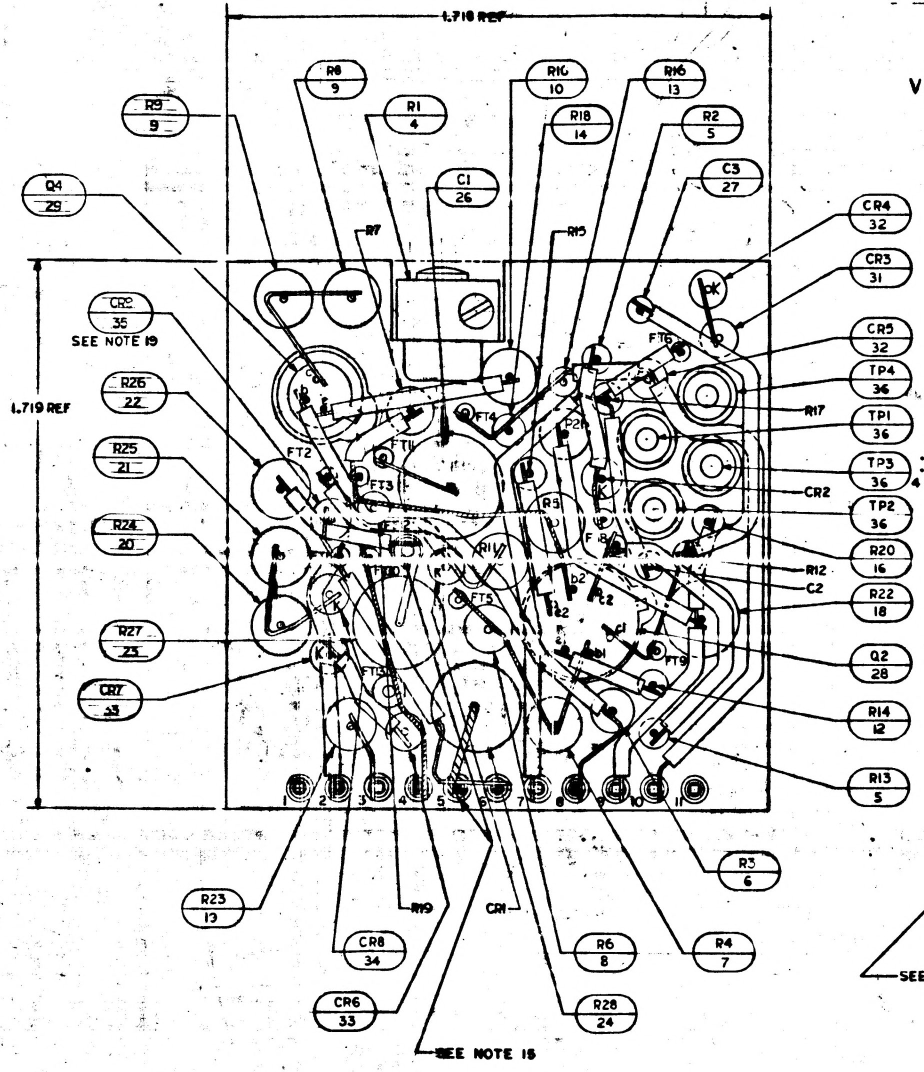
1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY ~~MIL-D-70327~~
2.-STAKE ALL COMPONENTS AND FIND NO. 36, 37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
10.-MARK .100/.060 HIGH, WHITE, PER ND 1002019 APPROX AS SHOWN

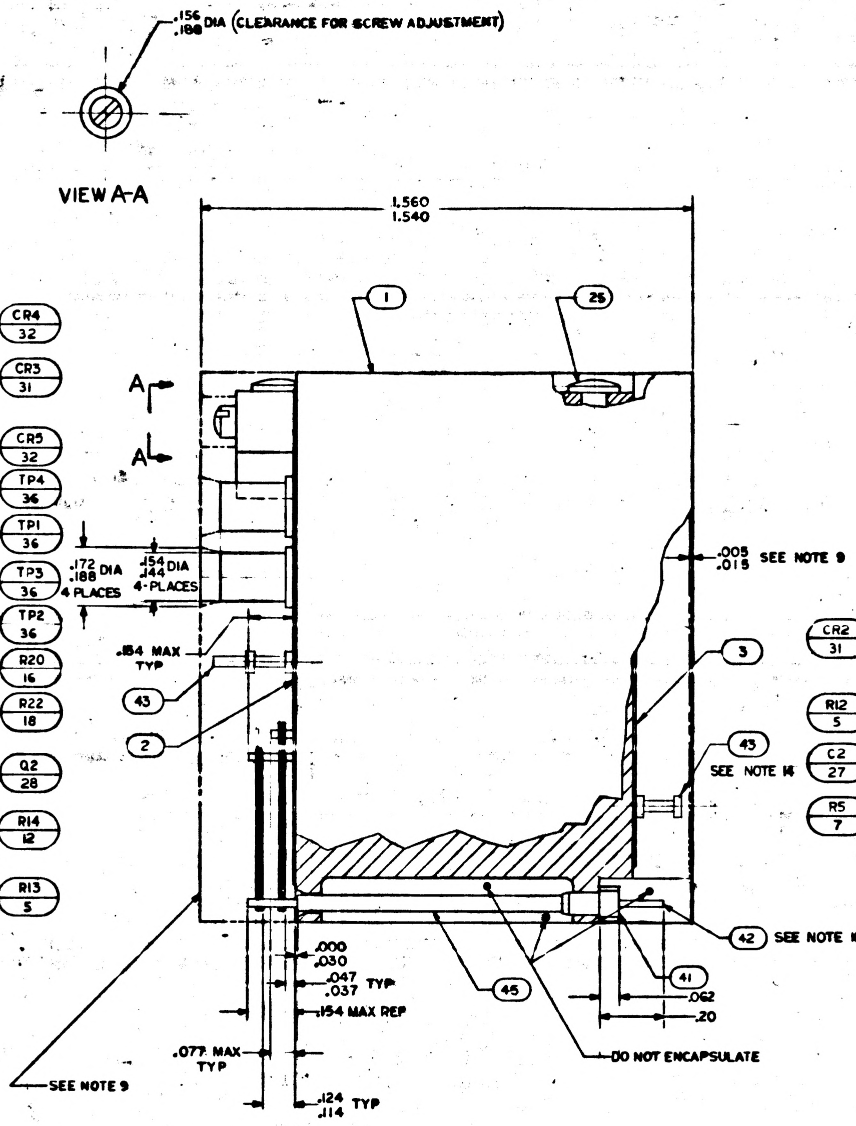
11.-AT ELECTRICAL TEST, R 25 TO BE SELECTED FROM CHART A
12.-AT ELECTRICAL TEST, R 26 TO BE SELECTED FROM CHART B
13.-AT ELECTRICAL TEST, R 27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16. CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ____________
17. R26 AND R27 TO BE SELECTED PER A.T.P. ____________
18. MUST MEET REQUIREMENTS OF ND 1002136
19. FIND NO. 35 TO BE PROCESSED IN ACCORDANCE WITH ND 1002199 AND SHALL MEET ALL REQUIREMENTS SPECIFIED BEFORE ASSEMBLY TO FIND NO. 1

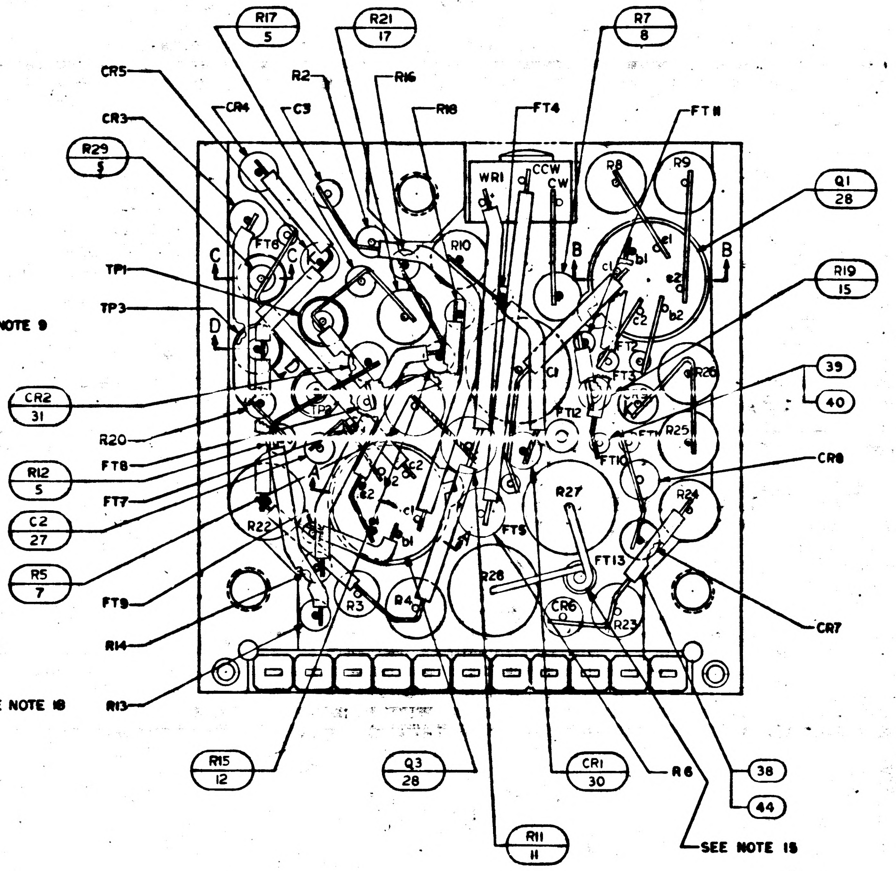
CHA
PART
010377

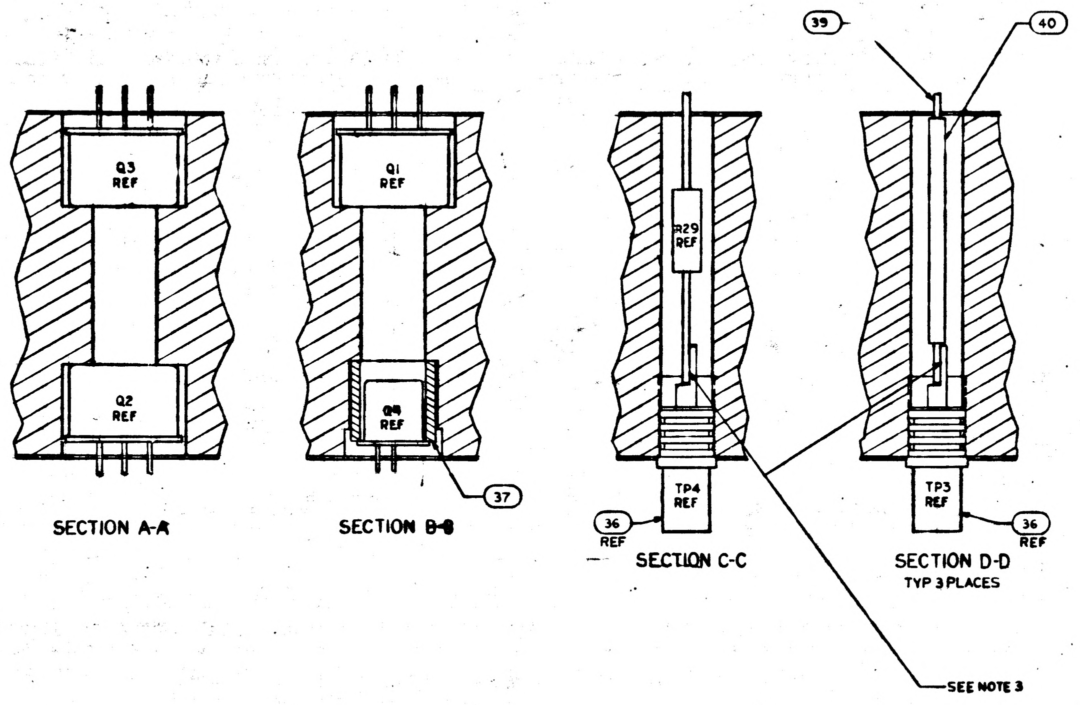
CHA
PART
010377

CHA
PART
010254


1.718 REF
1.719 REF
R9 9
R8 9
R1 4
C1 26
R16 10
R18 14
R16 13
R2 5
C3 27
Q4 29
CR4 32
CR3 31
CR2 35
SEE NOTE 19
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R26 22
R25 21
R24 20
R27 23
CR7 33
R20 16
R22 18
Q2 28
R14 12
R13 5
R3 6
R4 7
R6 8
R28 24
CR6 33
CR8 34
R23 13
R19
CR1
SEE NOTE 15


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.560 1.540
1
25
A
.172 .188 DIA 4 PLACES
.154 .144 DIA 4-PLACES
.005 .015 SEE NOTE 9
.154 MAX TYP
43
2
3
43 SEE NOTE 14
42 SEE NOTE 18
41
45
.000 .030
.047 .037 TYP
.154 MAX REF
.062
.20
DO NOT ENCAPSULATE
.077 MAX TYP
.124 .114 TYP
SEE NOTE 9


R17 5
R21 17
R7 8
CR5
CR3
R29 3
TP1
TP3
CR2 31
R20
FT8
FT7
R12 5
C2 27
R5 7
FT9
R14
R13
R15 12
Q3 28
CR1 30
R6
R11 11
Q1 28
R19 15
39
40
CR9
CR7
38
44
SEE NOTE 15
WR1
CCW
CW

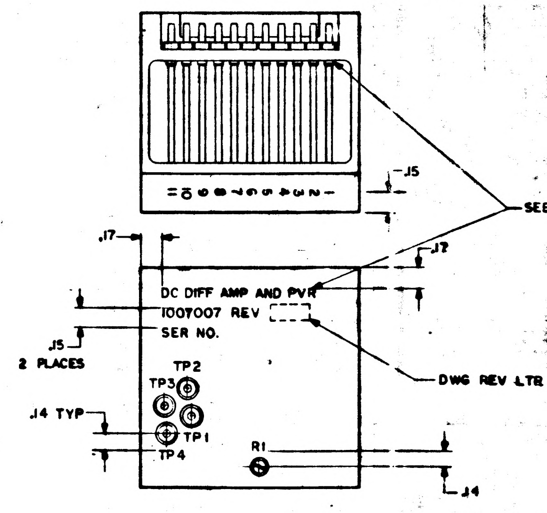

39
40
Q3 REF
Q2 REF
Q1 REF
Q4 REF
37
R29 REF
TP4 REF
TP3 REF
36 REF
SEE NOTE 3

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D
TYP 3 PLACES


J5
SEE
.17
.12
DC DIFF AMP AND PVR
1007007 REV
SER NO.
J5 2 PLACES
TP2
TP3
TP1
TP4
J4 TYP
R1
DWG REV LTR
J4

MARKING VIEW
SCALE 2/1

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
10.-MARK .100/.060 HIGH, WHITE, PER ND 1002019 APPROX AS SHOWN

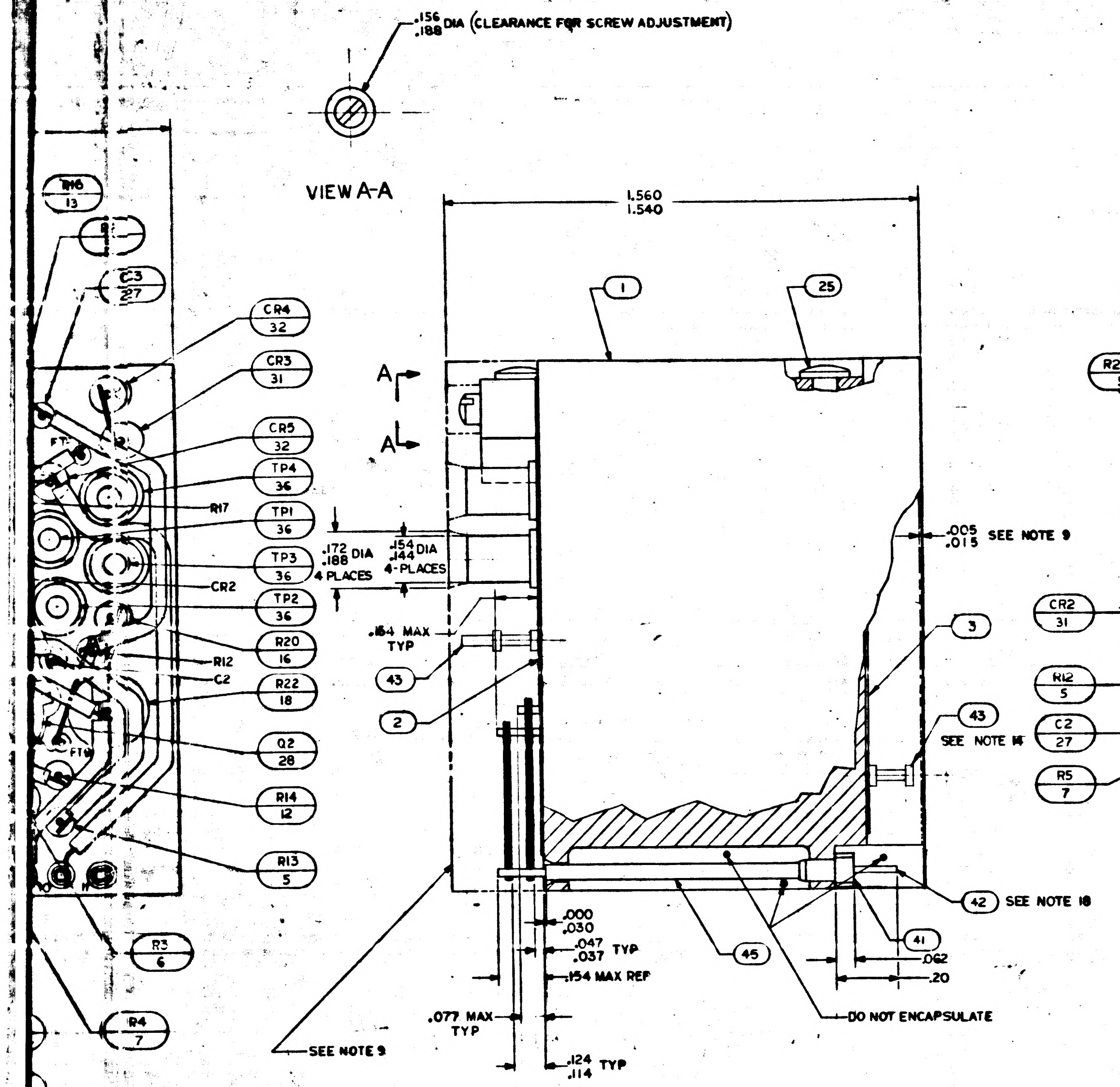
11.-AT ELECTRICAL TEST, R 25 TO BE SELECTED FROM CHART A
12.-AT ELECTRICAL TEST, R 26 TO BE SELECTED FROM CHART B
13.-AT ELECTRICAL TEST, R 27 TO BE SELECTED FROM CHART C
14. CUT FT3 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16. CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ________
17. R26 AND R27 TO BE SELECTED PER A.T.P. ________
18. MUST MEET REQUIREMENTS OF ND 1002136
19. FIND NO.35 TO BE PROCESSED IN ACCORDANCE WITH ND 1002199 AND SHALL MEET ALL REQUIREMENTS SPECIFIED BEFORE ASSEMBLY TO FIND NO.1

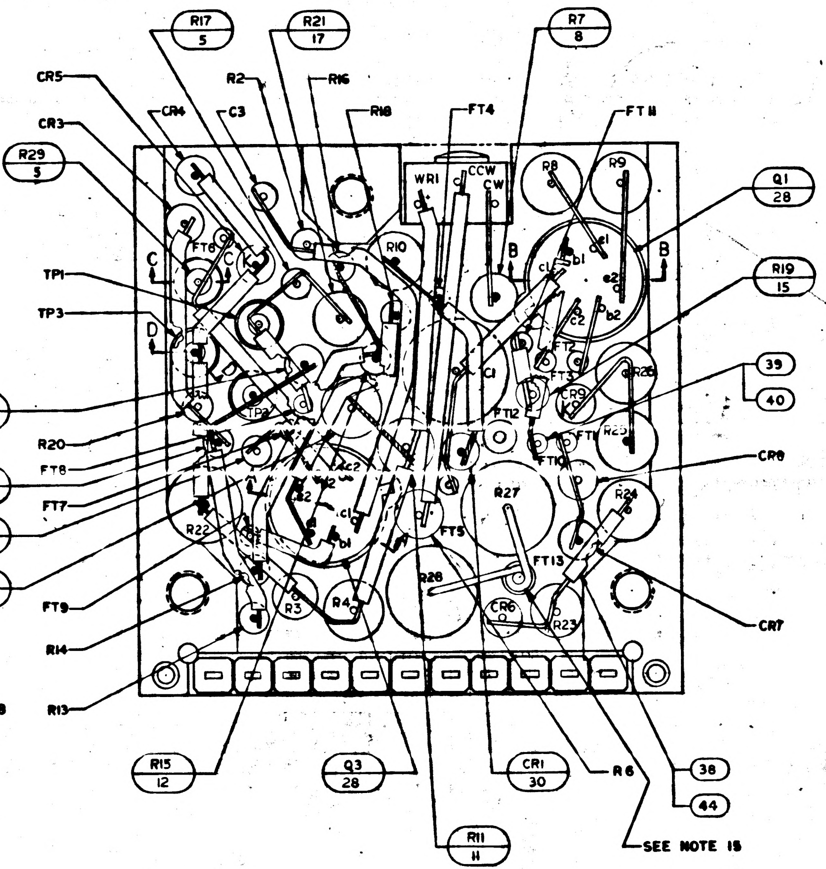
CHART
PART NO.
1010377 – 26
– 27
– 28
– 30
– 31
– 32
– 33
– 34
1010377 – 35

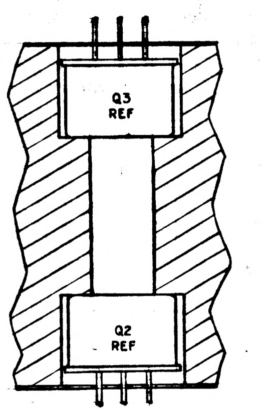
CHART
PART NO.
1010377 – 57
– 58
– 59
– 60
– 61
– 62
– 63
– 64
– 65
– 66
– 67
– 68
– 69
– 70
– 71
– 72
– 73
– 74
1010377 – 75

CHART
PART NO.
1010254 – 1
– 2
– 3
– 4
– 5
– 6
– 7
– 8
– 9
– 10
– 11
– 12
– 13
– 14
– 15
– 16
– 17
– 18
– 19
– 20
– 21

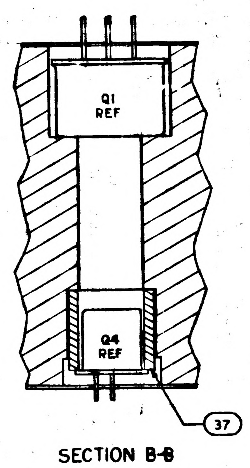
	REVISION	DATE	BY	APPR
A	REVISED PER TDRR [illegible]			WR
B	REVISED PER TDRR 01180	5-2-63	BJ	WR
C	REVISED PER TDRR 01303	5-22-63	AWV	WR
D	REVISED PER TDRR 01781	6-26-63	JJM	WR
E	REVISED PER TDRR 02066	7-17-63		LW
F	REVISED PER TDRR 02348	8-21-63	JJM	WR
G	REVISED PER TDRR 03315	9/11/63	JJM	


.156
.188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
R16 13
R8 (?)
C3 27
CR4 32
CR3 31
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R17
CR2
R20 16
R12
C2
R22 18
Q2 28
FT14
R14 12
R13 5
R3 6
R4 7
1.560
1.540
1
25
A
A
.172
.188 DIA
4 PLACES
.154
.144 DIA
4-PLACES
.005
.015 SEE NOTE 9
.164 MAX
TYP
43
2
3
43
SEE NOTE 14
42 SEE NOTE 18
41
.000
.030
.047
.037 TYP
.154 MAX REF
.062
.20
45
.077 MAX
TYP
.124
.114 TYP
SEE NOTE 9
DO NOT ENCAPSULATE

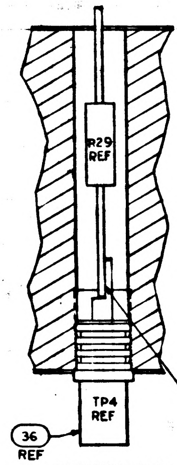

R17 5
R21 17
R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29 3
WR1
CCW
CW
R8
R9
Q1 28
R10
B
B
C
C
FT6
TP1
TP3
D
D
R19 15
39
40
CR2 31
R20
FT8
R12 5
C2 27
FT7
R5 7
FT9
R14
R13
R22
R1
R26
R27
R24
R25
CR8
CR9
FT3
FT12
FT10
FT5
FT13
CR6
R23
R28
R3
R4
CR7
R15 12
Q3 28
CR1 30
R6
38
44
R11 11
SEE NOTE 15


Q3
REF
Q2
REF

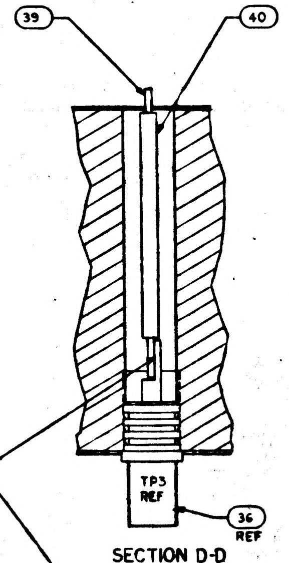
SECTION A-A


Q1
REF
Q4
REF
37

SECTION B-B


R29
REF
TP4
REF
36
REF

SECTION C-C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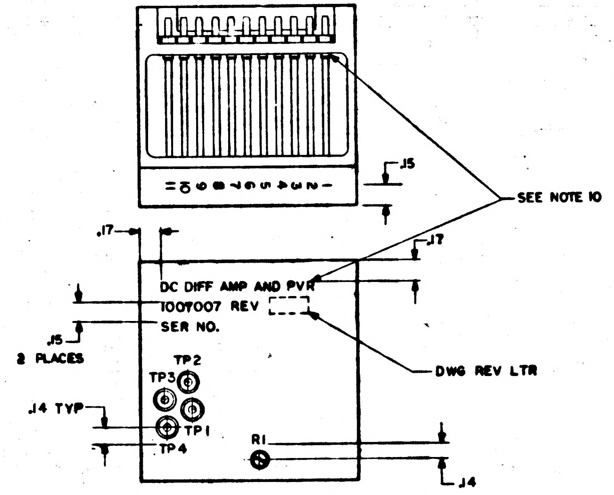
40
TP3
REF
36
REF

SECTION D-D
TYP 3 PLACES

SEE NOTE 3


.15
SEE NOTE 10
.17
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15
2 PLACES
DWG REV LTR
TP2
TP3
TP1
TP4
.14 TYP
R1
.14

MARKING VIEW
SCALE 2/1

CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010372-33	DIODE	32
2	1010372-32	DIODE	31
1	1010372-3	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 75K, 1/8 W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, [illegible]	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

1007007 G

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN H. Hogan DATE
CHECKED W. F. Gifford 6FEB63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL 2-13-63
MIT APPROVAL 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

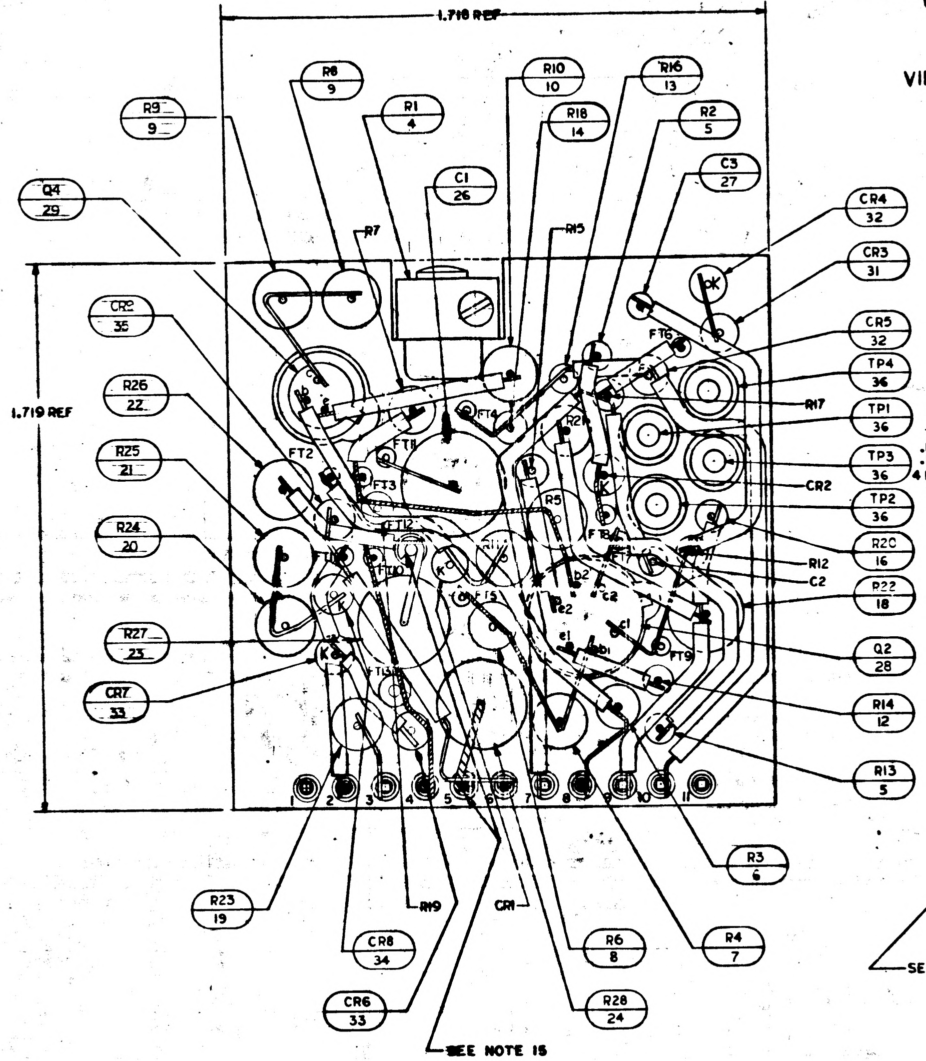
ASSEMBLY
DC DIFFERENTIAL AMPLIFIER & PVR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007007
SCALE 5/1
WT
SHEET 1 OF 1

1007007

PHOTOGRAPHIC SCALE ONLY

E-2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1.719 REF
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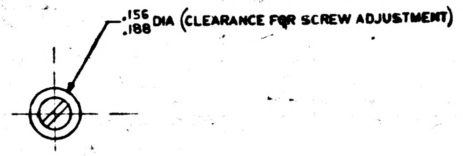
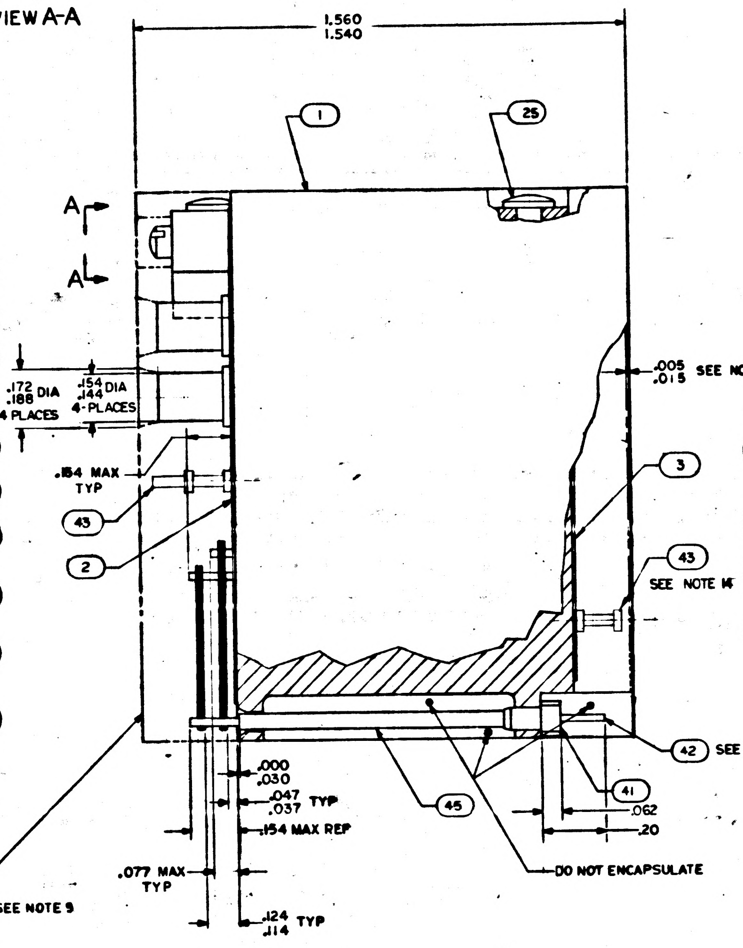
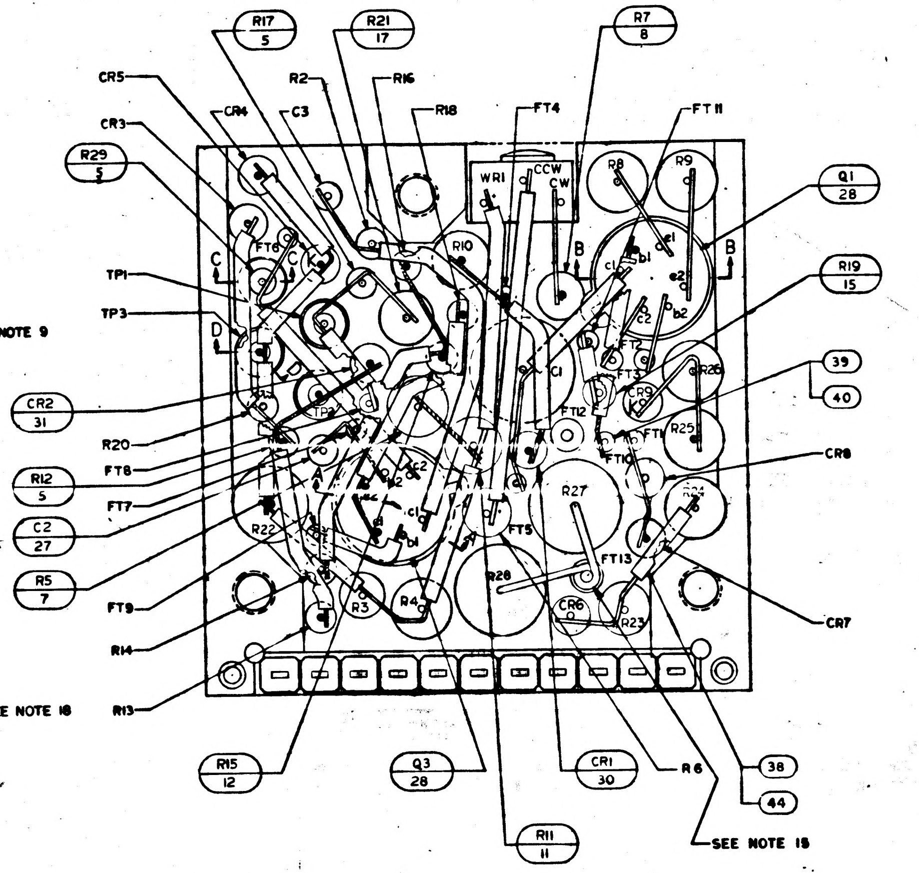
R8 9
R1 4
R10 10
R16 13
R18 14
R2 5
C1 26
C3 27
Q4 29
CR4 32
CR3 31
CR2 35
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R26 22
R25 21
R24 20
R27 23
CR7 33
R17
CR2
R20 16
R22 18
R12
C2
Q2 28
R14 12
R13 5
R3 6
R4 7
R6 8
R28 24
R23 19
CR8 34
CR6 33
R19
CR1
SEE NOTE 15


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)

VIEW A-A


1.560 1.540
1
25
A
A
.172 .188 DIA 4 PLACES
.154 .144 DIA 4-PLACES
.005 .015 SEE NOTE 9
3
.154 MAX TYP
43
2
43
SEE NOTE 14
42 SEE NOTE 18
41
45
.000 .030
.047 .037 TYP
.154 MAX REF
.062
.20
.077 MAX TYP
.124 .114 TYP
DO NOT ENCAPSULATE
SEE NOTE 9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R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29 5
Q1 28
R19 15
TP1
TP3
39
40
CR2 31
R20
FT8
R12 5
FT7
C2 27
R5 7
FT9
R14
R13
CR8
CR7
R15 12
Q3 28
R11 11
CR1 30
R6
38
44
SEE NOTE 15
WR1
CCW
CW
B
C
D

CHART	
PART NO.	
101037	7 – 26
	– 27
	– 28
	– 30
	– 31
	– 32
	– 33
	– 34
10103	7 – 35

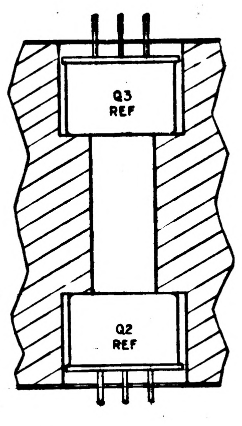
CHART	
PART NO.	
10103	7 – 57
	– 58
	– 59
	– 60
	– 61
	– 62
	– 63
	– 64
	– 65
	– 66
	– 67
	– 68
	– 69
	– 70
	– 71
	– 72
	– 73
	– 74
1010377	– 75

CHART	
PART NO.	
1010254	– 1
	– 2
	– 3
	– 4
	– 5
	– 6
	– 7
	– 8
	– 9
	– 10
	– 11
	– 12
	– 13
	– 14
	– 15
	– 16
	– 17
	– 18
	– 19
	– 20
	– 21

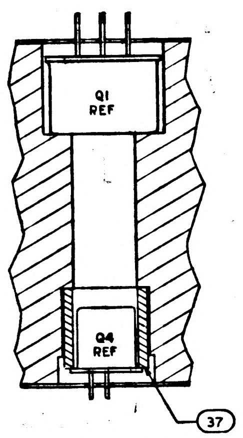
NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
10.-MARK .100/.060 HIGH, WHITE, PER ND 1002019 APPROX AS SHOWN

11.-AT ELECTRICAL TEST, R 25 TO BE SELECTED FROM CHART A
12.-AT ELECTRICAL TEST, R 26 TO BE SELECTED FROM CHART B
13.-AT ELECTRICAL TEST, R 27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16. CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ____________
17. R26 AND R27 TO BE SELECTED PER A.T.P. __________
18. MUST MEET REQUIREMENTS OF ND 1002136


Q3 REF
Q2 REF

SECTION A-A


Q1 REF
Q4 REF
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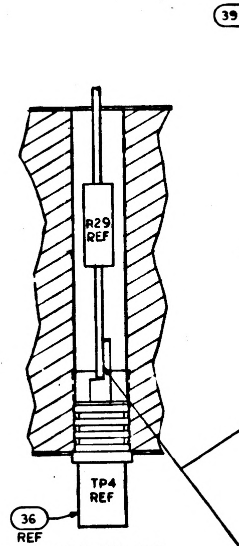
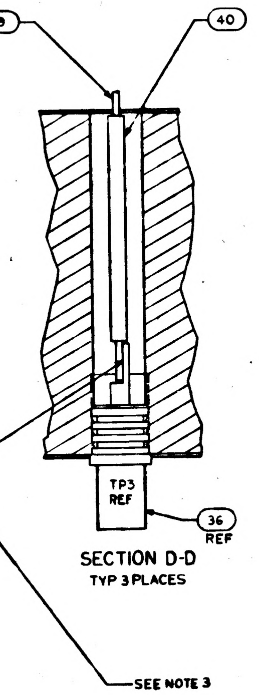
SECTION B-B


R29 REF
TP4 REF
36 REF

SECTION C-C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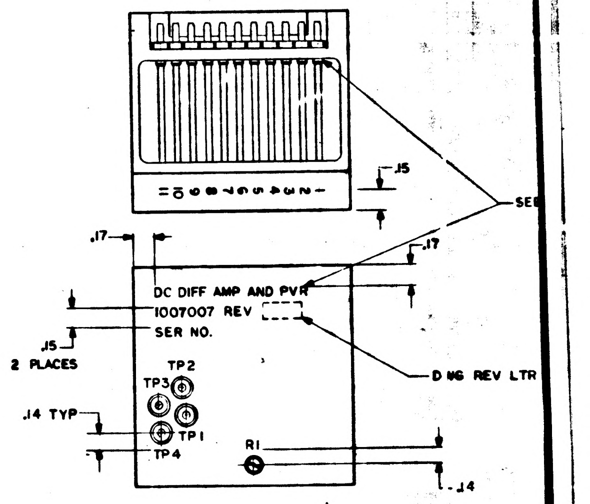
TP3 REF
36 REF
SEE NOTE 3

SECTION D-D
TYP 3 PLACES

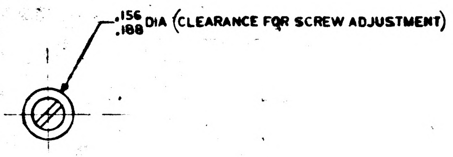

.15
.17
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15
2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1
.14
DWG REV LTR
SEE

MARKING VIEW
SCALE 2/1

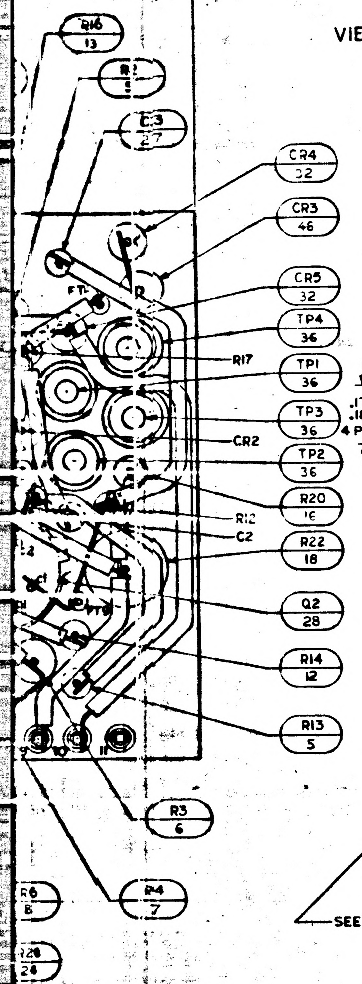
PHOTOGRAPHIC SCALE ONLY

HI 200200.1

A	REVISED PER TDRR 01009	[illegible]	WK
B	REVISED PER TDRR 01180	5-8-63	WK
C	REVISED PER TDRR 01313	5-22-63	WK
D	REVISED PER TDRR 01781	6-26-63	JJM. WK
E	REVISED PER TDRR 02066	7-17-63	WK
F	REVISED PER TDRR 223[illegible]	[illegible]	JJM WK.
G	REVISED PER TDRR 03315	[illegible]/63	JJM. 9/26
H	REVISED PER TDRR 03313	[illegible]/63	WK.


.156 / .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)

VIEW A-A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B
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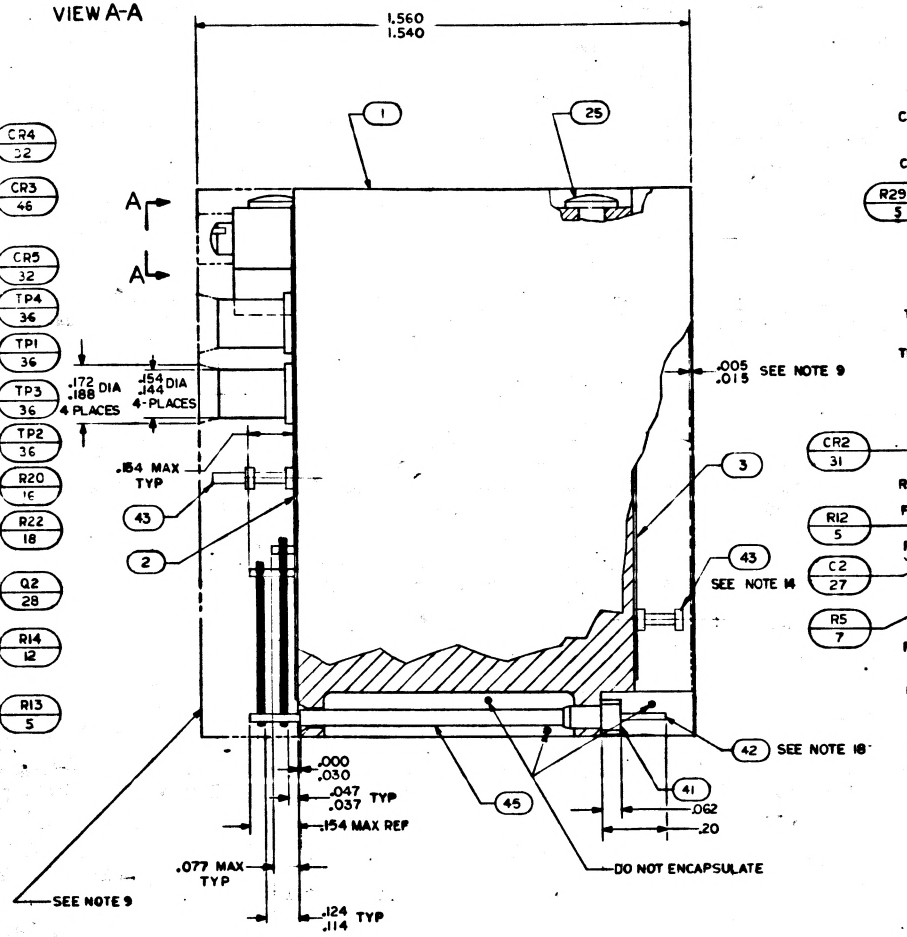
CR3 46
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R17
CR2
R20 16
R12
C2
R22 18
Q2 28
R14 12
R13 5
R5 6
R6 8
R4 7
R28 24
FT6


1.560
1.540
1
25
A
A
.172 / .188 DIA 4 PLACES
.154 / .144 DIA 4-PLACES
.005 / .015 SEE NOTE 9
3
.154 MAX TYP
43
2
43 SEE NOTE 14
42 SEE NOTE 18
41
.062
.20
45
.000 / .030
.047 / .037 TYP
.154 MAX REF
.077 MAX TYP
.124 / .114 TYP
DO NOT ENCAPSULATE
SEE NOTE 9

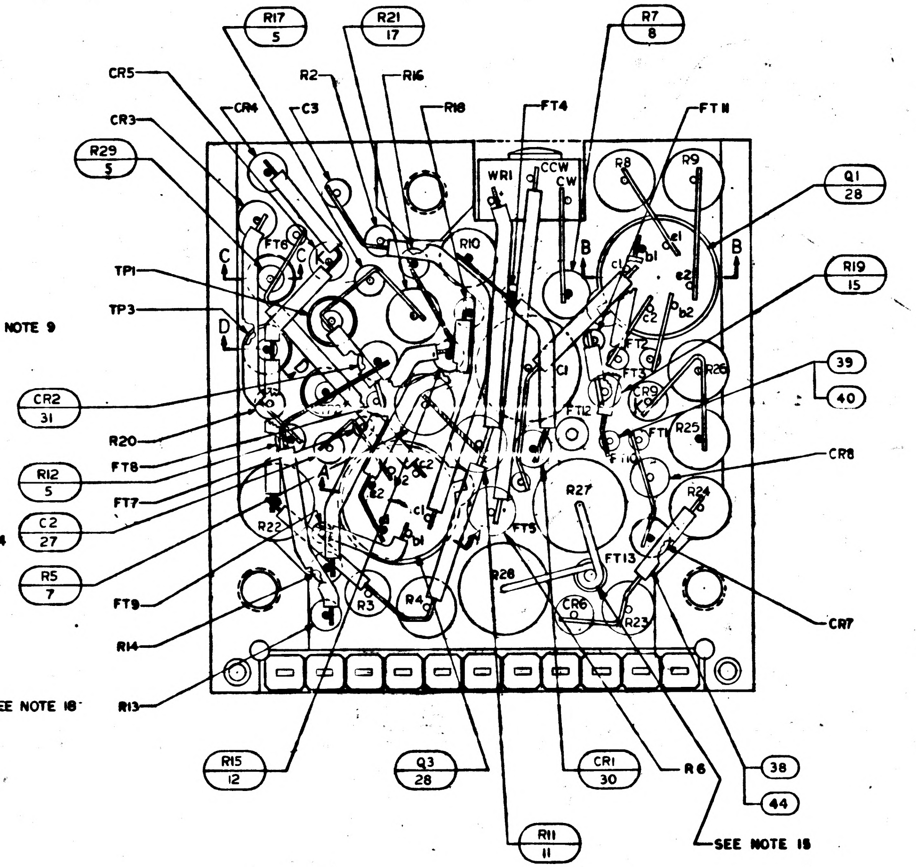

R17 5
R21 17
R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29 3
WR1
CCW
CW
R8
R9
Q1 28
TP1
TP3
C
D
R10
B
R19 15
39
40
CR2 31
R20
FT8
R12 5
C2 27
FT7
R5 7
FT9
R22
R14
R13
R26
R25
CR8
R27
R24
FT13
FT5
FT12
R28
CR6
R23
R3
R4
CR7
R15 12
Q3 28
CR1 30
R6
R11 11
38
44
SEE NOTE 18
B

CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
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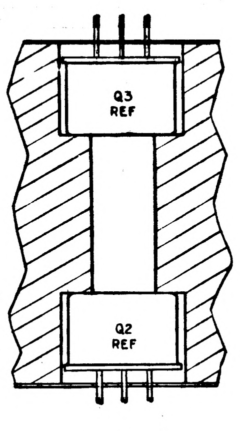
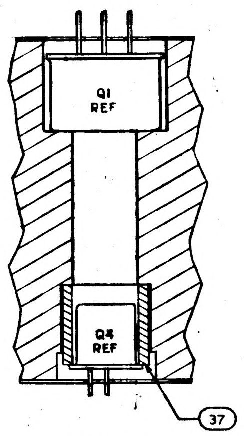
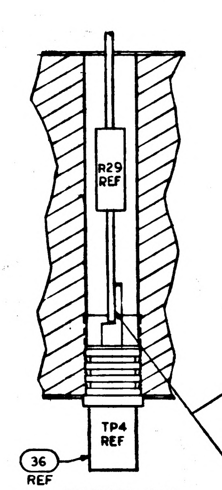
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500


Q3 REF
Q2 REF

SECTION A-A


Q1 REF
Q4 REF
37

SECTION B-B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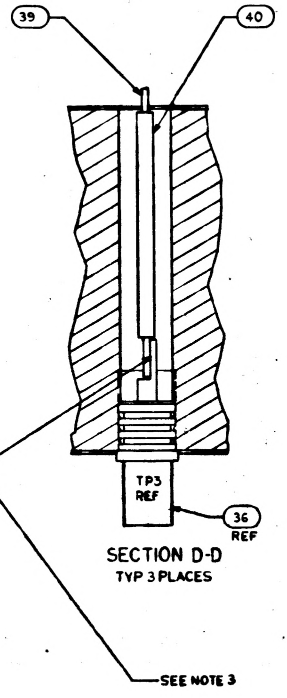
TP4 REF
36 REF

SECTION C-C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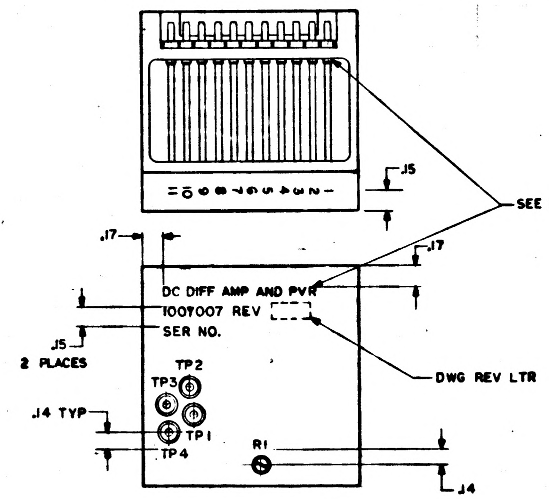
TP3 REF
36 REF
SEE NOTE 3

SECTION D-D
TYP 3 PLACES


J5
SEE NOTE 10
.17
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
DWG REV LTR
J5 2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1
J4

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
1	1010286-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
1	1010372-32	DIODE	31
1	1010372-3	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10 %	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5 %	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1 %	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02 %	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5 %	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1 %	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 175K, 1/8 W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN H. Horgan DATE 12-10-62
CHECKED W. J. Gifford 6FEB63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL 2-13-63
MIT APPROVAL 13Feb63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

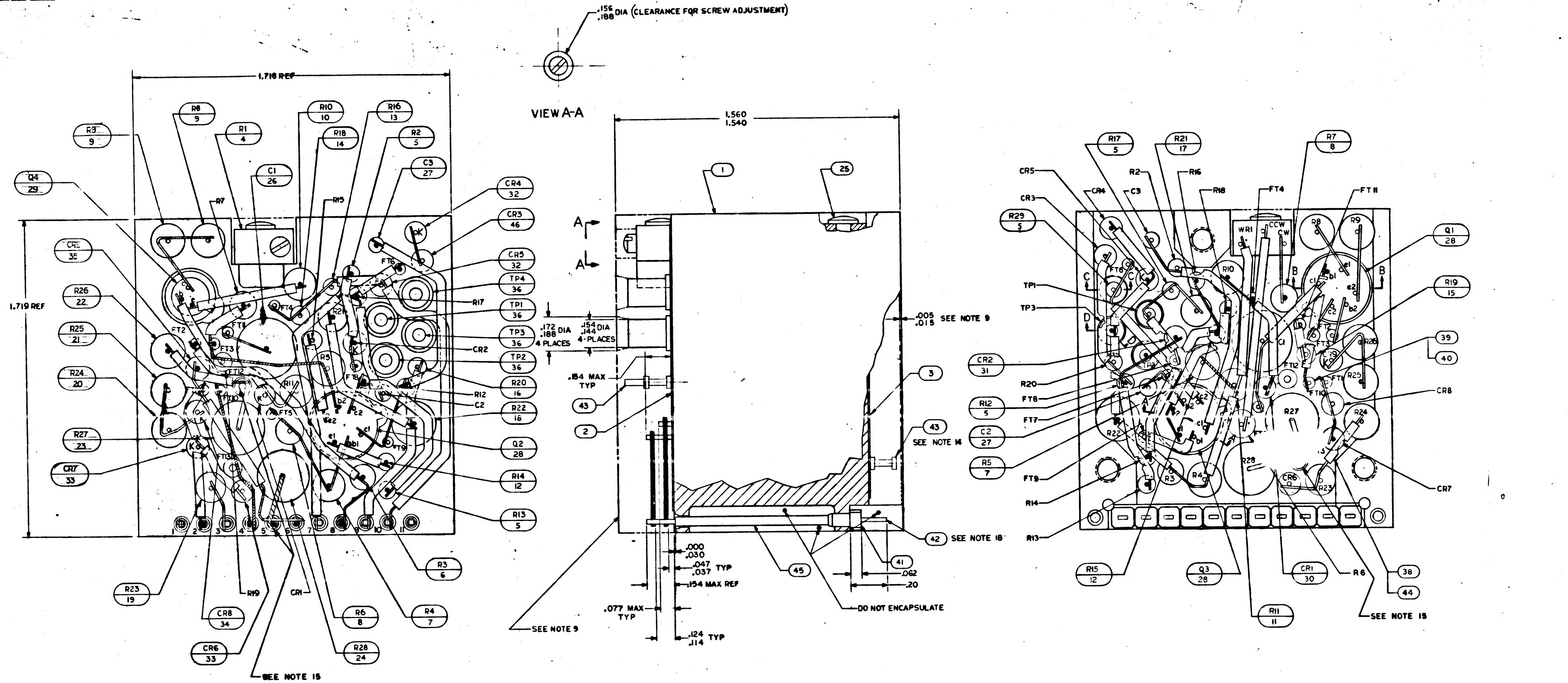
ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007007
SCALE 5/1 | WT | SHEET 1

H
1007007

F-2

PHOTOGRAPHIC SCALE ONLY


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
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1.719 REF
1.560 1.540
A
A
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R8 9
R1 4
C1 26
R10 10
R18 14
R16 13
R2 5
C3 27
Q4 29
CR4 32
CR3 46
CR2 35
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
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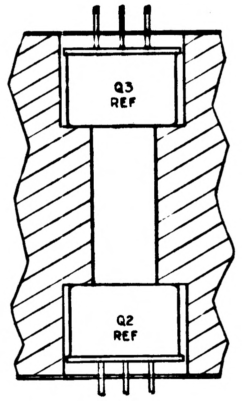
R25 21
R24 20
R27 23
CR7 33
R23 19
CR8 34
CR6 33
R28 24
R6 8
R4 7
R3 6
R7
R15
R17
CR2
R12
C2
R19
CR1
SEE NOTE 15
.172 .188 DIA 4 PLACES
.154 .144 DIA 4 PLACES
.154 MAX TYP
.005 .015 SEE NOTE 9
SEE NOTE 14
SEE NOTE 18
SEE NOTE 9
DO NOT ENCAPSULATE
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
.062
.20
1
25
3
43
2
41
42
45
R17 5
R21 17
R7 8
R29 5
Q1 28
R19 15
CR2 31
R12 5
C2 27
R5 7
R15 12
Q3 28
R11 11
CR1 30
39
40
38
44
CR8
CR7
CR5
CR4
CR3
C3
R2
R16
R18
FT4
FT11
TP1
TP3
R20
FT8
FT7
FT9
R14
R13
R6
WR1
CCW
CW
B
B
C
C
D
D
SEE NOTE 15

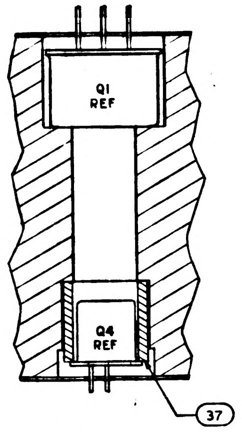
NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
10.-MARK .100/.060 HIGH, WHITE, PER ND 1002019 APPROX AS SHOWN

11.-AT ELECTRICAL TEST, R 25 TO BE SELECTED FROM CHART A
12.-AT ELECTRICAL TEST, R 26 TO BE SELECTED FROM CHART B
13.-AT ELECTRICAL TEST, R 27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16. CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ____________
17. R26 AND R27 TO BE SELECTED PER A.T.P. ____________
18. MUST MEET REQUIREMENTS OF ND 1002136


Q3 REF
Q2 REF

SECTION A-A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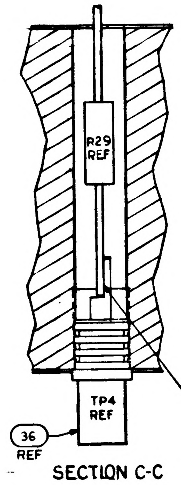
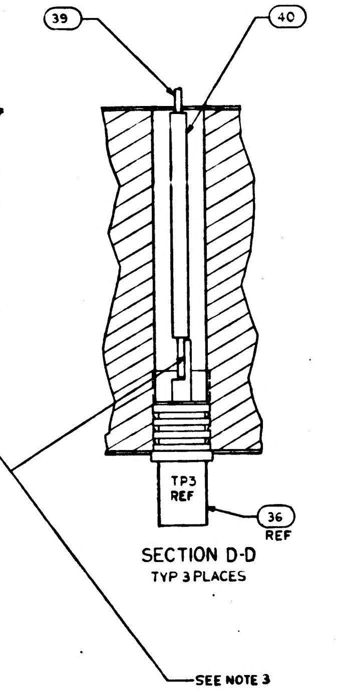
Q4 REF
37

SECTION B-B


R29 REF
TP4 REF
36 REF

SECTION C-C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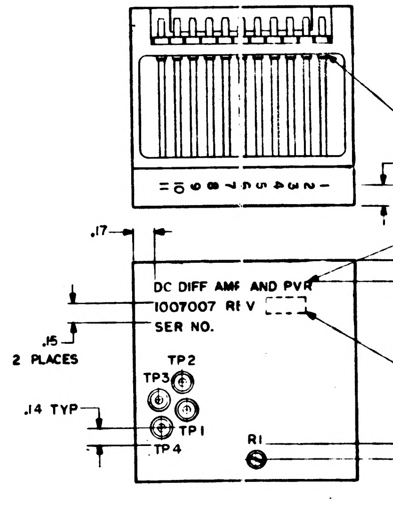
TP3 REF
36 REF
SEE NOTE 3

SECTION D-D
TYP 3 PLACES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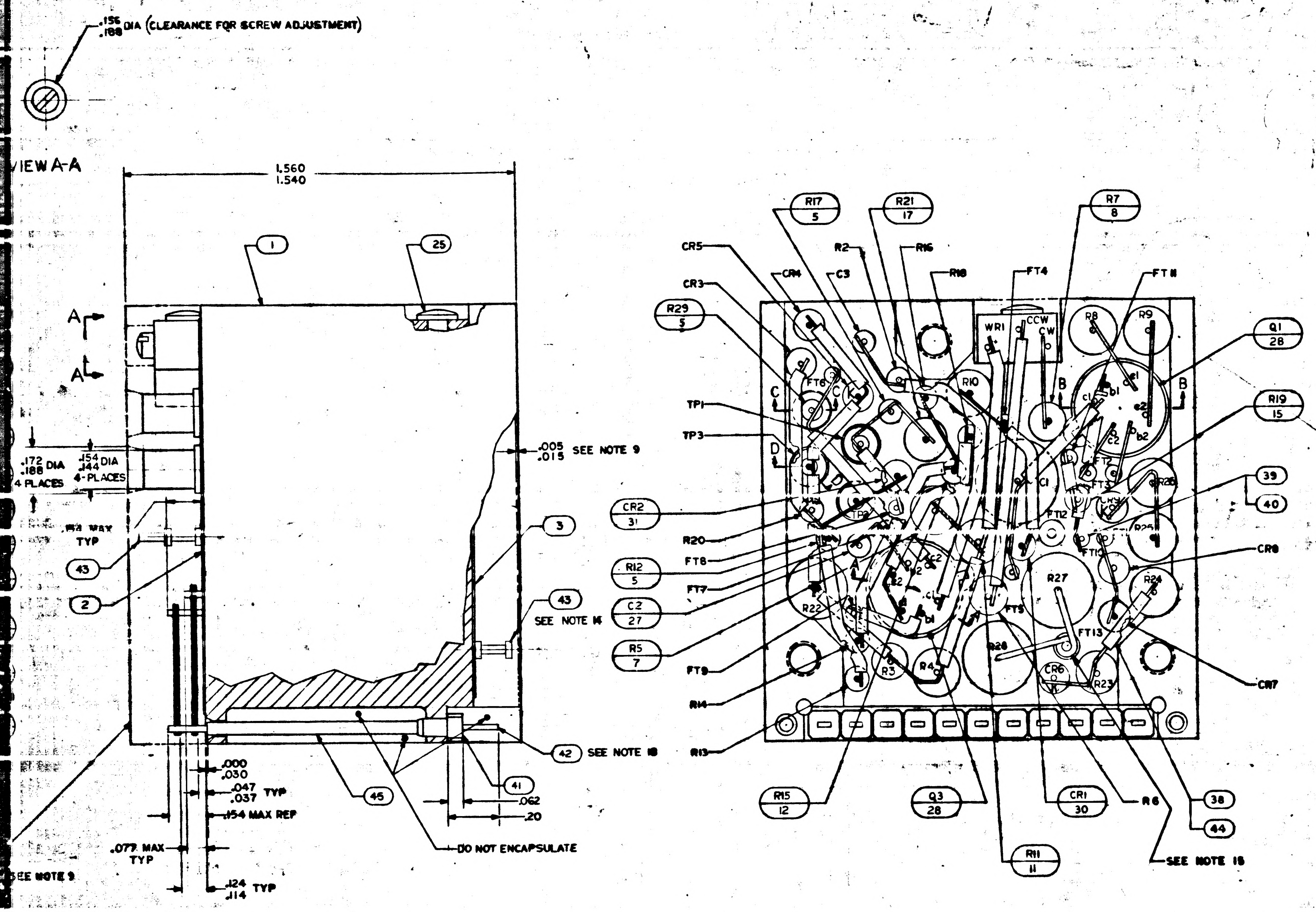
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15
2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1

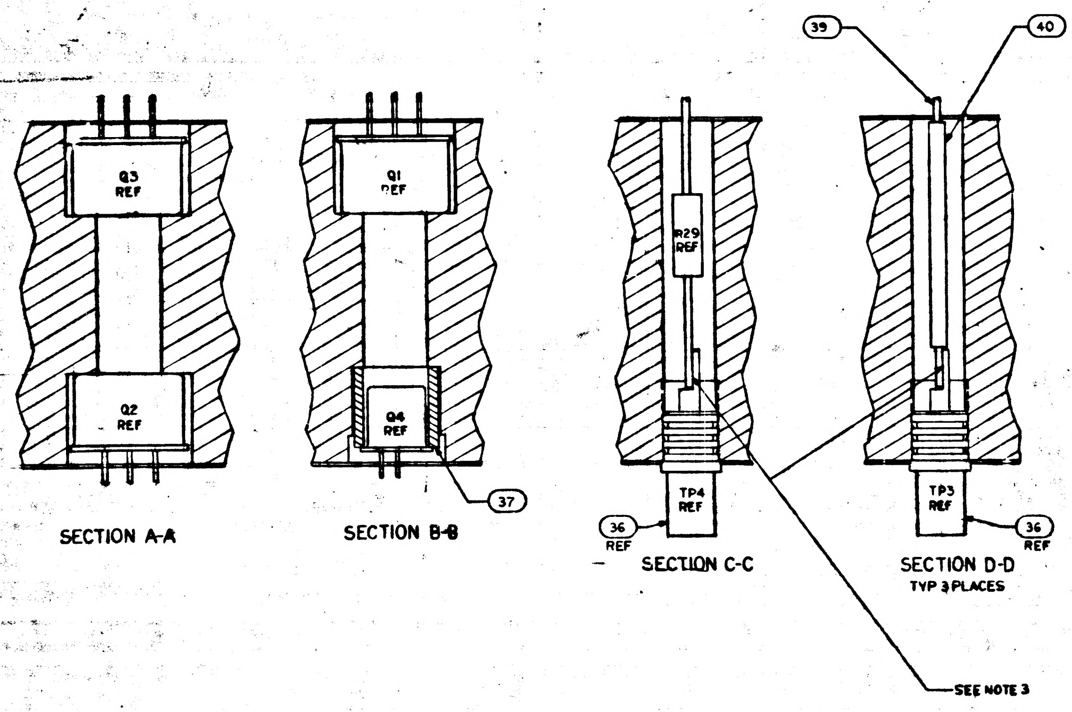
MARKING VIEW
SCALE 2/1

PHOTOGRAPHIC SCALE ONLY

J 1007007

SYM	DESCRIPTION	DATE	APP
A	REVISED PER TDRR 01009		WR
B	REVISED PER TDRR 01180	5-8-63	WR
C	REVISED PER TDRR 01313	5-22-63	WR
D	REVISED PER TDRR 01781	6-26-63	WR
E	REVISED PER TDRR 02066	7-17-63	
F	REVISED PER TDRR 02348		WR
G	REVISED PER TDRR 03316		
H	REVISED PER TDRR 03313	9/26/63	CWR
J	REVISED PER TDRR 04468		WR


.156 / .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.560 / 1.540
1
25
A
A
.172 / .188 DIA 4 PLACES
.154 / .144 DIA 4-PLACES
.005 / .015 SEE NOTE 9
.154 MAX TYP
3
43
2
43 SEE NOTE 14
42 SEE NOTE 18
41
45
.000 / .030
.047 / .037 TYP
.154 MAX REF
.062
.20
DO NOT ENCAPSULATE
.077 MAX TYP
SEE NOTE 9
.124 / .114 TYP
R17 5
R21 17
R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29 5
WR1
CCW
CW
R8
R9
Q1 28
FT6
TP1
TP3
R10
B
B
C
D
R19 15
39
40
CR2 31
R20
FT8
FT7
R12 5
C2 27
R5 7
FT9
R14
R13
R22
R27
R24
R26
R3
R4
R23
CR6
FT12
FT13
FT5
CR8
CR7
R15 12
Q3 28
CR1 30
R6
R11 11
38
44
SEE NOTE 18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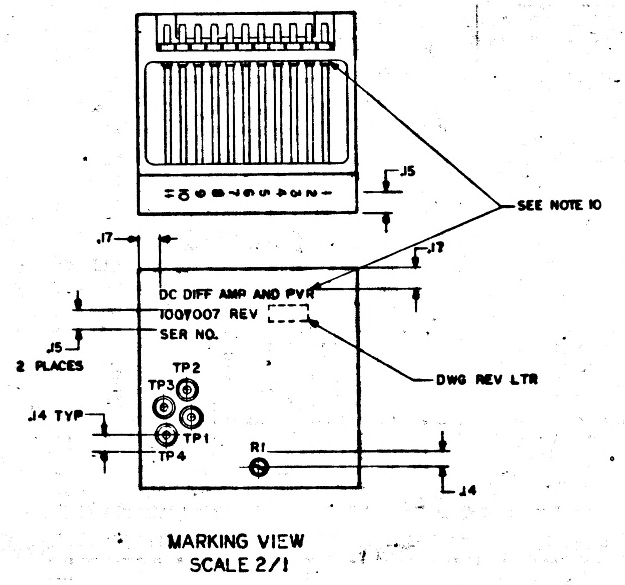
Q3 REF
Q2 REF
Q1 REF
Q4 REF
37
R29 REF
TP4 REF
TP3 REF
36 REF
36 REF
SEE NOTE 3

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D
TYP 3 PLACES


SEE NOTE 10
.15
.17
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15 2 PLACES
DWG REV LTR
TP2
TP3
TP1
TP4
.14 TYP
R1
.14

MARKING VIEW
SCALE 2/1

CHART A

PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B

PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C

PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	[illegible]
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
1	1010286-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
1	1010372-32	DIODE	31
1	1010372-3	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 75K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

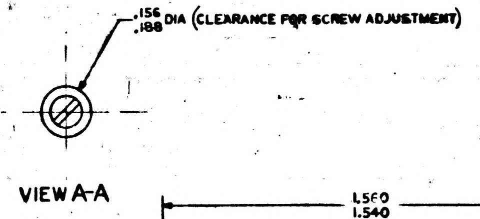
LIST OF MATERIALS

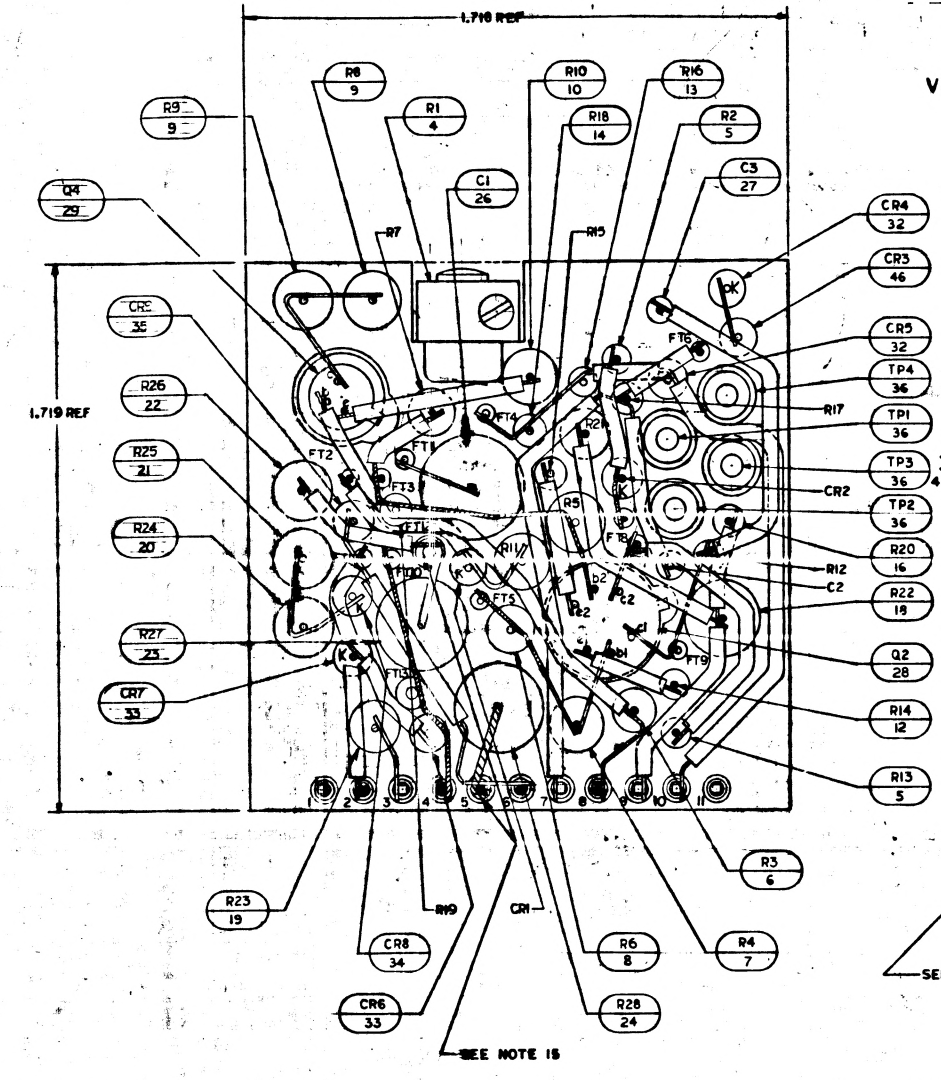
MASTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ± DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
MATERIAL	DRAWN DATE CHECKED W. Y. Gifford 6 FEB 63 APPROVAL 2/7/63 APPROVAL	ASSEMBLY DC DIFFERENTIAL AMPLIFIER & PVR
HEAT TREATMENT	NASA APPROVAL 2-13-63 MIT APPROVAL	CODE IDENT NO. SIZE J NASA DRAWING NO. 1007007
APPLICATION: NEXT ASSY / USED ON		

1007007 J

[illegible]


.156
.188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A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1.719 REF
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R8 9
R1 4
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R18 14
R16 13
R2 5
C3 27
Q4 29
R7
R15
CR4 32
CR3 46
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R17
CR2
R20 16
R12
C2
R22 18
Q2 28
R14 12
R13 5
CR5 35
R26 22
R25 21
R24 20
R27 23
CR7 33
FT1 FT2 FT3 FT5 FT6 FT9 FT10 FT11
R3 6
R4 7
R6 8
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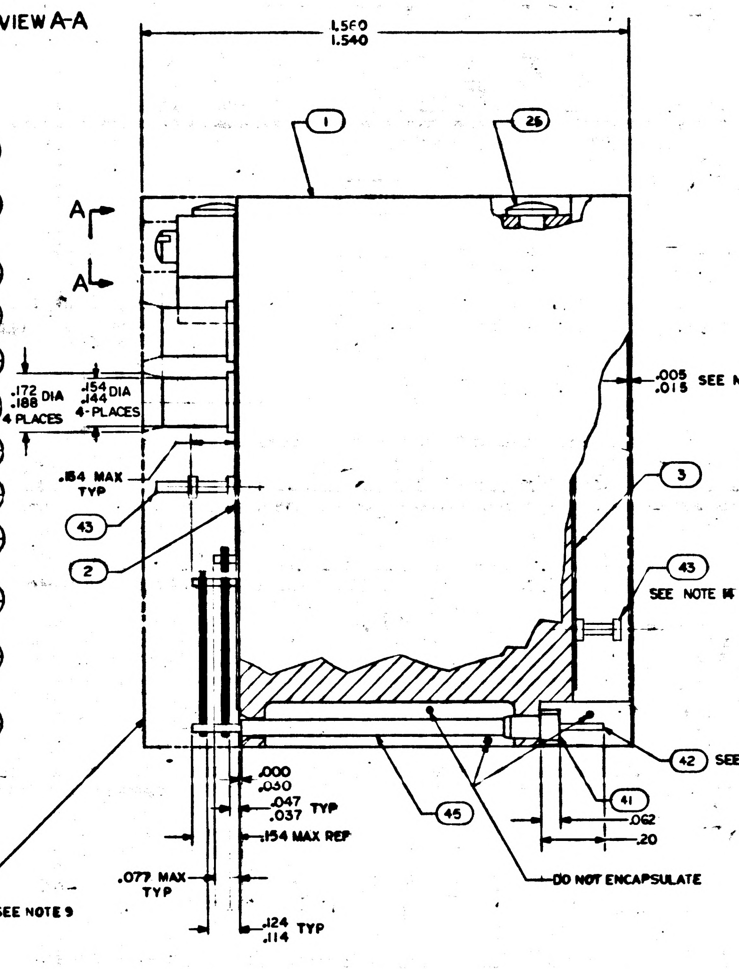
CR8 34
R19
CR1
CR6 33
SEE NOTE 15
1 2 3 4 5 6 7 8 9 10 11


1.550
1.540
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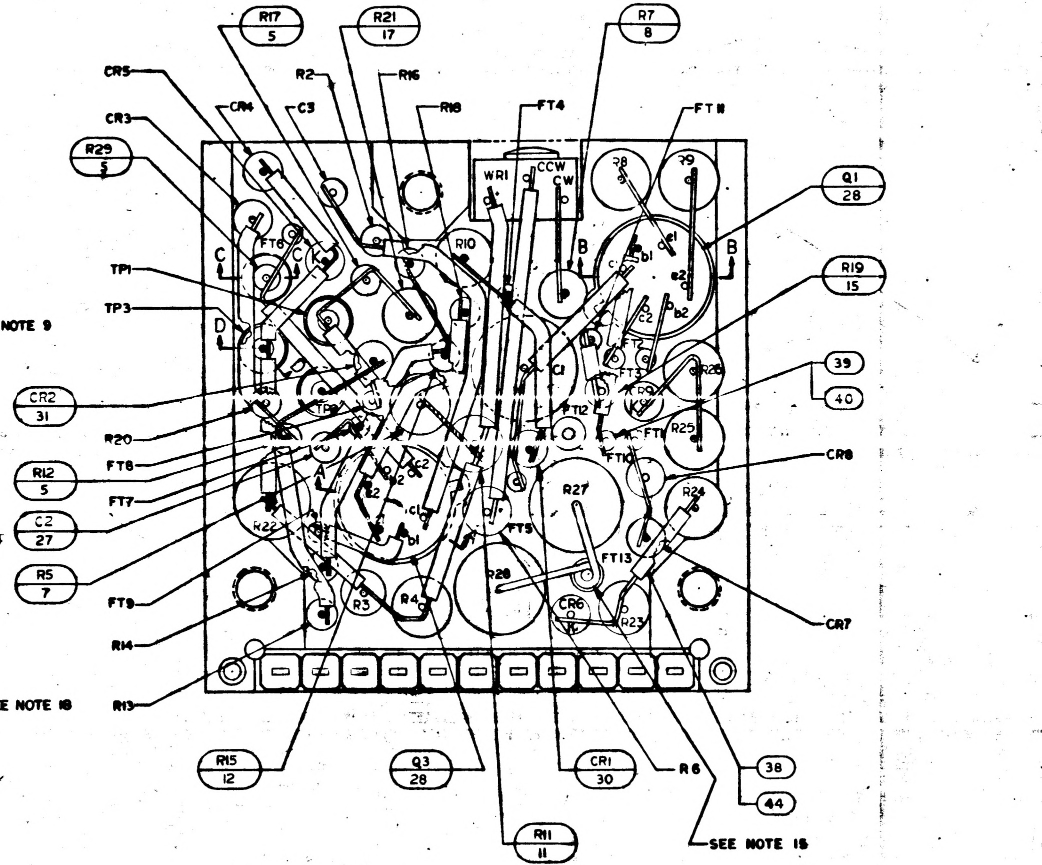
A
A
.172
.188 DIA
4 PLACES
.154
.144 DIA
4 PLACES
.005
.015 SEE NOTE 9
.184 MAX
TYP
3
43
2
43
SEE NOTE 14
42 SEE NOTE 18
41
.062
.20
45
.000
.030
.047
.037 TYP
.154 MAX REF
.077 MAX
TYP
.124
.114 TYP
DO NOT ENCAPSULATE
SEE NOTE 9


R17 5
R21 17
R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29 5
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CW
R10
Q1 28
R19 15
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B
C
C
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CR2 31
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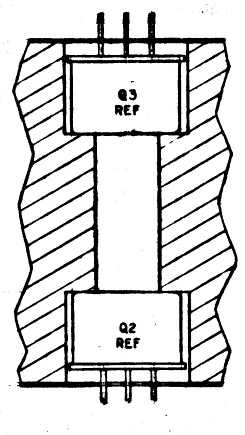
FT8
FT7
R12 5
C2 27
R5 7
FT9
R14
R13
CR8
R25
R24
R27
R28
FT13
CR6
R23
R22
R3
R4
CR7
R15 12
Q3 28
CR1 30
R6
38
44
R11 11
SEE NOTE 15

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
10.-MARK .100/.060 HIGH, WHITE, PER ND 1002019 APPROX AS SHOWN

11.-AT ELECTRICAL TEST, R 25 TO BE SELECTED FROM CHART A
12.-AT ELECTRICAL TEST, R 26 TO BE SELECTED FROM CHART B
13.-AT ELECTRICAL TEST, R 27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16. CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ________
17. R26 AND R27 TO BE SELECTED PER A.T.P. ________
18. MUST MEET REQUIREMENTS OF ND 1002136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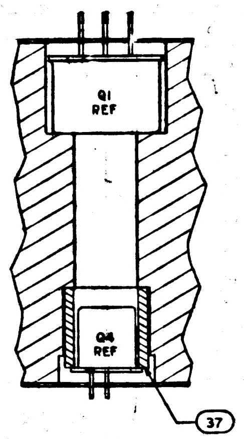
REF
Q2
REF

SECTION A-A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REF
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REF
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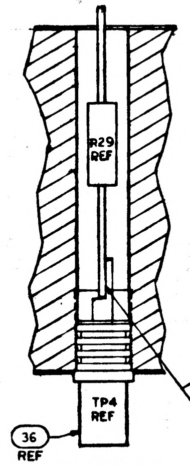
SECTION B-B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REF
TP4
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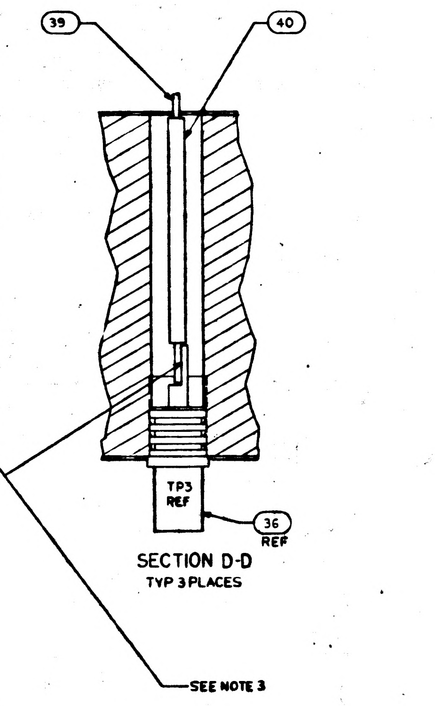
REF

SECTION C-C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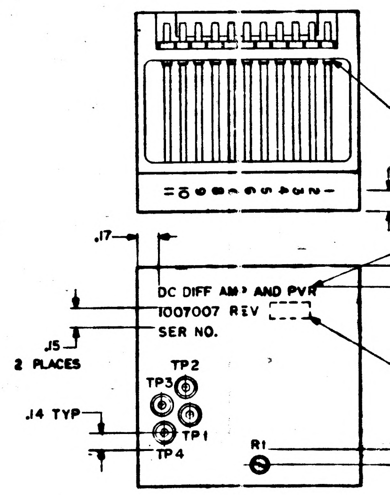
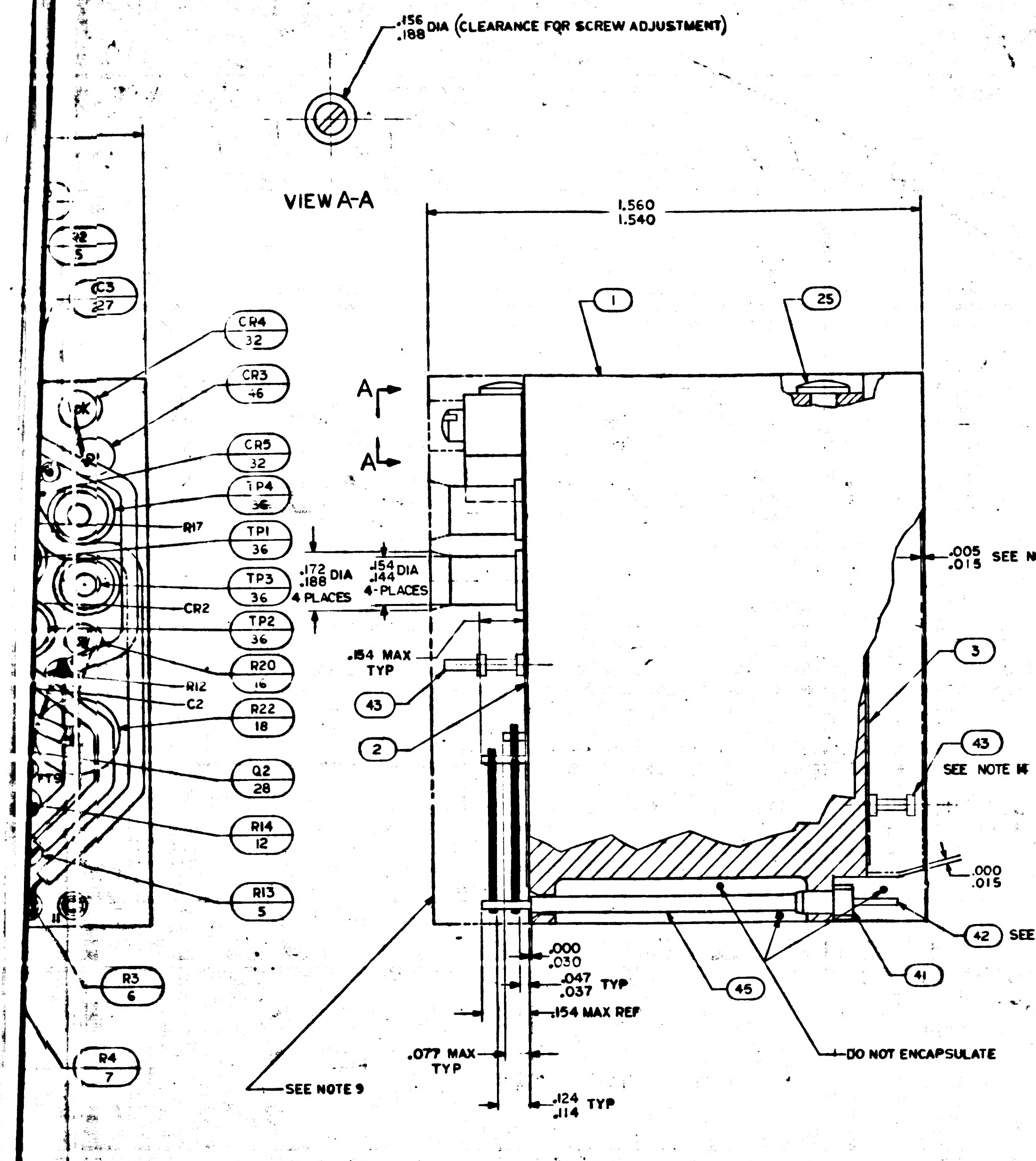
TP3
REF
36
REF
SEE NOTE 3

SECTION D-D
TYP 3 PLACES


.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
.15
2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1

MARKING VIEW
SCALE 2/1

A	REVISED PER TDRR 01009	[illegible]	[illegible]	WR
B	REVISED PER TDRR 01180	5-2-63	[illegible]	WR
C	REVISED PER TDRR 01313	5-22-63	[illegible]	WR
D	REVISED PER TDRR 01781	6-26-63	JJM	WR
E	REVISED PER TDRR 02066	7-7-63	[illegible]	[illegible]
F	REVISED PER TDRR 02348	[illegible]	JJM	WR
G	REVISED PER TDRR 03315	9/11/63	JJM	[illegible]
H	REVISED PER TDRR 03313	9/26/63		CWK
J	REVISED PER TDRR 04468	5 NOV 63	[illegible]	WK
K	REVISED PER TDRR 05481	[illegible]	[illegible]	WR


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.560 1.540
A
A
.172 .188 DIA 4 PLACES
.154 .144 DIA 4-PLACES
.154 MAX TYP
.005 .015 SEE NOTE 9
SEE NOTE 14
.000 .015
SEE NOTE 18
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
SEE NOTE 9
DO NOT ENCAPSULATE
R2 5
C3 27
CR4 32
CR3 46
CR5 32
TP4 36
R17
TP1 36
TP3 36
CR2
TP2 36
R20 16
R12
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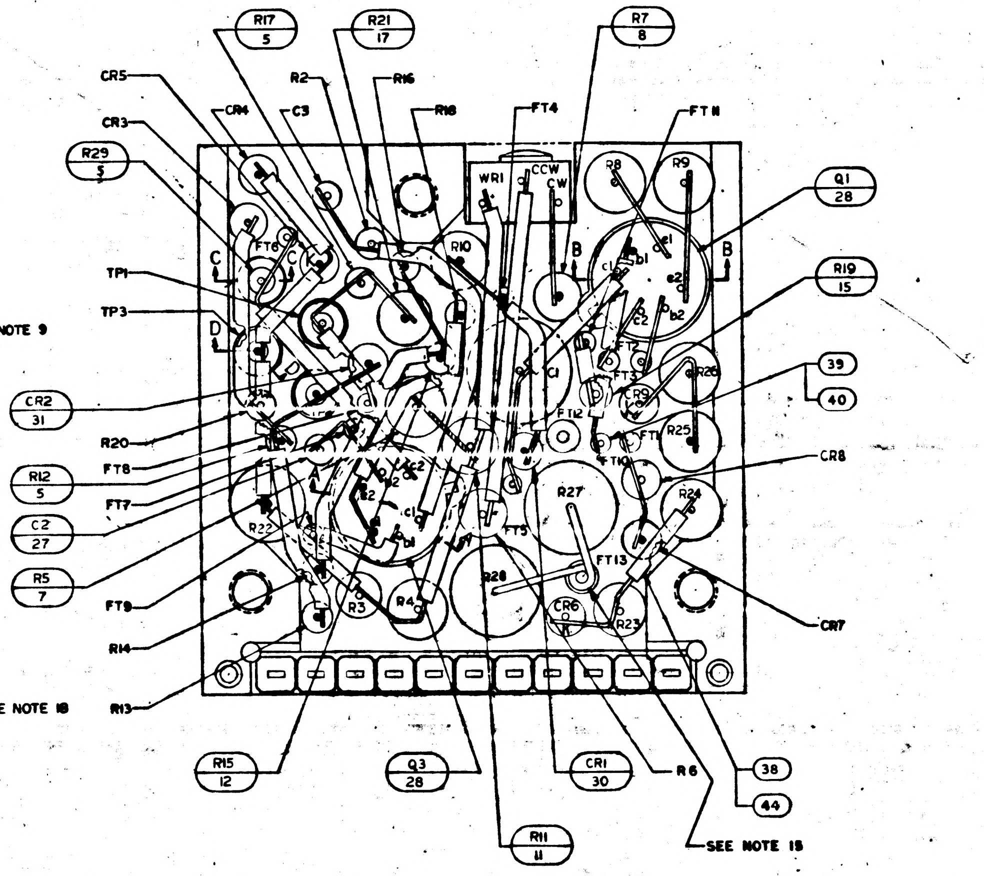
45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R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29 3
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CCW CW
R8
R9
Q1 28
TP1
TP3
R10
R19 15
39
40
CR2 31
R20
FT8
FT7
R12 5
C2 27
R5 7
FT9
R14
R13
R22
R28
R25
R26
CR8
R27
R24
FT13
FT10
FT12
CR6
R23
CR7
R3
R4
R1
FT6
B
C
D
R15 12
Q3 28
CR1 30
R6
38
44
R11 11
SEE NOTE 15

CHART A

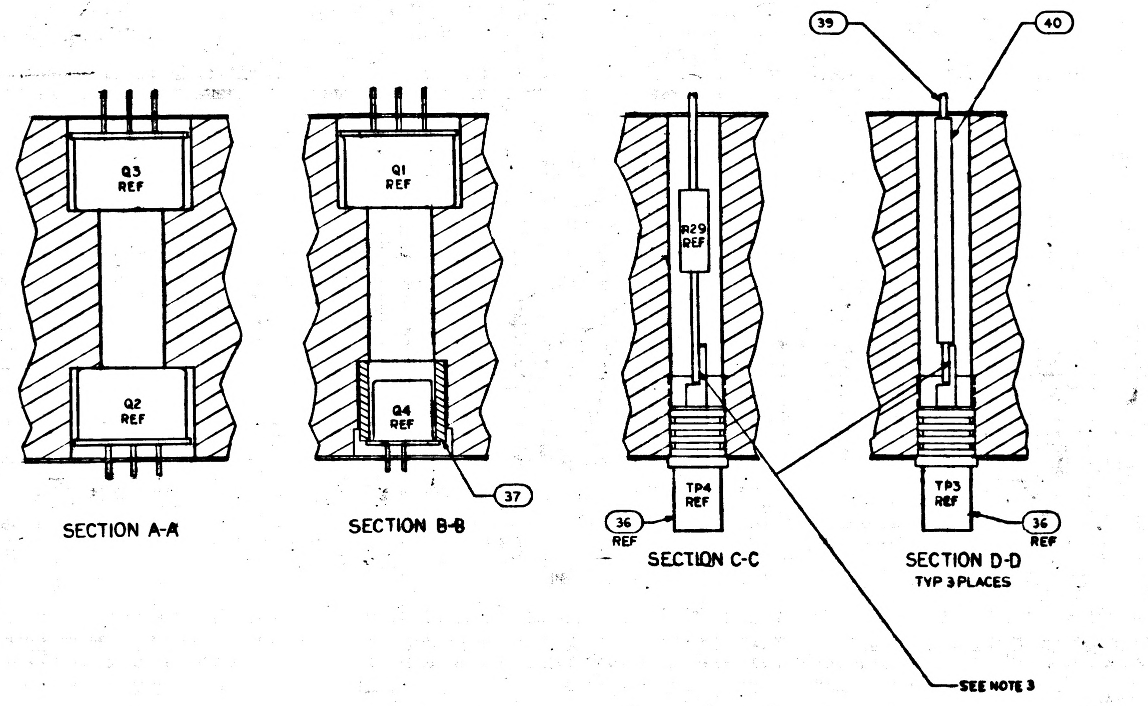
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B

PART NO.	VALUE
1010377-57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377-75	19 Ω

CHART C

PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500


Q3 REF
Q2 REF
Q1 REF
Q4 REF
37
R29 REF
TP4 REF
36 REF
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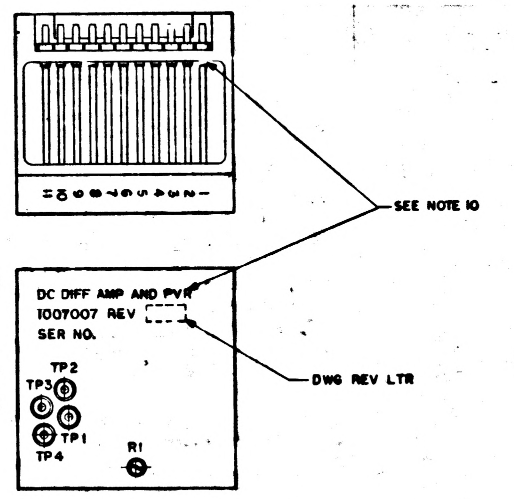
40
TP3 REF
36 REF
SEE NOTE 3

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D
TYP 3 PLACES


DC DIFF AMP AND PVR
1007007 REV
SER NO.
TP2
TP3
TP1
TP4
R1
SEE NOTE 10
DWG REV LTR

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
1	1010286-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
1	1010372-32	DIODE	31
1	1010372-3	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10 %	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5 %	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1 %	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02 %	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5 %	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1 %	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 175K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

MASTER

1007154	
1007153	
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

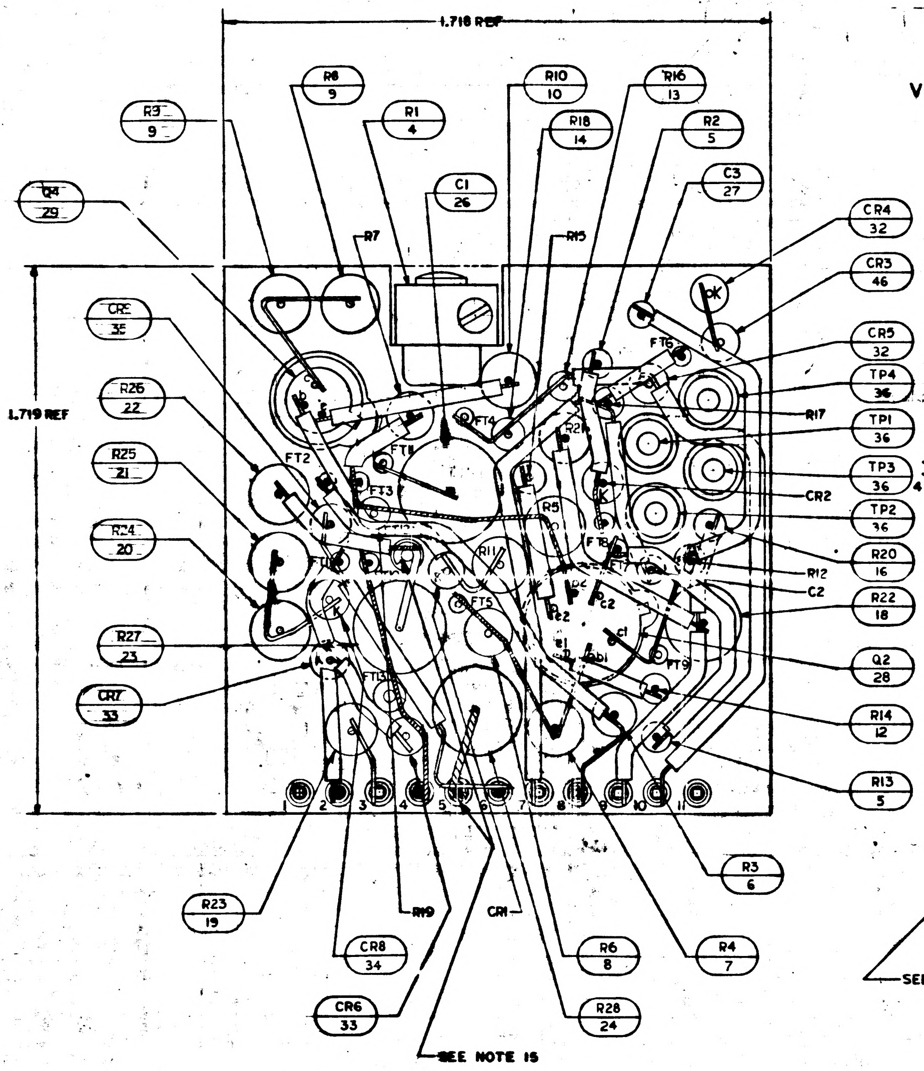
DRAWN DATE
CHECKED W. F. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL 9-13-63
MIT APPROVAL 9/13/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007007

1007007 K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CR3 46
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R17
CR2
R20 16
R12
C2
R22 18
Q2 28
R14 12
R13 5
R3 6
R4 7
R6 8
R28 24
CR1
R19
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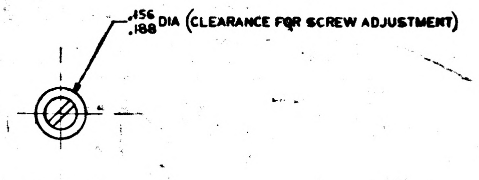
R26 22
CR2 35
R7
R15
SEE NOTE 15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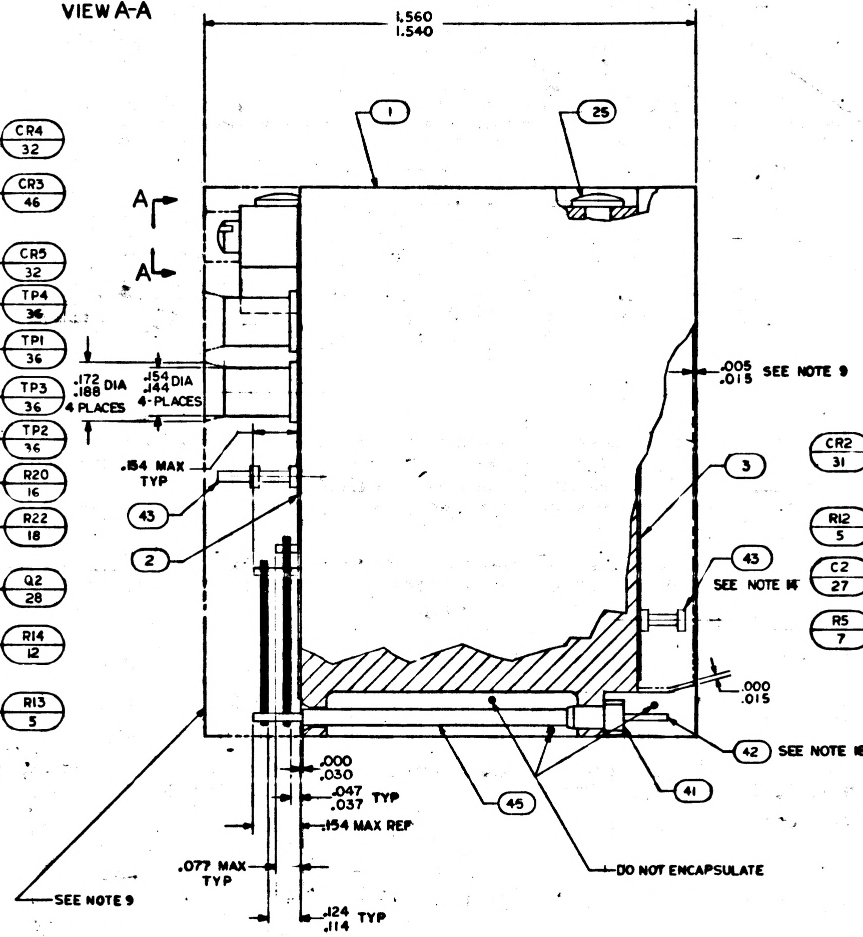
.188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)

VIEW A-A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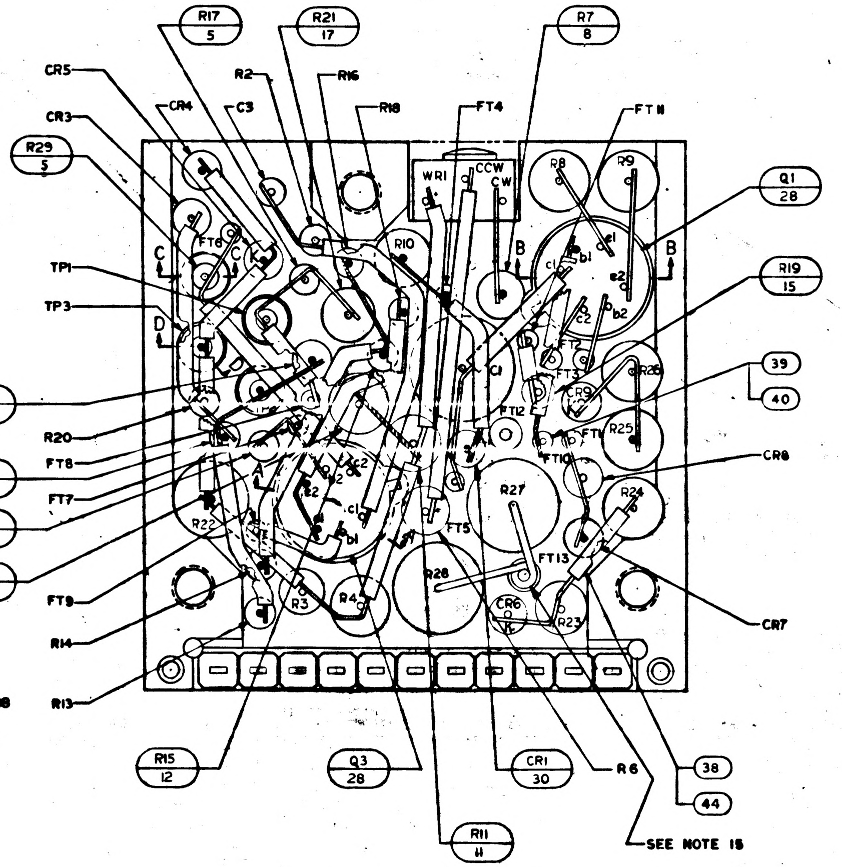
1.540
1
25
A
A
.172
.188 DIA
4 PLACES
.154
.144 DIA
4 PLACES
.154 MAX
TYP
43
2
3
.005
.015 SEE NOTE 9
43
SEE NOTE 14
.000
.015
42 SEE NOTE 18
41
45
DO NOT ENCAPSULATE
.000
.030
.047
.037 TYP
.154 MAX REF
.077 MAX
TYP
.124
.114 TYP
SEE NOTE 9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R21 17
R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29 5
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R19 15
TP1
TP3
39
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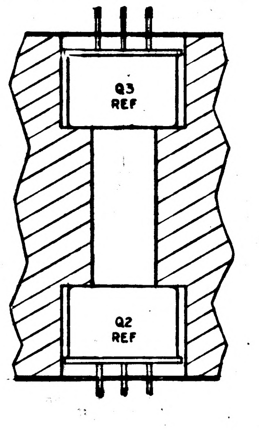
CR2 31
R20
FT8
R12 5
FT7
C2 27
R5 7
FT9
R14
R13
CR8
CR7
R15 12
Q3 28
R11 11
CR1 30
R6
38
44
SEE NOTE 15

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
~~4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-⊕ INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
10. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A
12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B
13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16 CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ____________
17 R26 AND R27 TO BE SELECTED PER A.T.P. ____________
18 MUST MEET REQUIREMENTS OF ND 1002136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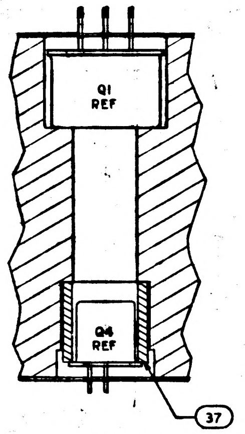
Q2 REF

SECTION A-A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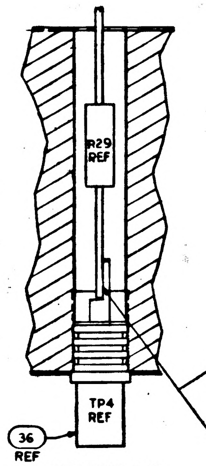
SECTION B-B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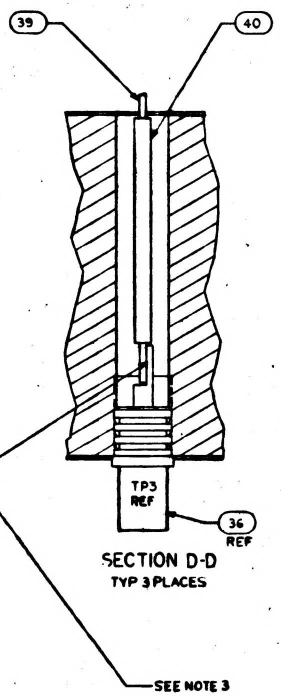
TP4 REF
36 REF

SECTION C-C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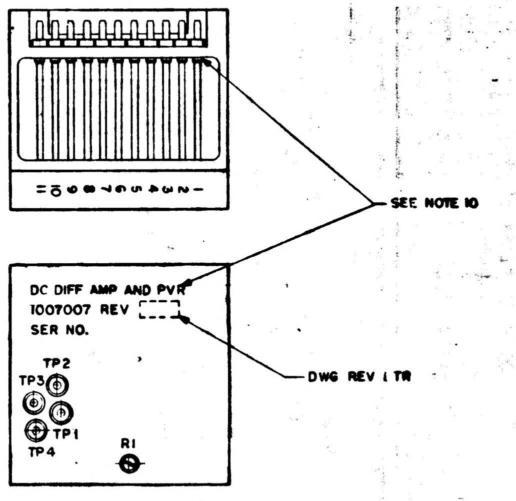
TP3 REF
36 REF
SEE NOTE 3

SECTION D-D
TYP 3 PLACES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SEE NOTE 10
DC DIFF AMP AND PVR
1007007 REV
SER NO.
TP2
TP3
TP1
TP4
R1
DWG REV LTR

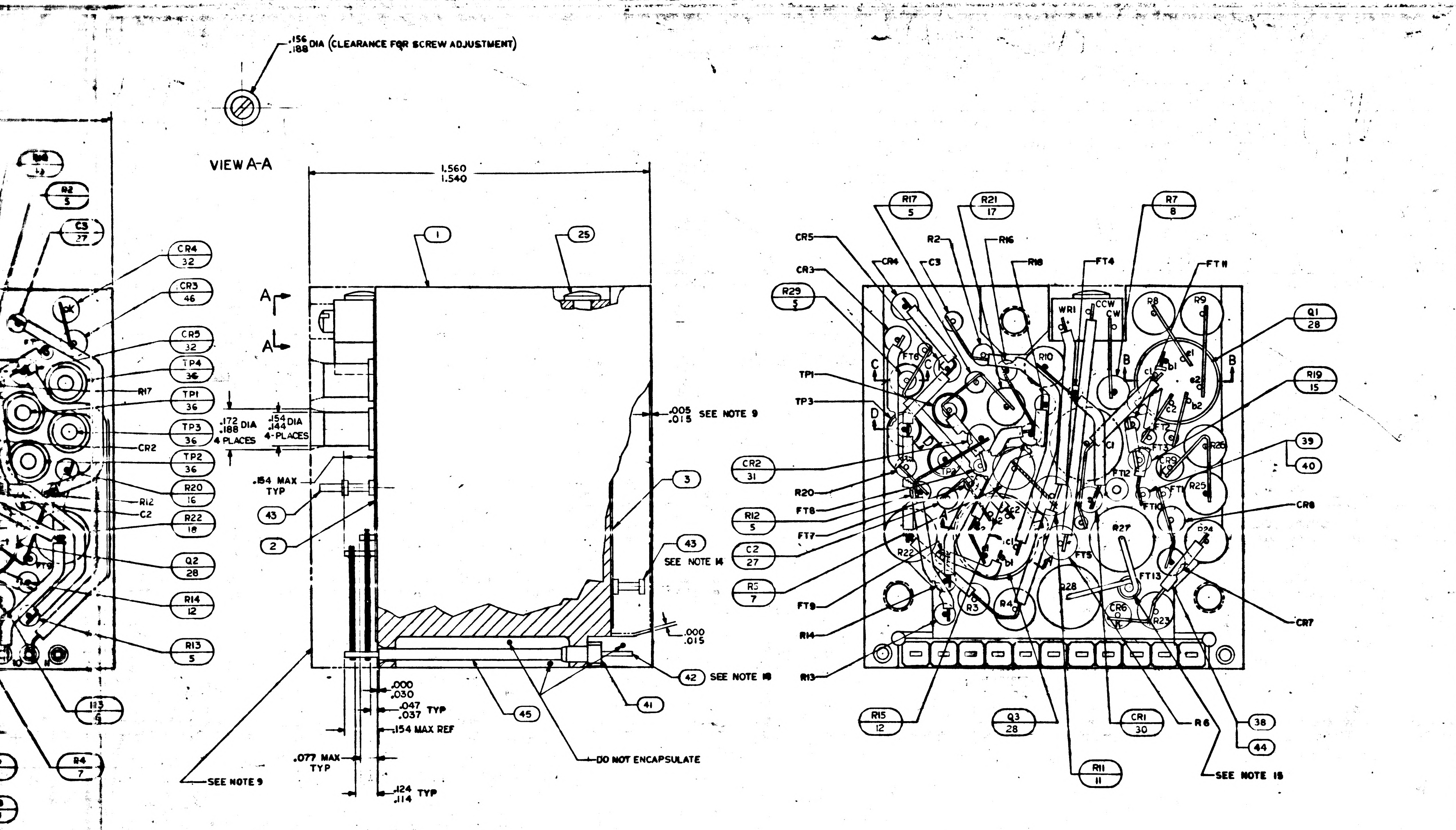
MARKING VIEW
SCALE 2/1

CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500

LTR	DESCRIPTION	DATE	BY	APPROVAL
B	REVISED PER TDRR 01180	[illegible]	[illegible]	WR
C	REVISED PER TDRR 01313	5-22-63	[illegible]	WR
D	REVISED PER TDRR 01781	2-26-63	JJM	WR
E	REVISED PER TDRR 02068	7-17-63	[illegible]	WR
F	REVISED PER TDRR 02348	[illegible]	JJM	WR
G	REVISED PER TDRR 03315	[illegible]	JJM	[illegible]
H	REVISED PER TDRR 03313	9/26/63		WR
J	REVISED PER TDRR 04468	[illegible]	[illegible]	WR
K	REVISED PER TDRR 05481	12 [illegible] 63	[illegible]	WR
L	REVISED PER TDRR 06461	[illegible]	[illegible]	WR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.188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.560
1.540
A
A
.172
.188 DIA
4 PLACES
.154
.144 DIA
4-PLACES
.154 MAX
TYP
.005
.015 SEE NOTE 9
SEE NOTE 14
.000
.015
SEE NOTE 18
.000
.030
.047
.037 TYP
.154 MAX REF
.077 MAX
TYP
.124
.114 TYP
DO NOT ENCAPSULATE
SEE NOTE 9
CR5
CR3
CR4
C3
R2
R16
R18
FT4
FT11
R17 5
R21 17
R7 8
R29 5
Q1 28
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R3 7
FT9
R14
R13
R15 12
Q3 28
R11 11
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R6
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39
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CR8
CR7
SEE NOTE 15
WR1
CCW
CW
R8
R9
R10
R26
R25
R27
R24
R28
R22
R23
R4
FT5
FT6
FT10
FT12
FT13
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CR4 32
CR3 46
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R20 16
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R13 5
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C3 27
R17
CR2
R12
C2
R4 7
1
2
3
25
41
42
43
45

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PART NO.	VALUE
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- 27	650 Ω
- 28	700 Ω
- 30	775 Ω
- 31	850 Ω
- 32	925 Ω
- 33	1000 Ω
- 34	1100 Ω
1010377 - 35	1200 Ω

CHART B	
PART NO.	VALUE
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- 58	2 Ω
- 59	3 Ω
- 60	4 Ω
- 61	5 Ω
- 62	6 Ω
- 63	7 Ω
- 64	8 Ω
- 65	9 Ω
- 66	10 Ω
- 67	11 Ω
- 68	12 Ω
- 69	13 Ω
- 70	14 Ω
- 71	15 Ω
- 72	16 Ω
- 73	17 Ω
- 74	18 Ω
1010377 - 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 - 1	100 Ω
- 2	120
- 3	140
- 4	160
- 5	180
- 6	200
- 7	220
- 8	240
- 9	260
- 10	280
- 11	300
- 12	320
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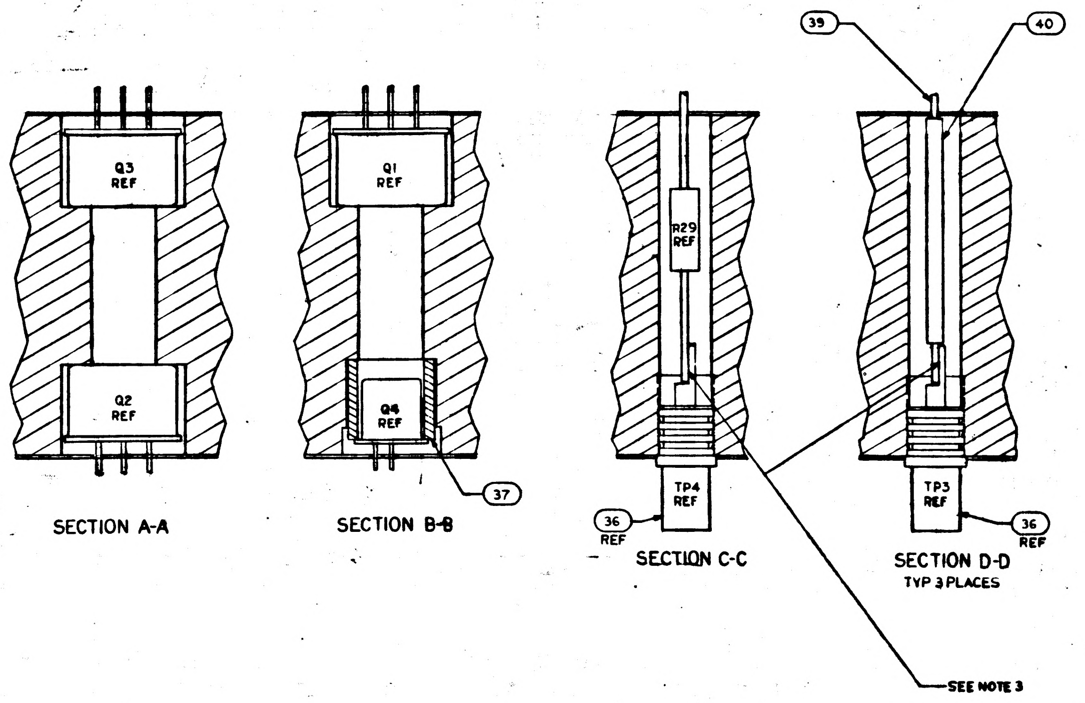
- 18	440
- 19	460
- 20	480
- 21	500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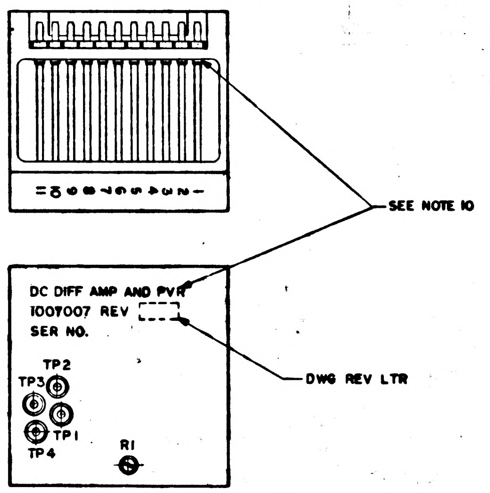
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
TYP 3 PLACES
SEE NOTE 3


SEE NOTE 10
DC DIFF AMP AND PVR
1007007 REV
SER NO.
DWG REV LTR
TP2
TP3
TP1
TP4
R1

MARKING VIEW
SCALE 2/1

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1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
1	1010372-32	DIODE	31
1	1010372-3	DIODE	30
1	1010357-1	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
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1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5 %	26
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1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1 %	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02 %	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5 %	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1 %	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 2%	19
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1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 175K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35 Ω, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W	6
5	1006750-80	RESISTOR, FIXED FILM, 100K 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN [illegible] DATE [illegible]
CHECKED W. F. Gifford 6 FEB 63
APPROVAL [illegible] 2/7/63
APPROVAL
NASA APPROVAL [illegible] 2-13-63
MIT APPROV [illegible] 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

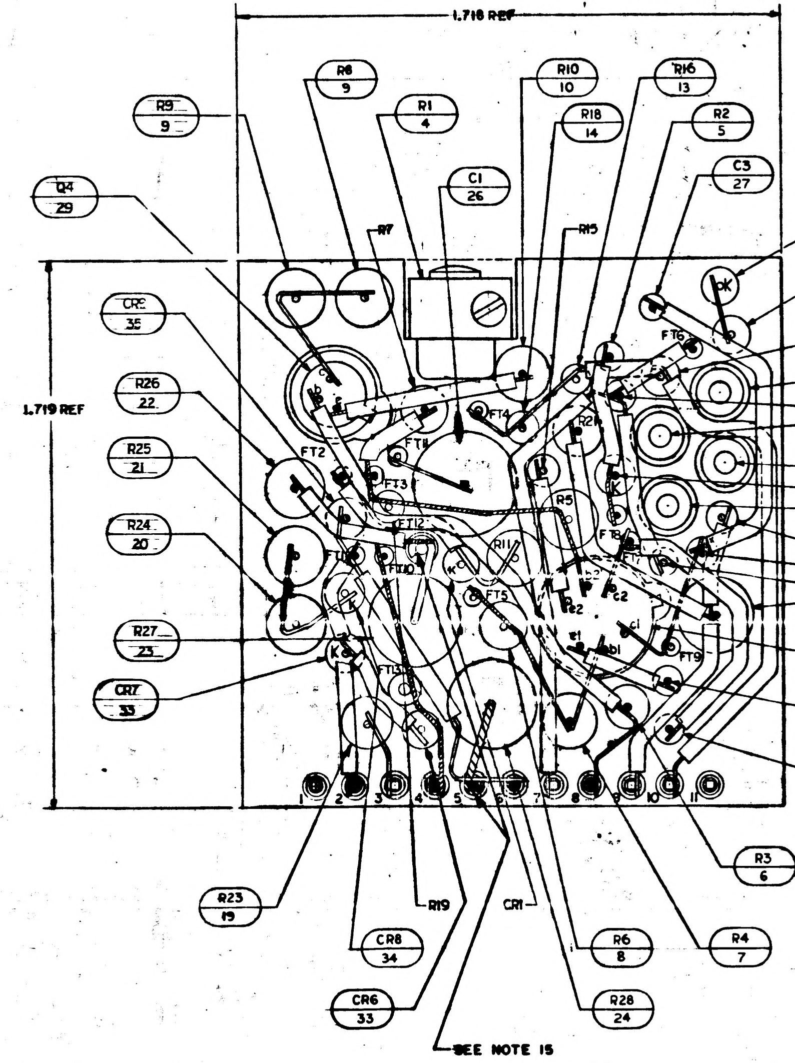
ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007007
SCALE 2/1 | WT | SHEET 1 OF 1

1007007 L

INCHES
PHOTOGRAPHIC SCALE ONLY

E2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CR3 46
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
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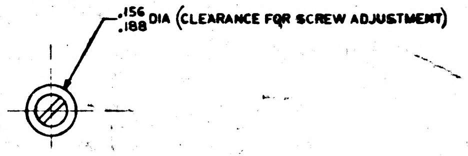
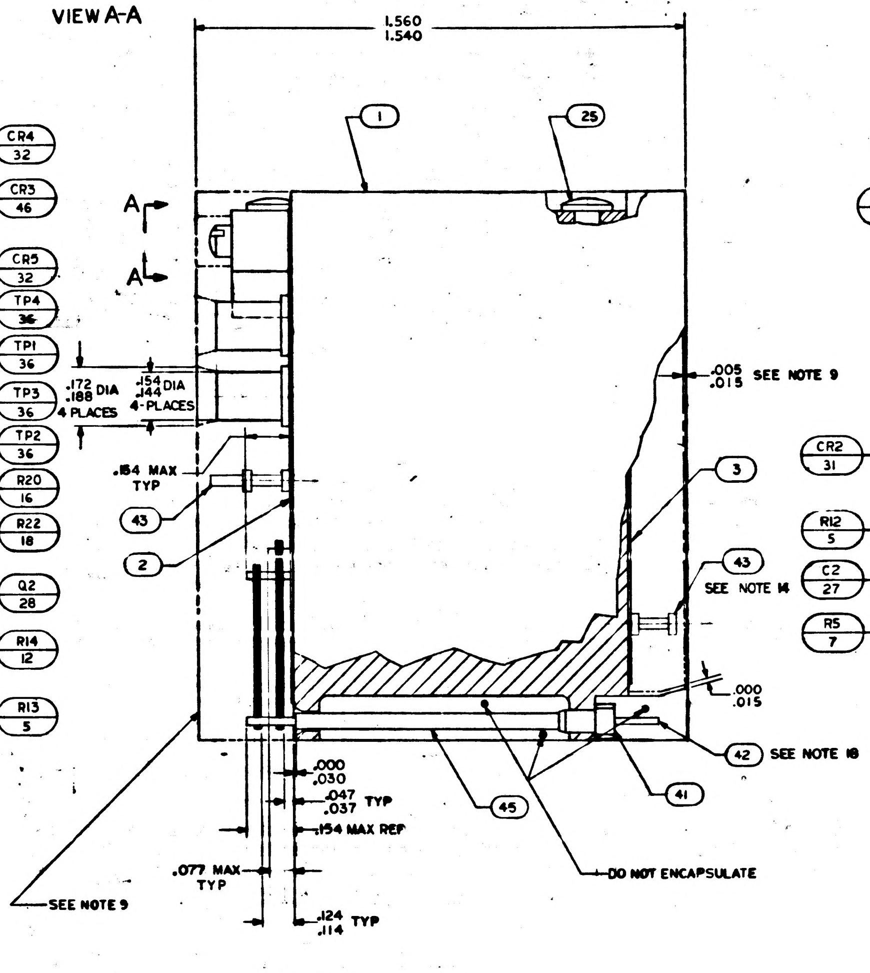
SEE NOTE 15


.156
.188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)

VIEW A-A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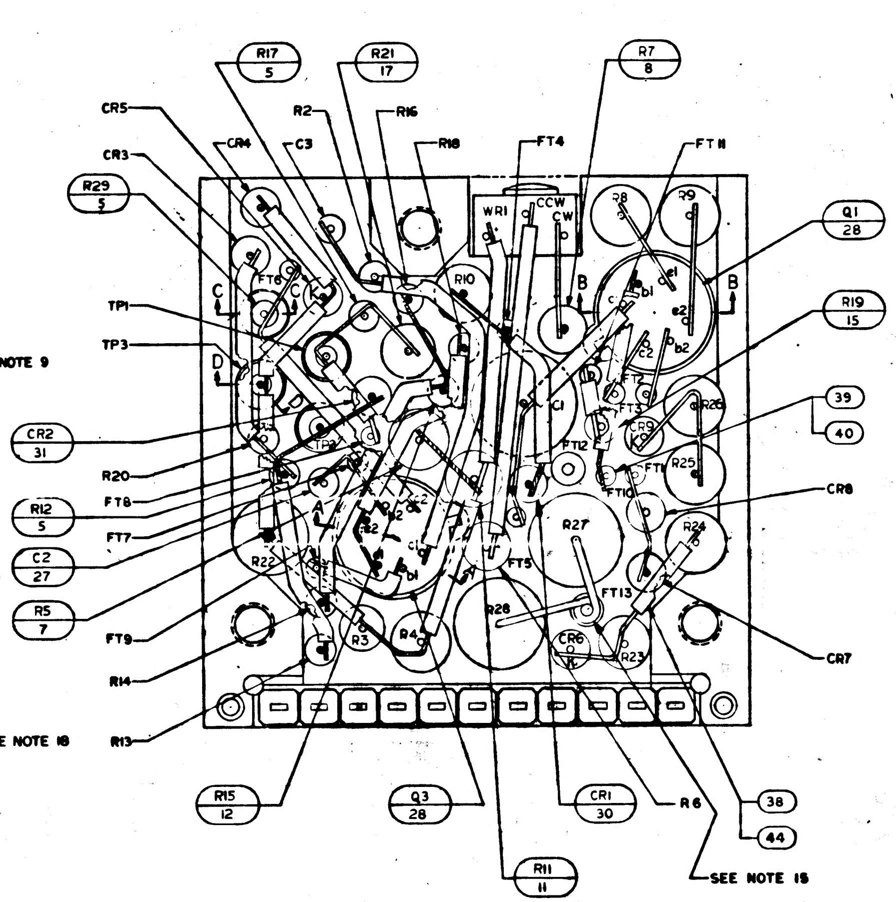
25
A
A
.172
.188 DIA
4 PLACES
.154
.144 DIA
4-PLACES
.005
.015 SEE NOTE 9
3
.164 MAX
TYP
43
2
43
SEE NOTE 14
.000
.015
42 SEE NOTE 18
41
45
DO NOT ENCAPSULATE
.000
.030
.047
.037 TYP
.154 MAX REF
.077 MAX
TYP
.124
.114 TYP
SEE NOTE 9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R21 17
R7 8
R2
R16
R18
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FT11
CR5
CR4
C3
CR3
R29 5
Q1 28
R19 15
TP1
TP3
39
40
CR2 31
R20
FT8
FT7
R12 5
C2 27
R5 7
FT9
R14
R13
CR8
CR7
R15 12
Q3 28
CR1 30
R6
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R11 11
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B
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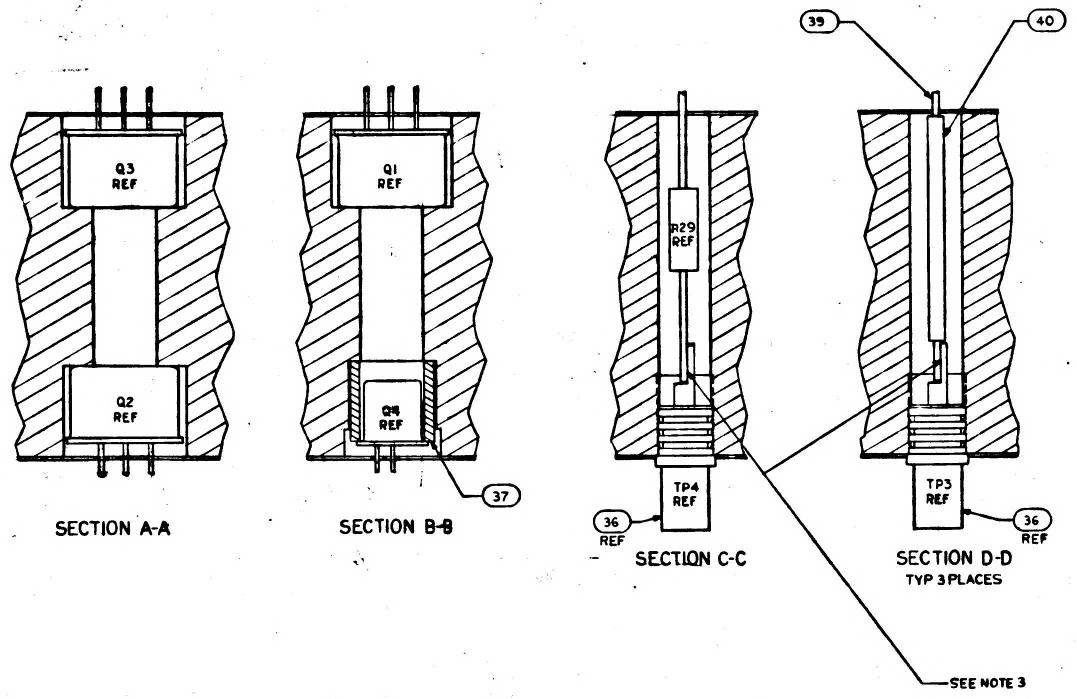
C
C
D
D
WR1
CCW
CW


Q3 REF
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Q1 REF
Q4 REF
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R29 REF
TP4 REF
36 REF
TP3 REF
36 REF
39
40
SEE NOTE 3

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D
TYP 3 PLACES

NOTES:

1. ~~INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327~~
2. STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ~~APPLY ZINC CHROMATE PRIMER~~ SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
10. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A
12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B
13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16. CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. __________
17. R26 AND R27 TO BE SELECTED PER A.T.P. __________
18. MUST MEET REQUIREMENTS OF ND 1002136

CHART A

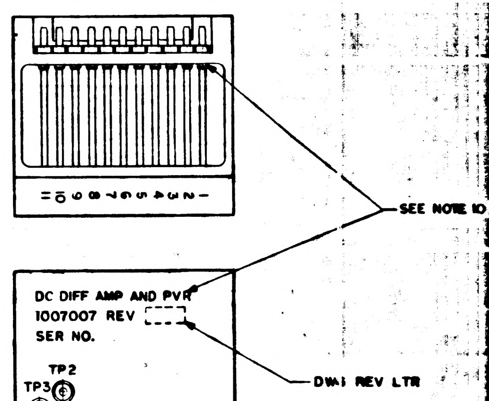
PART NO.		VALUE
101037	7 - 26	600 Ω
	- 27	650 Ω
	- 28	700 Ω
	- 30	775
	- 31	850
	- 32	925
	- 33	1000 Ω
	- 34	1100 Ω
101037	7 - 35	1200 Ω

CHART B

PART NO.		VALUE
10103	7 - 57	1 Ω
	- 58	2 Ω
	- 59	3 Ω
	- 60	4 Ω
	- 61	5 Ω
	- 62	6 Ω
	- 63	7 Ω
	- 64	8 Ω
	- 65	9 Ω
	- 66	10 Ω
	- 67	11 Ω
	- 68	12 Ω
	- 69	13 Ω
	- 70	14 Ω
	- 71	15 Ω
	- 72	16 Ω
	- 73	17 Ω
	- 74	18 Ω
10103	7 - 75	19 Ω

CHART C

PART NO.		VALUE
10102	4 — 1	100 Ω
	— 2	120
	— 3	140
	— 4	160
	— 5	180
	— 6	200
	[illegible]	[illegible]
	— 8	240
	— 9	260
	— 10	280
	— 11	300
	— 12	320
	— 13	340
	— 14	360
	— 15	380
	— 16	400
	— 17	420
	— 18	440
	— 19	460
	— 20	480
	— 21	500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SEE NOTE 10
DC DIFF AMP AND PVR
1007007 REV
SER NO.
TP2
TP3
TP1
TP4
R1
DWG REV LTR

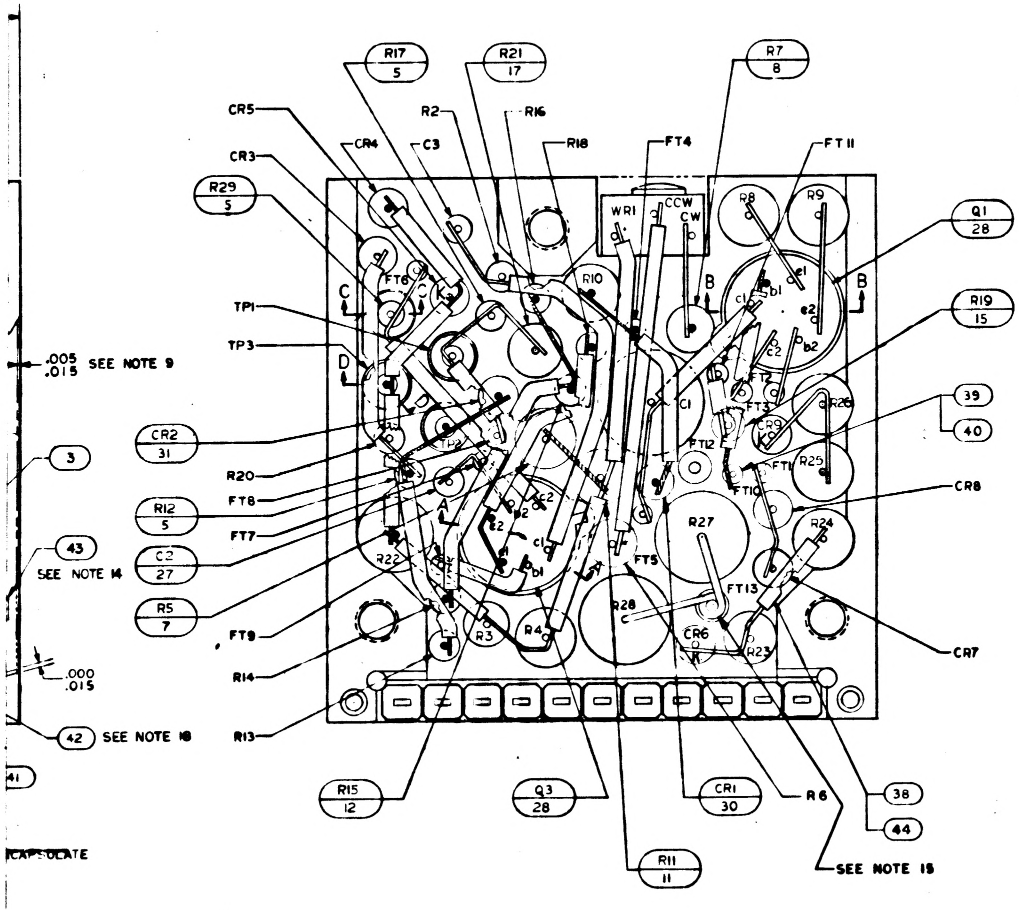
MARKING VIEW
SCALE 2/1

INCHES
PHOTOGRAPHIC SCALE ONLY

1007007 K

SYM	DESCRIPTION	DATE		
A	REVISED PER TDRR 01009	4-25-63	D.T.	WK
B	REVISED PER TDRR 01180	5-8-63	DT	WK
C	REVISED PER TDRR 01313	5-22-63	AVU	WR
D	REVISED PER TDRR 01721	6-26-63	JJM	WK
E	REVISED PER TDRR 02068	7-17-63		LK
F	REVISED PER TDRR 02348	7-31-63	JJM	WK
G	REVISED PER TDRR 03315	9/ /63	JJM 9/26	
H	REVISED PER TDRR 03313	9/26/63		WK
J	REVISED PER TDRR 04468	5 NOV 63	BK	WK
K	REVISED PER TDRR 05481	12/17/63		WK
L	REVISED PER TDRR 06461	13 FEB 64		WK
M	REVISED PER TDRR 07127	7 APR 64	S.W.	CF
N	REVISED PER TDRR 07284	6 APR 64	RWT	W.A.

REVISIONS TDRR 002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R7
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CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
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WR1
CCW
CW
R8
R9
Q1
28
C
B
B
TP1
TP3
D
R10
R19
15
FT6
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e1
e2
c2
b2
FT2
FT3
R26
39
40
CR2
31
TP2
C1
FT12
CR9
R25
R20
FT8
R12
5
FT7
FT10
CR8
A
R27
R24
C2
27
R22
FT5
R5
7
FT13
FT9
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R3
R4
CR6
R23
CR7
R14
R13
R15
12
Q3
28
CR1
30
R6
38
44
R11
11
SEE NOTE 15
.005
.015
SEE NOTE 9
3
43
SEE NOTE 14
.000
.015
42
SEE NOTE 18
41
CAPSULATE

CHA	
PART NC	JE
1010377 - 26	[illegible] Ω
- 27	650 Ω
- 28	700 Ω
- 30	775 Ω
- 31	850 Ω
- 32	925 Ω
- 33	1000 Ω
- 34	1100 Ω
1010377 - 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377-57	1 Ω
- 58	2 Ω
- 59	3 Ω
- 60	4 Ω
- 61	5 Ω
- 62	6 Ω
- 63	7 Ω
- 64	8 Ω
- 65	9 Ω
- 66	10 Ω
- 67	11 Ω
- 68	12 Ω
- 69	13 Ω
- 70	14 Ω
- 71	15 Ω
- 72	16 Ω
- 73	17 Ω
- 74	18 Ω
1010377-75	19 Ω

CHART C	
PART NO.	VALUE
1010254 - 1	100 Ω
- 2	120
- 3	140
- 4	160
- 5	180
- 6	200
- 7	220
- 8	240
- 9	260
- 10	280
- 11	300
- 12	320
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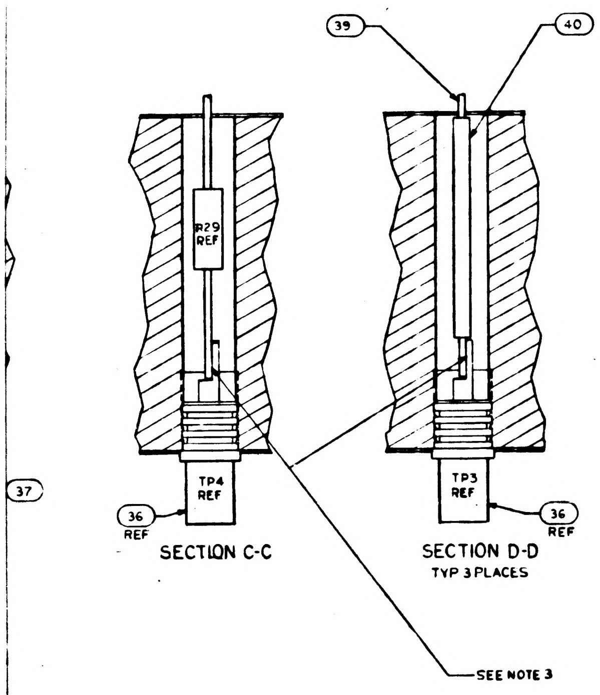
- 16	400
- 17	420
- 18	440
- 19	460
- 20	480
- 21	500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R29
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TP4
REF
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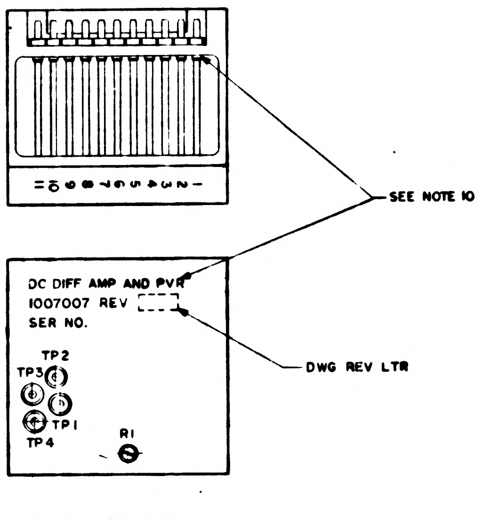
REF
TP3
REF
36
REF
37
SEE NOTE 3

SECTION C-C

SECTION D-D
TYP 3 PLACES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7
8
9
10
11
SEE NOTE 10
DC DIFF AMP AND PVR
1007007 REV
SER NO.
TP2
TP3
TP1
TP4
R1
DWG REV LTR

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
	1010008	ELEC SCHEMATIC DIAGRAM	REF
1	1010286-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776 21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
1	1010372-32	DIODE	31
1	1010372-3	DIODE	30
1	1010357-1	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
2	1010618-3	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 175K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN DATE
CHECKED 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL 2-13-63
MIT APPROVAL 13 Feb 63

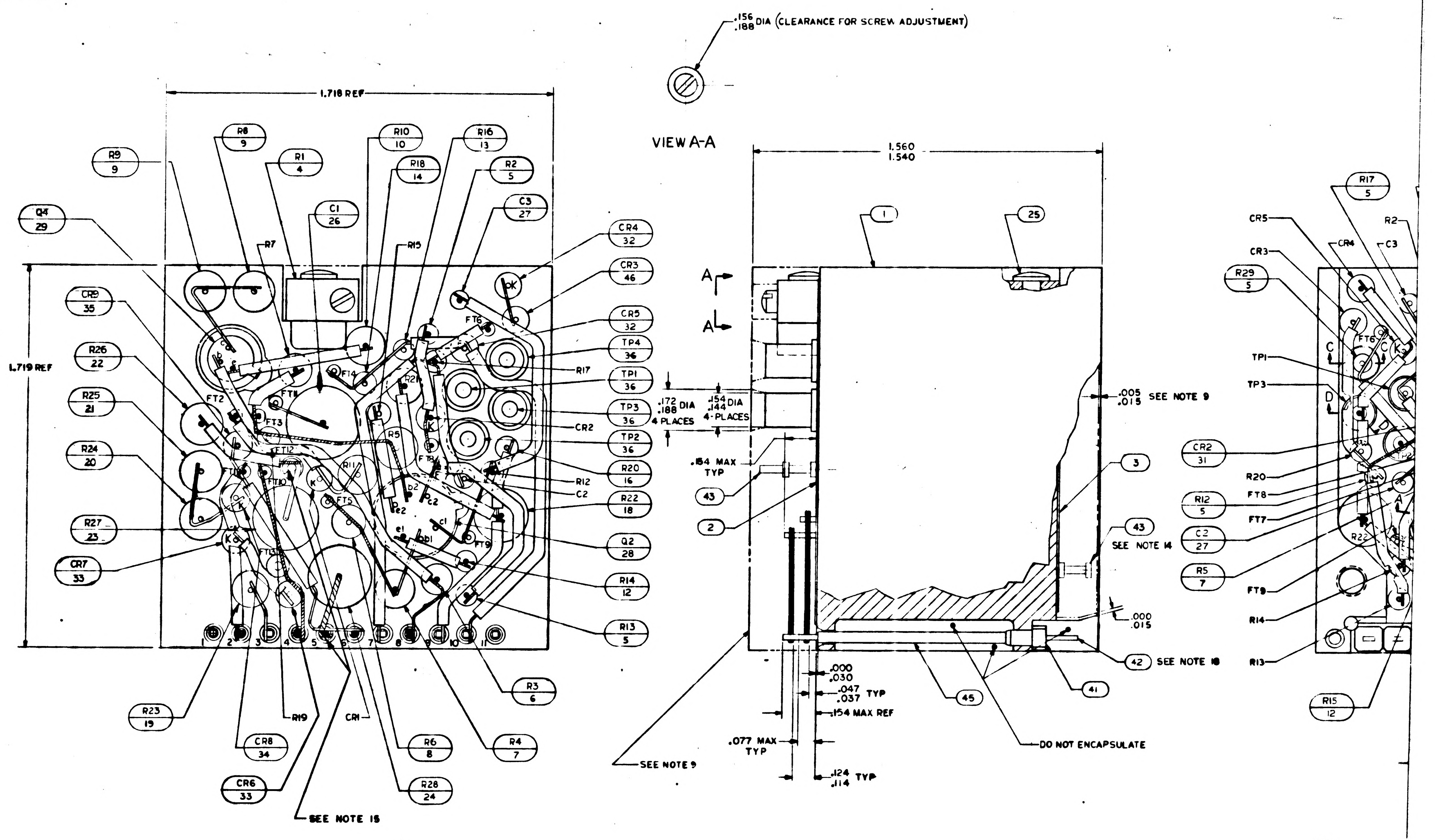
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY DC DIFFERENTIAL AMPLIFIER & PVR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007007
SCALE 5:1
WT
SHEET 1 OF 1

1007007 N

2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1.560 1.540
R8 9
R9 9
R1 4
C1 26
R10 10
R18 14
R16 13
R2 5
C3 27
Q4 29
R7
R15
CR4 32
CR3 46
CR5 32
TP4 36
TP1 36
TP3 36
TP2 36
R20 16
R22 18
Q2 28
R14 12
R13 5
R17
CR2
R12
C2
CR9 35
R26 22
R25 21
R24 20
R27 23
CR7 33
R23 19
CR8 34
CR6 33
R19
CR1
R6 8
R28 24
R4 7
R3 6
SEE NOTE 15
.172 .188 DIA 4 PLACES
.154 .144 DIA 4 PLACES
.154 MAX TYP
.005 .015 SEE NOTE 9
SEE NOTE 14
.000 .015
SEE NOTE 18
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
SEE NOTE 9
DO NOT ENCAPSULATE
1
25
3
43
2
42
41
45
A
R17 5
R29 5
CR2 31
R12 5
C2 27
R5 7
R15 12
TP1
TP3
R20
FT8
FT7
FT9
R14
R13
R22
39

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009

3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED

~~4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~

5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING

6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING

7.-K INDICATES CATHODE SIDE OF DIODE

8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25

9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

10. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.

11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A

12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B

13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C

14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW

15. SOLDER PER MIL-S-6872

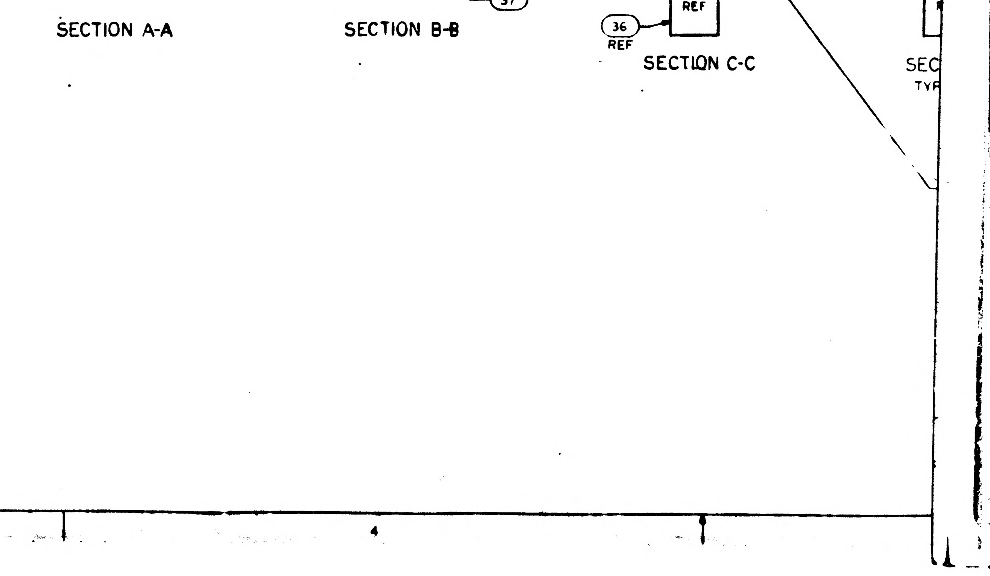
16 CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ______

17 R26 AND R27 TO BE SELECTED PER A.T.P. ______

18 MUST MEET REQUIREMENTS OF ND 1002136

19. ASSEMBLE AND TEST PER ATP 1007007

20. PROCURE PER PS 1007007


Q3 REF
Q2 REF
SECTION A-A
Q1 REF
Q4 REF
37
SECTION B-B
R29 REF
TP4 REF
36 REF
SECTION C-C
SEC
TYP

1007007 P

SYM	DESCRIPTION		
A	REVISED PER TDRR 01009	4-25-63	DT WK
B	REVISED PER TDRR 01180	5-8-63	DT WK
C	REVISED PER TDRR 01313	5-23-63	AUV WR
D	REVISED PER TDRR 01721	6-26-63	JJM WK
E	REVISED PER TDRR 02065	7-17-63	JA
F	REVISED PER TDRR 02348	7-31-63	JJM WK
G	REVISED PER TDRR 03315	9/26/63	JJM
H	REVISED PER TDRR 03313	9/26/63	WK
J	REVISED PER TDRR 04468	5 NOV 63	WK
K	REVISED PER TDRR 05481	12/20/63	WK
L	REVISED PER TDRR 06461	18 FEB 64	WK
M	REVISED PER TDRR 07127	7 APR 64	CF
N	REVISED PER TDRR 07284	6 APR 64	RWT JA
P	REVISED PER TDRR 08071	11 MAY 64	J.E.G.

.005
.015 SEE NOTE 9

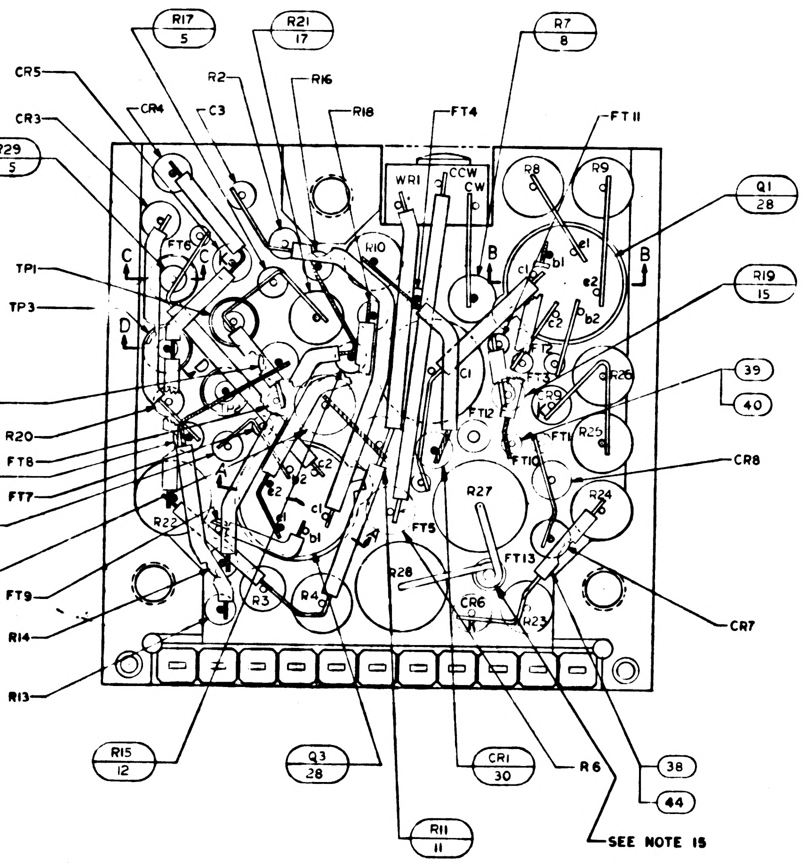
3

43
SEE NOTE 14

.000
.015

42 SEE NOTE 18

ULATE


R17
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R21
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R7
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CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29
5
WR1
CCW
CW
R8
R9
Q1
28
C
C
B
B
K
R10
e1
b1
c1
e2
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TP1
TP3
D
D
R19
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C1
FT2
FT3
R26
CR9
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40
CR2
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FT12
FT1
R25
R20
FT8
R12
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FT7
FT10
CR8
C2
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A
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R5
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FT13
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FT9
R3
R4
CR6
R23
CR7
R14
R13
R15
12
Q3
28
CR1
30
R6
38
44
R11
11
SEE NOTE 15

CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
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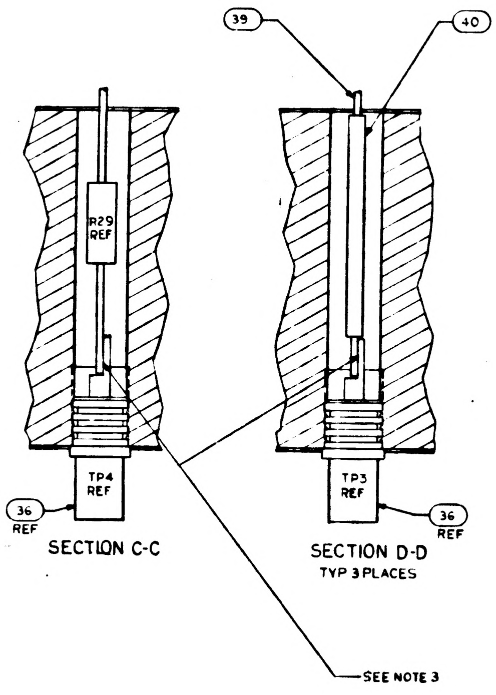
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500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R29
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TP4
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TP3
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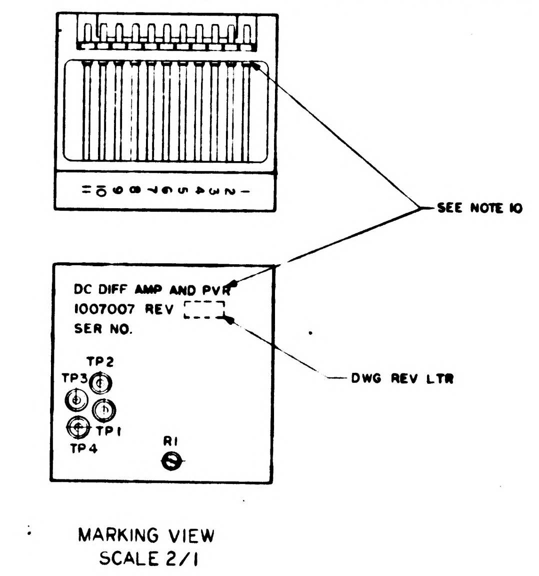
REF
SEE NOTE 3

SECTION C-C

SECTION D-D
TYP 3 PLACES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SEE NOTE 10
DC DIFF AMP AND PVR
1007007 REV
SER NO.
DWG REV LTR
TP2
TP3
TP1
TP4
R1

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1010286-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
~~1~~	~~1010372-32~~	~~DIODE~~	~~31~~
1	1010372-3	DIODE	30
1	1010357-1	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
2	1010618-3	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 174K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN H. Hogan DATE 12-18-62
CHECKED W. F. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL W. J. Rhine 2-13-63
MIT APPROVAL 13 Feb 63

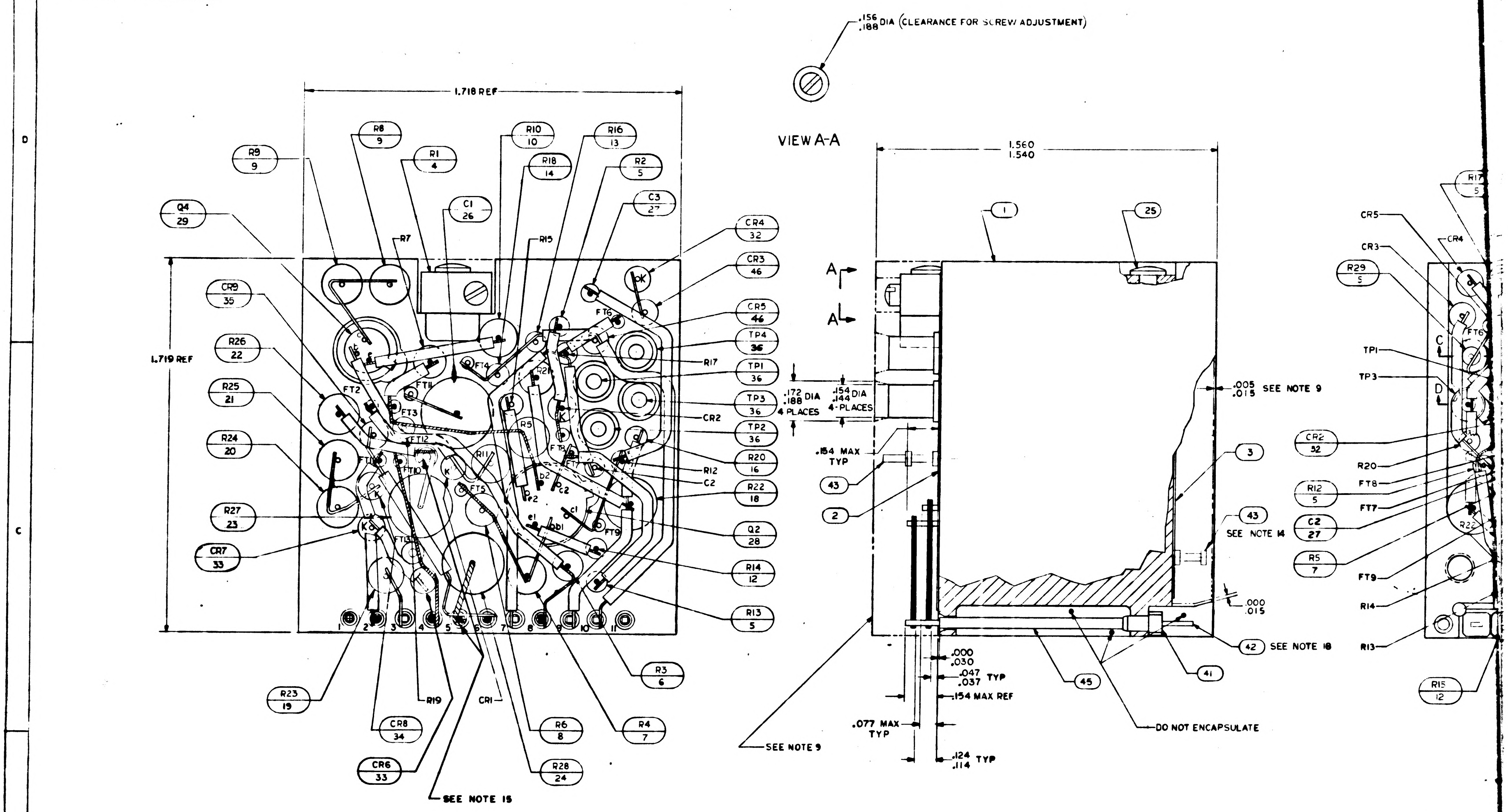
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO
SIZE J
NASA DRAWING NO. 1007007
SCALE 5:1
WT
SHEET 1 OF 1

P
1007007

2/1007007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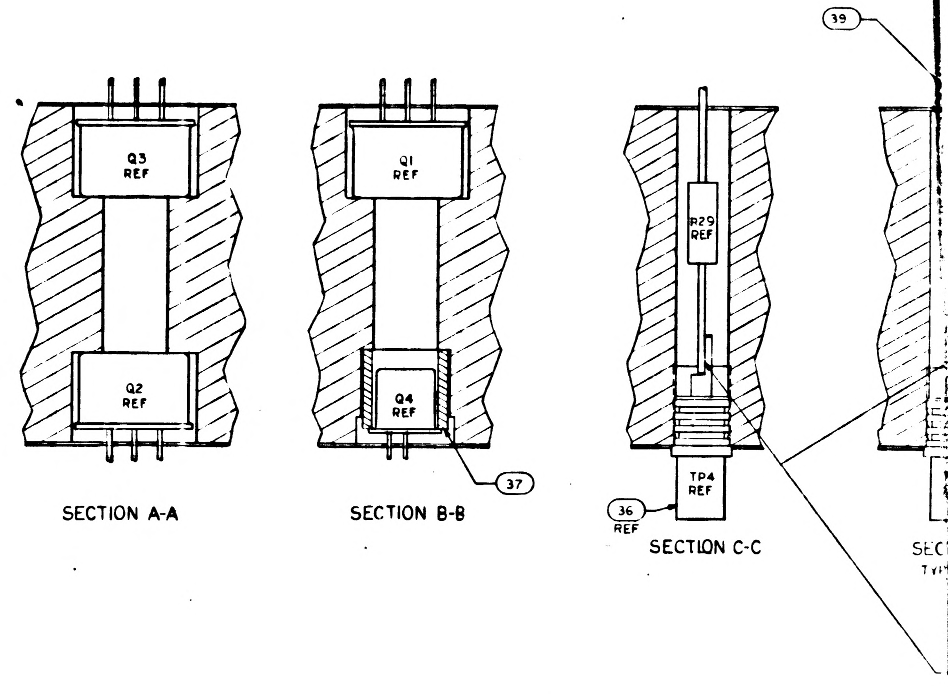
VIEW A-A
1.718 REF
1.719 REF
1.560 1.540
R9 9
R8 9
R1 4
R7
C1 26
R10 10
R18 14
R15
R16 13
R2 5
C3 27
Q4 29
CR9 35
R26 22
R25 21
R24 20
R27 23
CR7 33
CR4 32
CR3 46
CR5 46
TP4 36
TP1 36
TP3 36
TP2 36
R17
CR2
R20 16
R12
C2
R22 18
Q2 28
R14 12
R13 5
R3 6
R4 7
R6 8
R28 24
CR1
R19
R23 19
CR8 34
CR6 33
SEE NOTE 15
1 2 3 4 5 6 7 8 9 10 11
A
A
.172 .188 DIA 4 PLACES
.154 .144 DIA 4 PLACES
.154 MAX TYP
43
2
1
25
3
.005 .015 SEE NOTE 9
43 SEE NOTE 14
.000 .015
42 SEE NOTE 18
41
45
DO NOT ENCAPSULATE
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
SEE NOTE 9
CR5
CR4
CR3
R29 5
TP1
TP3
C
D
CR2 32
R20
FT8
R12 5
FT7
C2 27
R5 7
FT9
R14
R13
R15 12
R17 5
R22
FT6

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
~~4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
10. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A
12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B
13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16 CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. ____________
17 R26 AND R27 TO BE SELECTED PER A.T.P. ____________
18 MUST MEET REQUIREMENTS OF ND 1002136
19. ASSEMBLE AND TEST PER ATP 1007007
20. PROCURE PER PS 1007007


39
Q3 REF
Q2 REF
SECTION A-A
Q1 REF
Q4 REF
37
SECTION B-B
R29 REF
TP4 REF
36 REF
SECTION C-C

1007007 L

1/1007007

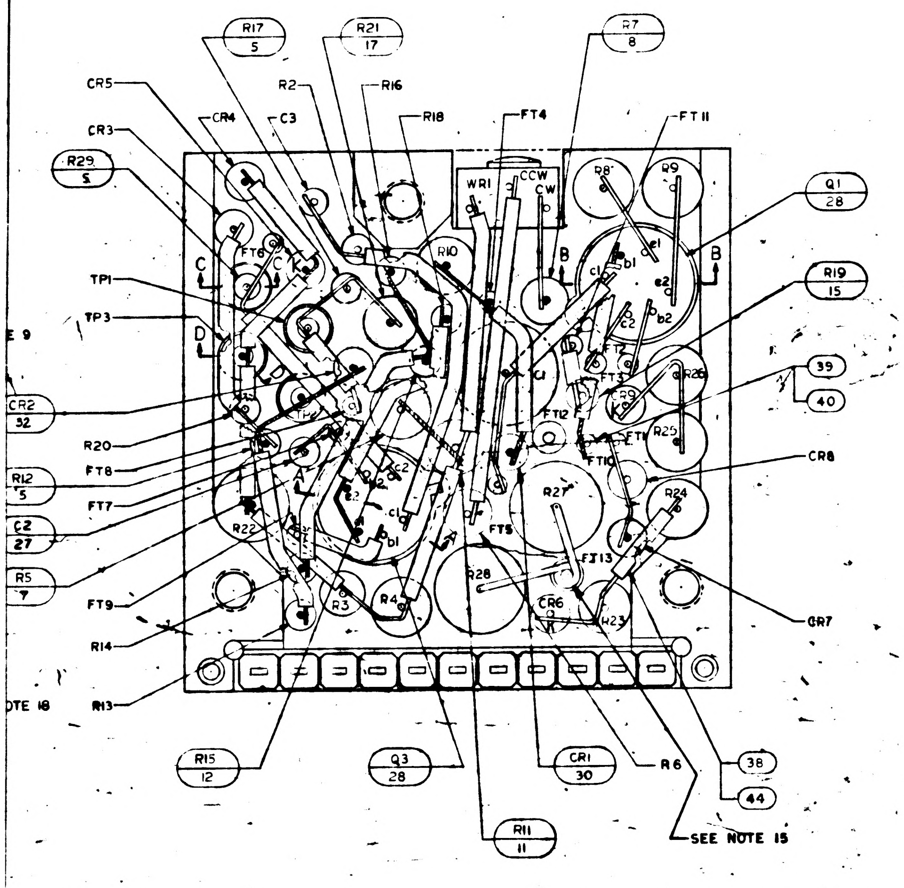
1007007 R

A	REVISED PER TDRR 01009			
B	REVISED PER TDRR 01180			
C	REVISED PER TDRR 01313	7.22.63		WK
D	REVISED PER TDRR 01781	[illegible]	JJM	WK
E	REVISED PER TDRR 02065	7.17.63		JM
F	REVISED PER TDRR 02348	[illegible]	JJM	WK
G	REVISED PER TDRR 03315	[illegible]	JJM	
H	REVISED PER TDRR 03313	[illegible]		WK
J	REVISED PER TDRR 04468	5 NOV 63		WK
K	REVISED PER TDRR 05481	[illegible]		WK
L	REVISED PER TDRR 06461	[illegible] FEB 64		WK
M	REVISED PER TDRR 07127	[illegible] 64	S.W.	
N	REVISED PER TDRR 07284	6 APR 64	RWT	
P	REVISED PER TDRR 08021	11 MAY 64		
R	REVISED PER TDRR 10909	28 JUL 64	JJJ	AV

CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω
Ⓡ 1006757 – 8	0 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500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R2
R16
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R18
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CR3
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5
WR1
CCW
CW
R8
R9
Q1
28
C
B
R10
c1
b1
e1
e2
b2
c2
R19
15
TP1
TP3
FT6
D
FT2
FT3
R26
39
40
CR9
CR2
32
R20
FT12
FT1
R25
FT10
CR8
FT8
R12
5
FT7
C2
27
R27
R24
R22
FT5
FT13
R5
7
R28
FT9
R3
R4
CR6
R23
CR7
R14
R13
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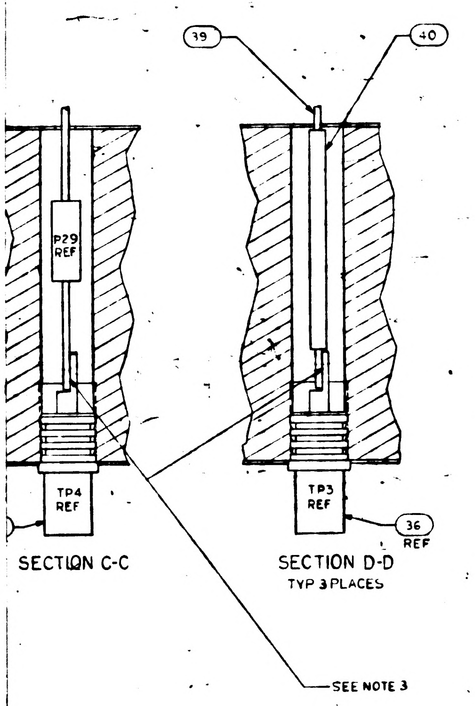
28
CR1
30
R6
38
44
R11
11
SEE NOTE 15
E 9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R29
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TP4
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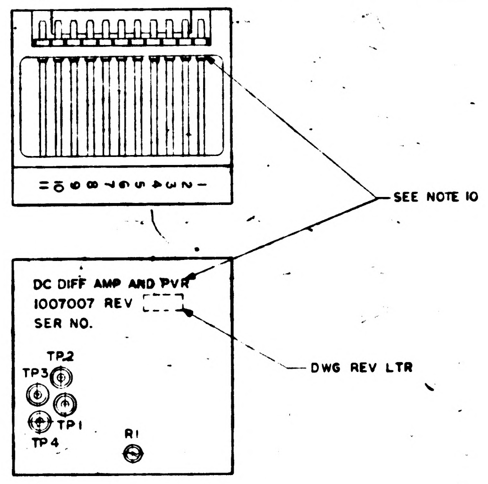
TP3
REF
36
REF
SEE NOTE 3

SECTION C-C

SECTION D-D
TYP 3 PLACES


1
2
3
4
5
6
7
8
9
10
11
SEE NOTE 10
DC DIFF AMP AND PVR
1007007 REV
SER NO.
DWG REV LTR
TP2
TP3
TP1
TP4
R1

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1010286-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
A. REQ	1006776-22	INSULATION, SLEEVING	40
A. REQ	1006757-8	WIRE, ELEC .020 DIA	39
A. REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
~~1~~	~~1010372-32~~	~~DIODE~~	~~31~~
1	1010372-3	DIODE	30
1	1010357-1	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
8	1010618-3	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 05%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 174K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, [illegible]	6
3	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497

DRAWN [illegible] DATE [illegible]
CHECKED [illegible] 6 FEB 63
APPROVAL [illegible] 2/7/63
APPROVAL

NASA APPROVAL [illegible]
9-13-63

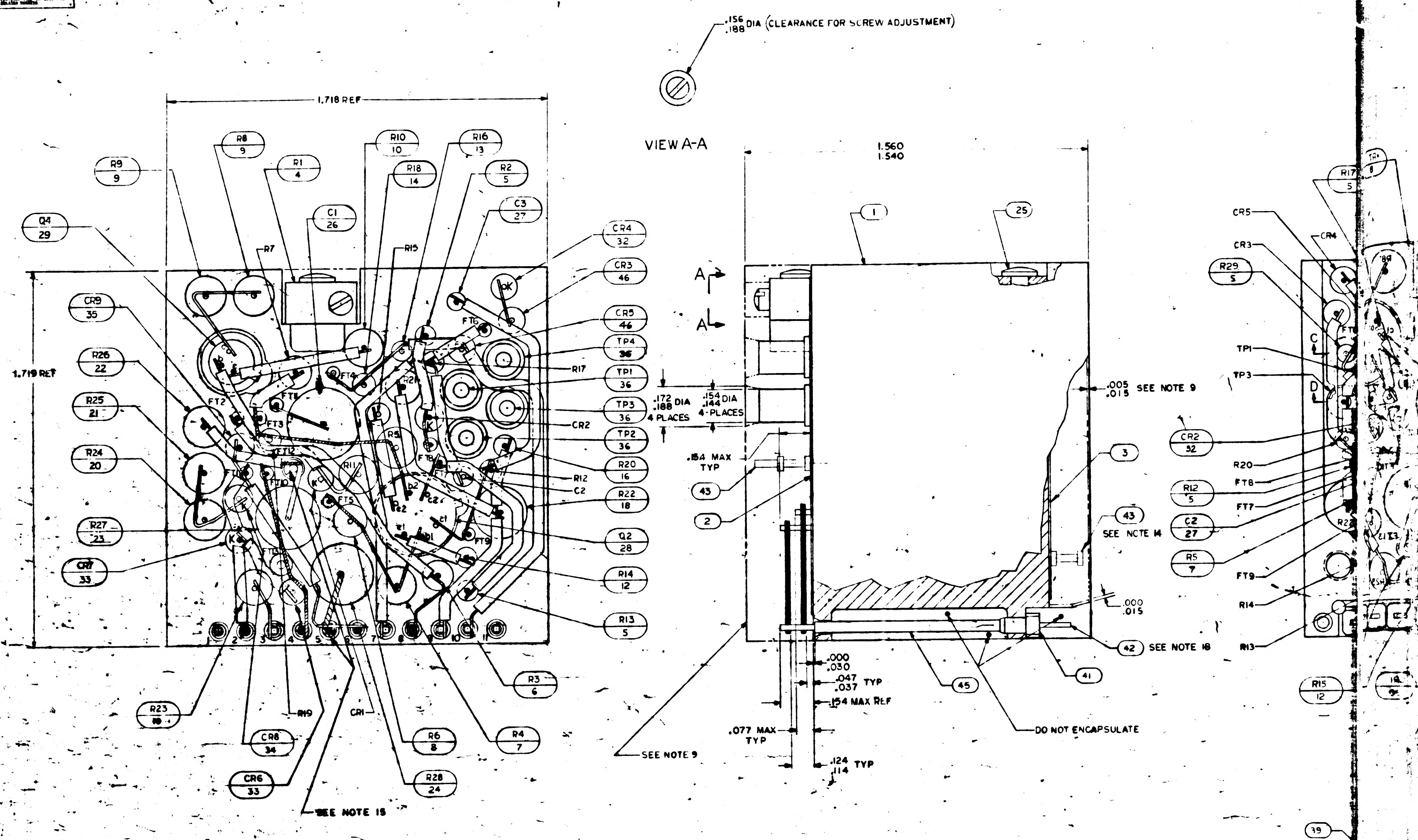
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007007
SCALE 5:1
WT
SHEET

1007007 R

2/1007007


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
1.718 REF
1.719 REF
VIEW A-A
1.560 1.540
A
A
R9 9
R8 9
R1 4
R7
C1 26
R10 10
R18 14
R15
R16 13
R2 5
C3 27
CR4 32
CR3 46
CR5 46
TP4 36
TP1 36
TP3 36
TP2 36
R17
CR2
R12
C2
R20 16
R22 18
Q2 28
R14 12
R13 5
R3 6
R4 7
R28 24
R6 8
CR1
CR6 33
CR8 34
R19
R23 19
SEE NOTE 15
Q4 29
CR9 35
R26 22
R25 21
R24 20
R27 23
CR7 33
FT2
FT3
FT4
FT5
FT6
FT7
FT8
FT9
FT12
1 2 3 4 5 6 7 8 9 10 11
.172 .188 DIA 4 PLACES
.154 .144 DIA 4 PLACES
.154 MAX TYP
.005 .015 SEE NOTE 9
.000 .015
SEE NOTE 18
SEE NCTE 14
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
SEE NOTE 9
DO NOT ENCAPSULATE
1
2
3
25
41
42
43
45
CR5
CR3
R29 5
TP1
TP3
C
D
CR2 32
R20
FT8
R12 5
FT7
C2 27
R5 7
FT9
R14
R13
R15 12
R17 5

NOTES:

~~1.- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327~~

~~2.-~~ STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009

3.- ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED

~~4.- WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~

5.- WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING

6.- BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING

~~7.- K~~ INDICATES CATHODE SIDE OF DIODE

~~8.- APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER~~ MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25

9.- ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

10. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.

11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A

12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B

13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C

14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW

15. SOLDER PER MIL-S-6872

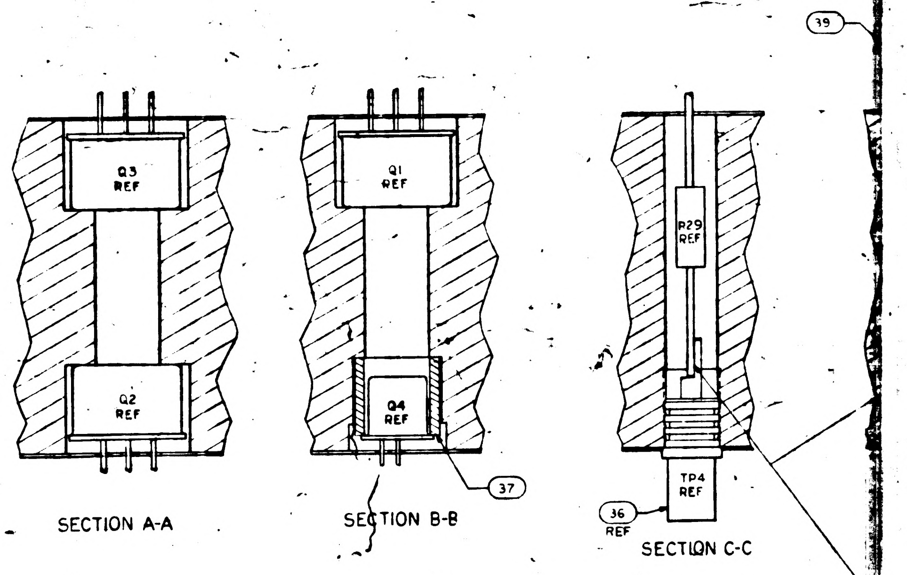
16 CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P.

17 R26 AND R27 TO BE SELECTED PER A.T.P.

18 MUST MEET REQUIREMENTS OF ND 1002136

19. ASSEMBLE AND TEST PER ATP 1007007

20. PROCURE PER PS 1007007

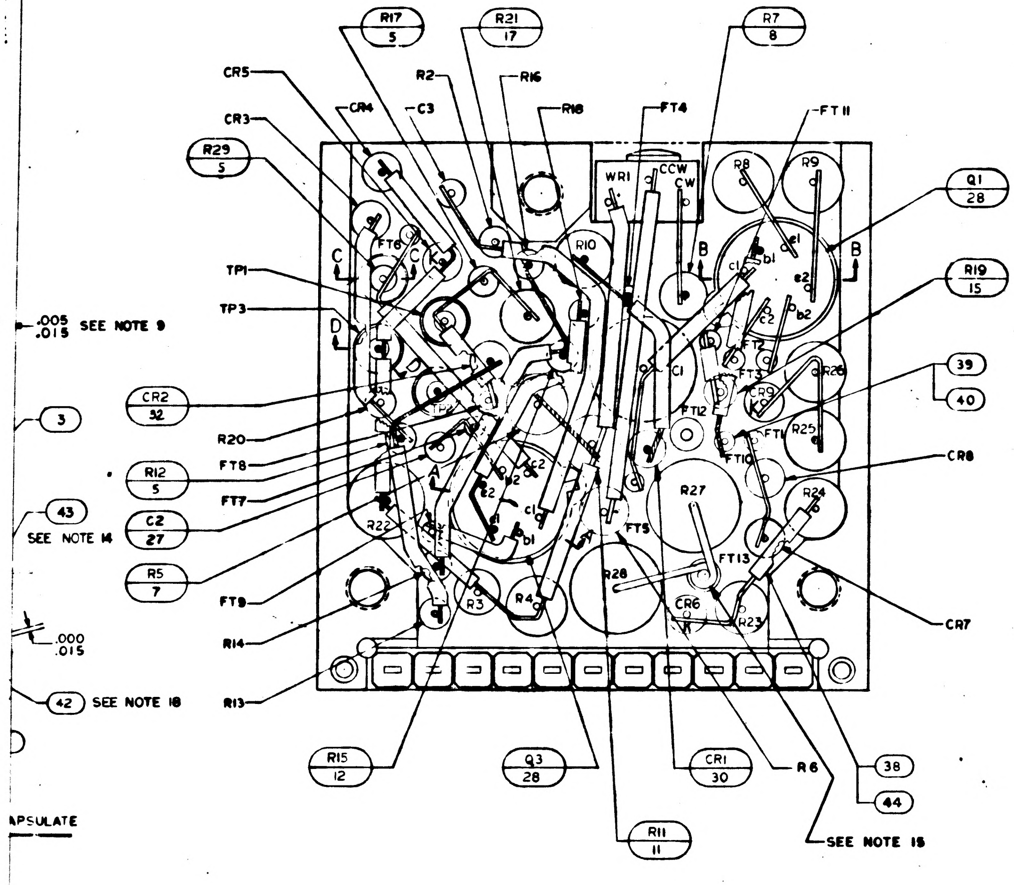

39
Q3 REF
Q2 REF
Q1 REF
Q4 REF
37
R29 REF
TP4 REF
36 REF
SECTION A-A
SECTION B-B
SECTION C-C

1007007 R

1/1007007

S 1007007

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01009	4-25-63	RT WK
B	REVISED PER TDRR 01180	5-8-63	RT WK
C	REVISED PER TDRR 01313	5-22-63	WV WR
D	REVISED PER TDRR 01781	6-26-63	JJM WK
E	REVISED PER TDRR 02068	7-17-63	LM
F	REVISED PER TDRR 02348	7-31-63	JJM WR
G	REVISED PER TDRR 03315	9/11/63	JJM
H	REVISED PER TDRR 03313	9/26/63	WK
J	REVISED PER TDRR 04468	5 NOV 63	WK
K	REVISED PER TDRR 05481	12/ /63	WR
L	REVISED PER TDRR 06461	18 FEB 64	WR
M	REVISED PER TDRR 07127	7 MAR 64	CF
N	REVISED PER TDRR 07284	3 APR 64	RWT
P	REVISED PER TDRR 08071	11 MAY 64	J.E.G.
R	REVISED PER TDRR 10909	28 JUL 64	JJJ AU
S	REVISED PER TDRR 10922	30 JUL 64	JWP J.E.G.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R7
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CR4
C3
R2
R16
R18
FT4
FT 11
CR3
R29
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WR1
CCW
CW
R8
R9
Q1
28
R10
B
C
TP1
TP3
D
FT6
R19
15
.005
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40
R26
3
CR2
32
R20
FT8
FT7
R12
5
C2
27
R5
7
R22
FT9
43
SEE NOTE 14
C1
FT12
FT10
R25
CR8
R24
R27
R28
FT5
FT13
CR6
R23
R3
R4
CR7
.000
.015
R14
R13
42 SEE NOTE 18
R15
12
Q3
28
R11
11
CR1
30
R6
38
44
SEE NOTE 15
APSULATE

CHART A

(S)

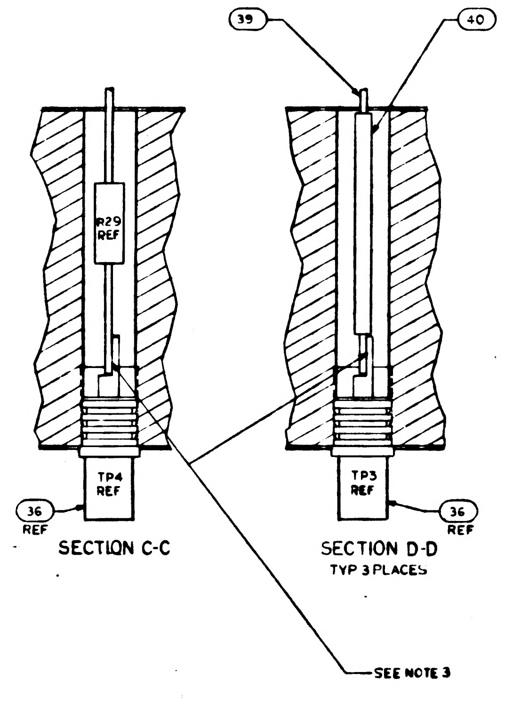
PART NO.	VALUE	PART NO.	VALUE
1010377 - 26	600 Ω	1010377 - 325	740 Ω
- 27	650 Ω	- 326	810 Ω
- 28	700 Ω	- 327	890 Ω
- 30	775 Ω	- 328	960 Ω
- 31	850 Ω	- 329	1050 Ω
- 32	925 Ω	- 330	1150 Ω
- 33	1000 Ω		
- 34	1100 Ω		
1010377 - 35	1200 Ω		

CHART B

PART NO.	VALUE
1010377 - 57	1 Ω
- 58	2 Ω
- 59	3 Ω
- 60	4 Ω
- 61	5 Ω
- 62	6 Ω
- 63	7 Ω
- 64	8 Ω
- 65	9 Ω
- 66	10 Ω
- 67	11 Ω
- 68	12 Ω
- 69	13 Ω
- 70	14 Ω
- 71	15 Ω
- 72	16 Ω
- 73	17 Ω
- 74	18 Ω
1010377 - 75	19 Ω
(R) 1006757 - 8	0 Ω

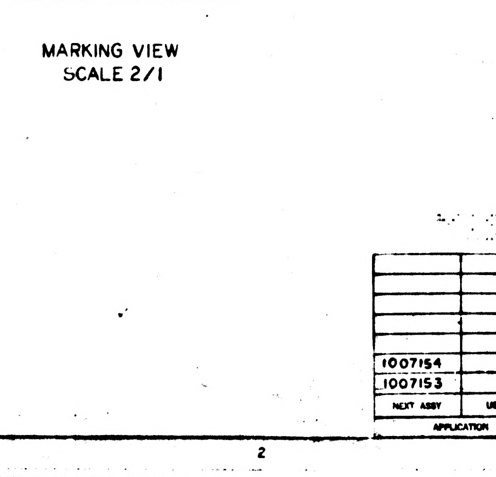
CHART C

PART NO.	VALUE
1010254 - 1	100 Ω
- 2	120
- 3	140
- 4	160
- 5	180
- 6	200
- 7	220
- 8	240
- 9	260
- 10	280
- 11	300
- 12	320
- 13	340
- 14	360
- 15	380
- 16	400
- 17	420
- 18	440
- 19	460
- 20	480
- 21	500


39
40
R29
REF
TP4
REF
TP3
REF
36
REF
36
REF
SEE NOTE 3

SECTION C-C

SECTION D-D
TYP 3 PLACES


1 2 3 4 5 6 7 8 9 10 11
SEE NOTE 10
DC DIFF AMP AND PVR
1007007 REV
SER NO.
DWG REV LTR
TP2
TP3
TP1
TP4
R1
SEE NOTES 21 & 22.
(S)

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1010286-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
~~1~~	~~1010372-32~~	~~DIODE~~	~~31~~
1	1010372-3	DIODE	30
1	1010357-1	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10 %	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5 %	26
2	1010618-3	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1 %	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02 %	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5 %	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1 %	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2 W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2 W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4 W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 174 K, 1/8 W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 2%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN DATE
CHECKED 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL 2-13-63
MIT APPROVAL 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

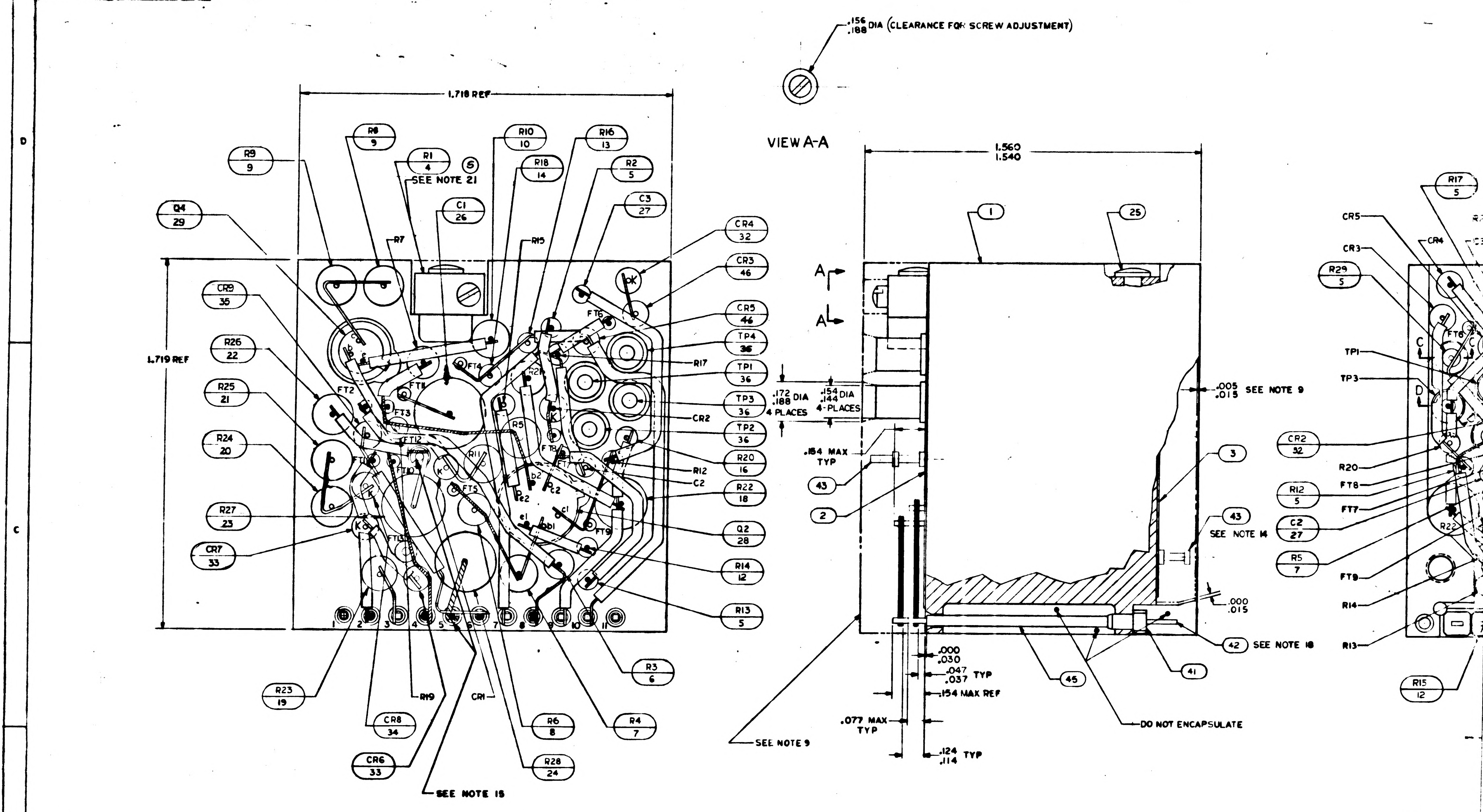
ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007007

SCALE | WT | SHEET 1 OF 1

S 1007007

2/1007007


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.718 REF
1.719 REF
1.560 1.540
R8 9
R9 9
R1 4 SEE NOTE 21
⑥
C1 26
R10 10
R18 14
R16 13
R2 5
C3 27
R15
R7
Q4 29
CR9 35
R26 22
R25 21
R24 20
R27 23
CR7 33
CR4 32
CR3 46
CR5 46
TP4 36
TP1 36
TP3 36
TP2 36
R20 16
R22 18
Q2 28
R14 12
R13 5
R17
CR2
R12
C2
R3 6
R4 7
R6 8
R28 24
CR1
R19
CR8 34
CR6 33
R23 19
SEE NOTE 15
FT1 FT2 FT3 FT4 FT5 FT6 FT7 FT8 FT9 FT10 FT11 FT12 FT13
1 2 3 4 5 6 7 8 9 10 11
A A
.172 .188 DIA 4 PLACES
.154 .144 DIA 4-PLACES
.184 MAX TYP
43
2
1
25
3
.005 .015 SEE NOTE 9
43 SEE NOTE 14
.000 .015
42 SEE NOTE 18
41
45
DO NOT ENCAPSULATE
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
SEE NOTE 9
R17 5
CR5
CR4
CR3
R29 5
TP1
TP3
C
D
CR2 32
R20
FT8
R12 5
FT7
C2 27
R5 7
FT9
R22
R14
R13
R15 12

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009

3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED

~~4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002005~~

5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING

6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING

7.-K INDICATES CATHODE SIDE OF DIODE

8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25

9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

10. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.

11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A

12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B

13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C

14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW

15. SOLDER PER MIL-S-6872

16 CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. 1007007

17 R26 AND R27 TO BE SELECTED PER A.T.P. 1007007

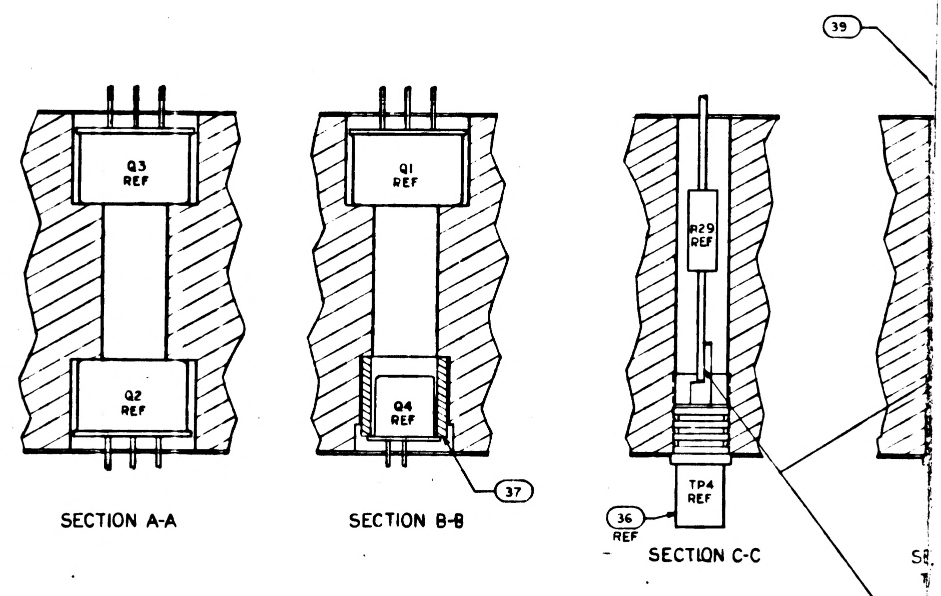
18 MUST MEET REQUIREMENTS OF ND 1002136

19. ASSEMBLE AND TEST PER ATP 1007007

20. PROCURE PER PS 1007007

21. SEAL CALIBRATION POT R1 PER ND-1002009, METHOD C, AFTER ALL THE REQUIREMENTS OF FTM-1007007 HAVE BEEN SATISFIED.

22. AFTER SEALING R1, MARK DATE OF SEALING PER ND-1002023(RED).


39
Q3 REF
Q2 REF
Q1 REF
Q4 REF
37
R29 REF
TP4 REF
36 REF

SECTION A-A

SECTION B-B

SECTION C-C

1/1007007

1007007 T

SYM	REVISIONS TDRR 00311 DESCRIPTION	DATE	
A	REVISED PER TDRR 01009	4·25·63	D.T. WK
B	REVISED PER TDRR 01180	5·8·63	D.T. WK
C	REVISED PER TDRR 01313	5·22·63	AUV WR
D	REVISED PER TDRR 01721	6·26·63	J.J.M. WK
E	REVISED PER TDRR 02068	7·17·63	EPR LK
F	REVISED PER TDRR 02348	7·31·63	J.J.M. WR
G	REVISED PER TDRR 03315	7/29/63	J.J.M. 9/26 WK
H	REVISED PER TDRR 03313	9/26/63	WK
J	REVISED PER TDRR 04468	5 NOV 63	BK WK
K	REVISED PER TDRR 05481	12/17/63	BK WK
L	REVISED PER TDRR 06461	18 FEB 64	EPE WK
M	REVISED PER TDRR 07127	7 APR 64	S.W.B. EF
N	REVISED PER TDRR 07284	6 APR 64	RWT W.A.
P	REVISED PER TDRR 08071	11 MAY 64	J.E.G.
R	REVISED PER TDRR 10909	28 JUL 64	JJJ AU
S	REVISED PER TDRR 10922	30 JUL 64	JWP J.E.G.
T	REVISED PER TDRR 17335	12 MAR 65	JHR EF

(S)

CHART A

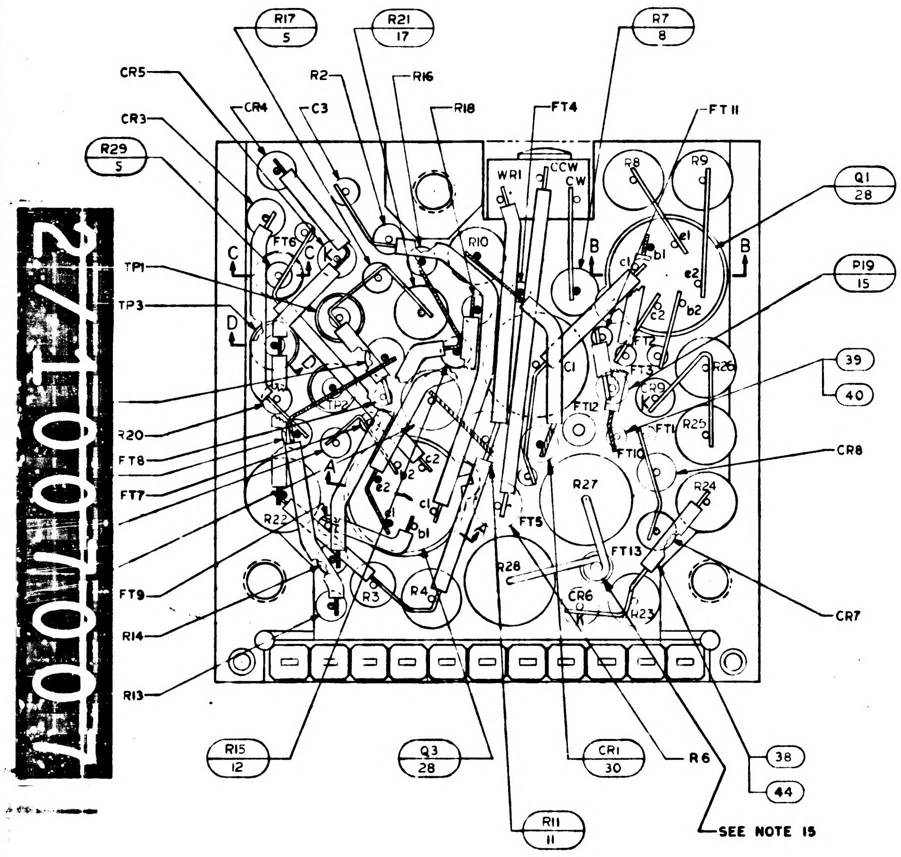
PART NO.	VALUE	PART NO.	VALUE
1010377 - 26	600 Ω	1010377 - 325	740 Ω
- 27	650 Ω	- 326	810 Ω
- 28	700 Ω	- 327	890 Ω
- 30	775 Ω	- 328	960 Ω
- 31	850 Ω	- 329	1050 Ω
- 32	925 Ω	- 330	1150 Ω
- 33	1000 Ω		
- 34	1100 Ω		
1010377 - 35	1200 Ω		

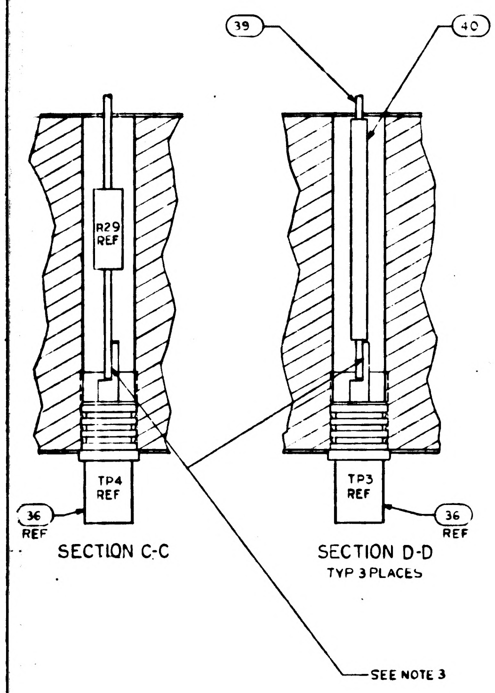
CHART B

PART NO.	VALUE
1010377 - 57	1 Ω
- 58	2 Ω
- 59	3 Ω
- 60	4 Ω
- 61	5 Ω
- 62	6 Ω
- 63	7 Ω
- 64	8 Ω
- 65	9 Ω
- 66	10 Ω
- 67	11 Ω
- 68	12 Ω
- 69	13 Ω
- 70	14 Ω
- 71	15 Ω
- 72	16 Ω
- 73	17 Ω
- 74	18 Ω
1010377 - 75	19 Ω
(R) 1006757 - 8	0 Ω

CHART C

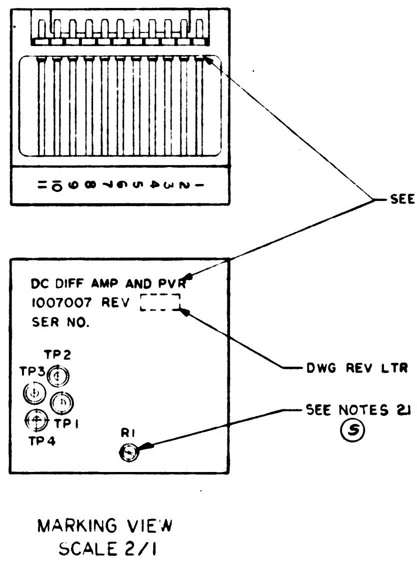
PART NO.	VALUE
1010254 - 1	100 Ω
- 2	120
- 3	140
- 4	160
- 5	180
- 6	200
- 7	220
- 8	240
- 9	260
- 10	280
- 11	300
- 12	320
- 13	340
- 14	360
- 15	380
- 16	400
- 17	420
- 18	440
- 19	460
- 20	480
- 21	500





SECTION C-C

SECTION D-D
TYP 3 PLACES



MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
⨯	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1010286-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
~~1~~	~~1010372-32~~	~~DIODE~~	~~31~~
1	1010372-3	DIODE	30
1	1010357-1	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
2	1010618-3	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 174K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

M I T
INSTRUMENTATION LAB
Cambridge, Mass
Contract NAS 9-497
DRAWN H. Hogan DATE 12-18-62
CHECKED W. F. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL 2-13-63
M I T APPROVAL 13 Feb 63

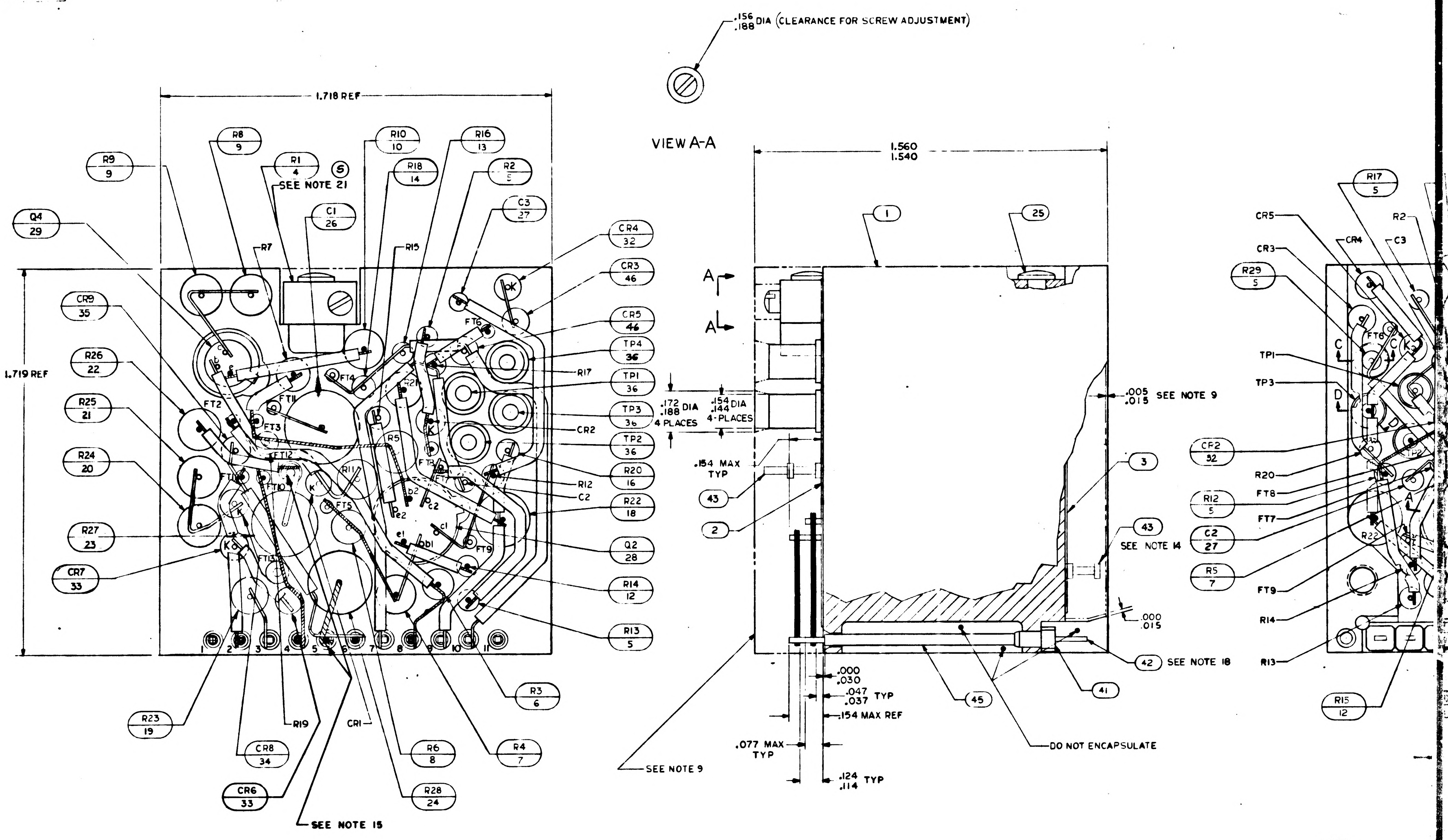
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO | SIZE J | NASA DRAWING NO. 1007007
SCALE 5:1 | WT | SHEET 1 OF 1

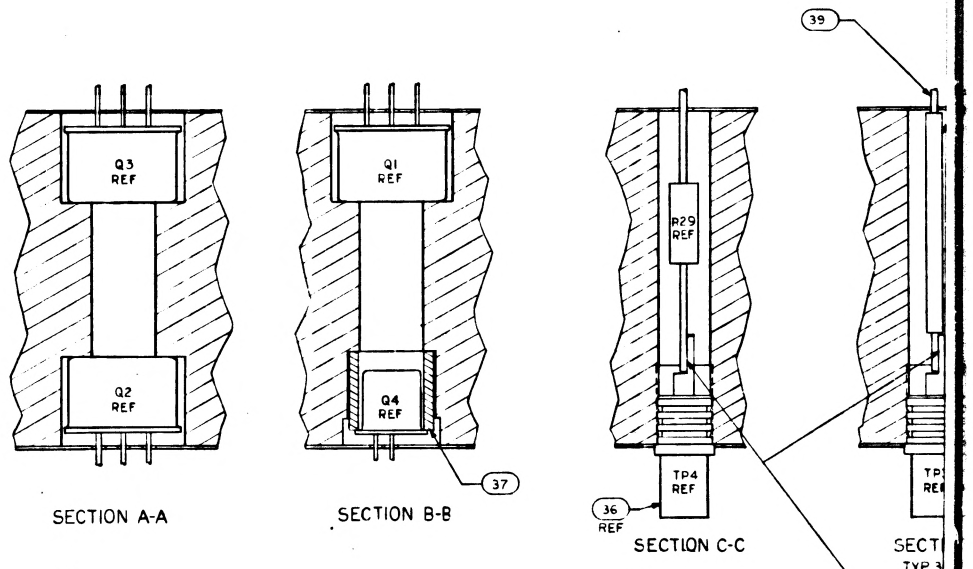
1007007 T

27/1007007


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.718 REF
1.719 REF
R9 9
R8 9
R1 4
SEE NOTE 21
(5)
R10 10
R18 14
R16 13
R2 5
C1 26
C3 27
Q4 29
R7
R15
CR4 32
CR3 46
CR5 46
TP4 36
R17
TP1 36
TP3 36
CR2
TP2 36
R20 16
R12
C2
R22 18
Q2 28
R14 12
R13 5
CR9 35
R26 22
R25 21
R24 20
R27 23
CR7 33
R23 19
CR8 34
R19
CR1
CR6 33
R6 8
R28 24
R4 7
R3 6
SEE NOTE 15
FT2
FT3
FT11
FT12
FT13
FT14
FT5
FT6
FT7
FT9
FT10
K
1 2 3 4 5 6 7 8 9 10 11
1.560 1.540
1
25
A
.005 .015 SEE NOTE 9
3
43
SEE NOTE 14
.000 .015
42
SEE NOTE 18
41
45
DO NOT ENCAPSULATE
.172 .188 DIA 4 PLACES
.154 .144 DIA 4 PLACES
.154 MAX TYP
2
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
SEE NOTE 9
R17 5
R2
CR5
CR4
C3
CR3
R29 5
TP1
TP3
CF2 32
R20
FT8
R12 5
FT7
C2 27
R5 7
FT9
R14
R13
R15 12
R22
C
D
B

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009
3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED
~~4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7.-K INDICATES CATHODE SIDE OF DIODE
8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25
9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
10. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A
12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B
13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C
14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW
15. SOLDER PER MIL-S-6872
16 CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. 1007007
17 R26 AND R27 TO BE SELECTED PER A.T.P. 1007007
18 MUST MEET REQUIREMENTS OF ND 1002136
19. ASSEMBLE AND TEST PER ATP 1007007
20. PROCURE PER PS 1007007
21. SEAL CALIBRATION POT R1 PER ND-1002009, METHOD C, AFTER ALL THE REQUIREMENTS OF FTM-1007007 HAVE BEEN SATISFIED.
22. AFTER SEALING R1, MARK DATE OF SEALING PER ND-1002023 (RED).
23. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.


Q3 REF
Q2 REF
Q1 REF
Q4 REF
37
R29 REF
TP4 REF
36 REF
39
TP REF
SECT TYP 3

SECTION A-A

SECTION B-B

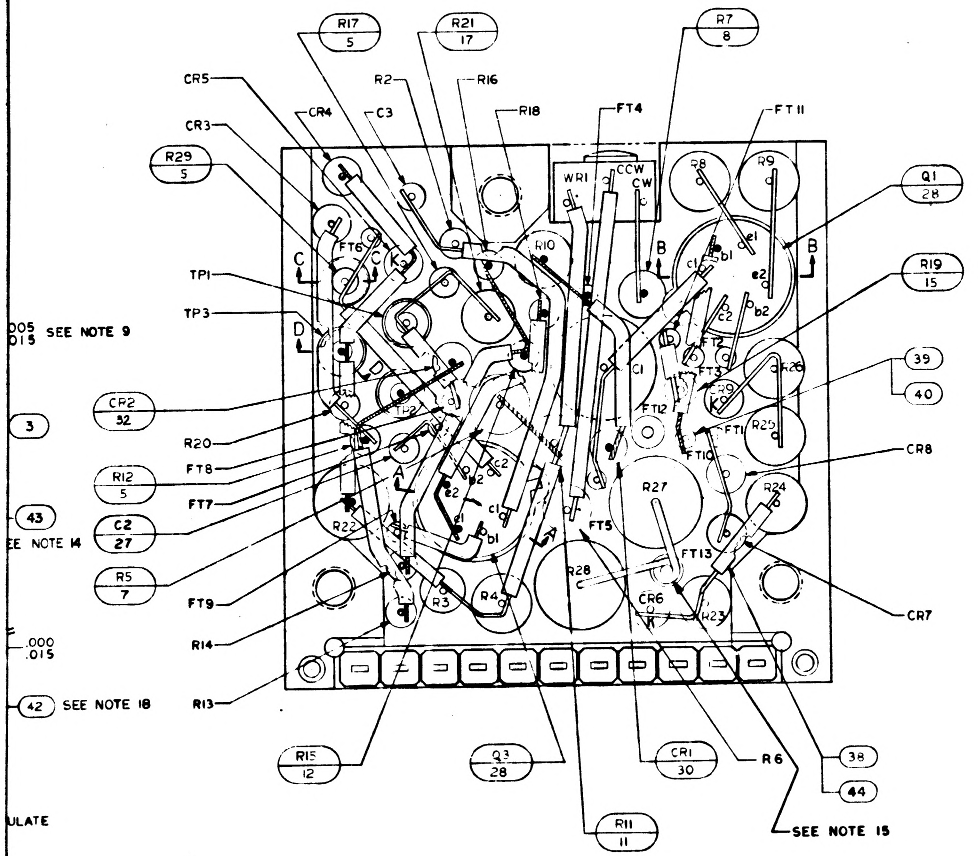
SECTION C-C

1007007 T

1/1007007

1007007 U

	SYM	DESCRIPTION	DATE	
		REVISIONS TDRR 00…		
Ⓜ	A	REVISED PER TDRR 01009	4-25-63	DT WK
	B	REVISED PER TDRR 01180	5-8-63	DJ WK
Ⓜ	C	REVISED PER TDRR 01313	5-22-63	AUV WK
	D	REVISED PER TDRR 01721	6-26-63	JJA WK
Ⓜ	E	REVISED PER TDRR 02068	7-17-63	FPR
Ⓜ	F	REVISED PER TDRR 02348	7-31-63	JJM WK
Ⓜ	G	REVISED PER TDRR 03315	9/19/63	JJM 9/20 WK
Ⓜ	H	REVISED PER TDRR 03313	9/26/63	WK
Ⓜ	J	REVISED PER TDRR 04468	5 NOV 63	BK WK
	K	REVISED PER TDRR 05481	12/17/63	WK
Ⓜ	L	REVISED PER TDRR 06461	18 FEB 64	EPK WK
	M	REVISED PER TDRR 07127	7 APR 64	C.W.S. EF
Ⓜ	N	REVISED PER TDRR 07284	6 APR 64	RWT W.A.
Ⓜ	P	REVISED PER TDRR 08071	11 MAY 64	J.E.G.
	R	REVISED PER TDRR 10909	28 JUL 64	JJJ AU
Ⓜ	S	REVISED PER TDRR 10922	30 JUL 64	JWP J.E.G.
Ⓜ	T	REVISED PER TDRR 17335	12 MAR 65	JHR EF
	U	REVISED PER TDRR 19471	1 JUN 65	JWP EF



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R21 17
R7 8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
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Q1 28
WR1
CCW
CW
R8
R9
R10
B
B
C
C
D
TP1
TP3
R19 15
FT6
TP2
c1
b1
e1
e2
c2
b2
FT2
FT3
CR9
R26
39
40
CR2 32
C1
FT12
FT1
R25
R20
FT10
CR8
FT8
R12 5
FT7
A
A
R27
R24
C2 27
R22
FT5
R5 7
FT13
FT9
R28
CR6
R23
CR7
R3
R4
R14
R13
R15 12
Q3 28
CR1 30
R6
38
44
R11 11
SEE NOTE 15

005 SEE NOTE 9
015

3

43
EE NOTE 14

.000
.015

42 SEE NOTE 18

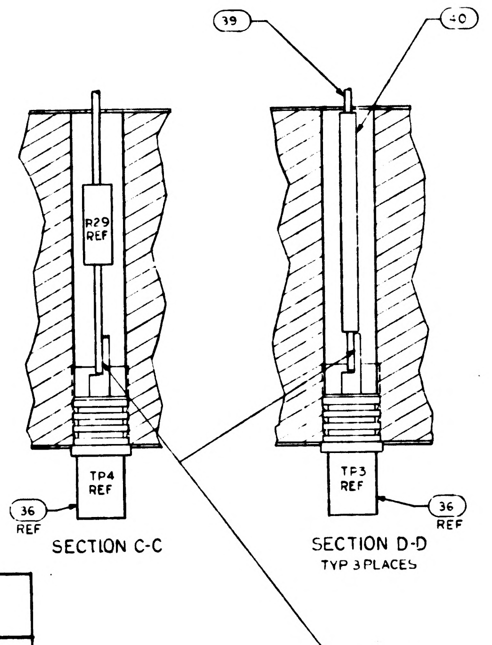
ULATE

Ⓢ

CHART A			
PART NO.	VALUE	PART NO.	VALUE
1010377 – 26	600 Ω	1010377 – 325	740 Ω
– 27	650 Ω	– 326	810 Ω
– 28	700 Ω	– 327	890 Ω
– 30	775 Ω	– 328	960 Ω
– 31	850 Ω	– 329	1050 Ω
– 32	925 Ω	– 330	1150 Ω
– 33	1000 Ω		
– 34	1100 Ω		
1010377 – 35	1200 Ω		

CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω
Ⓡ 1006757 – 8	0 Ω

CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500



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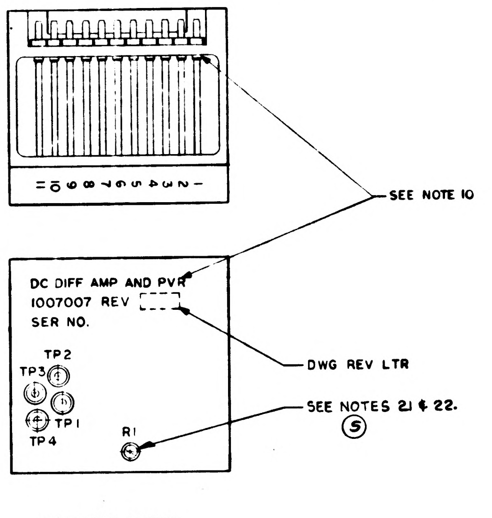
R29 REF
TP4 REF
36 REF
TF3 REF
36 REF
SEE NOTE 3

SECTION C-C

SECTION D-D
TYP 3 PLACES



1 2 3 4 5 6 7 8 9 10 11
SEE NOTE 10
DC DIFF AMP AND PVR
1007007 REV
SER NO.
TP2
TP3
TP1
TP4
R1
DWG REV LTR
SEE NOTES 21 & 22.
Ⓢ

MARKING VIEW
SCALE 2/1

NTACT
TO

OTAL
% OF
THIN .03
L EDGE

QT REQ'D	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
X	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1010286-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010286-27	DIODE	32
~~1~~	~~1010372-32~~	~~DIODE~~	~~31~~
1	1010372-3	DIODE	30
1	1010357-1	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
2	1010618-3	SCREW, BUTTON HD	25
1	1010254-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 174K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

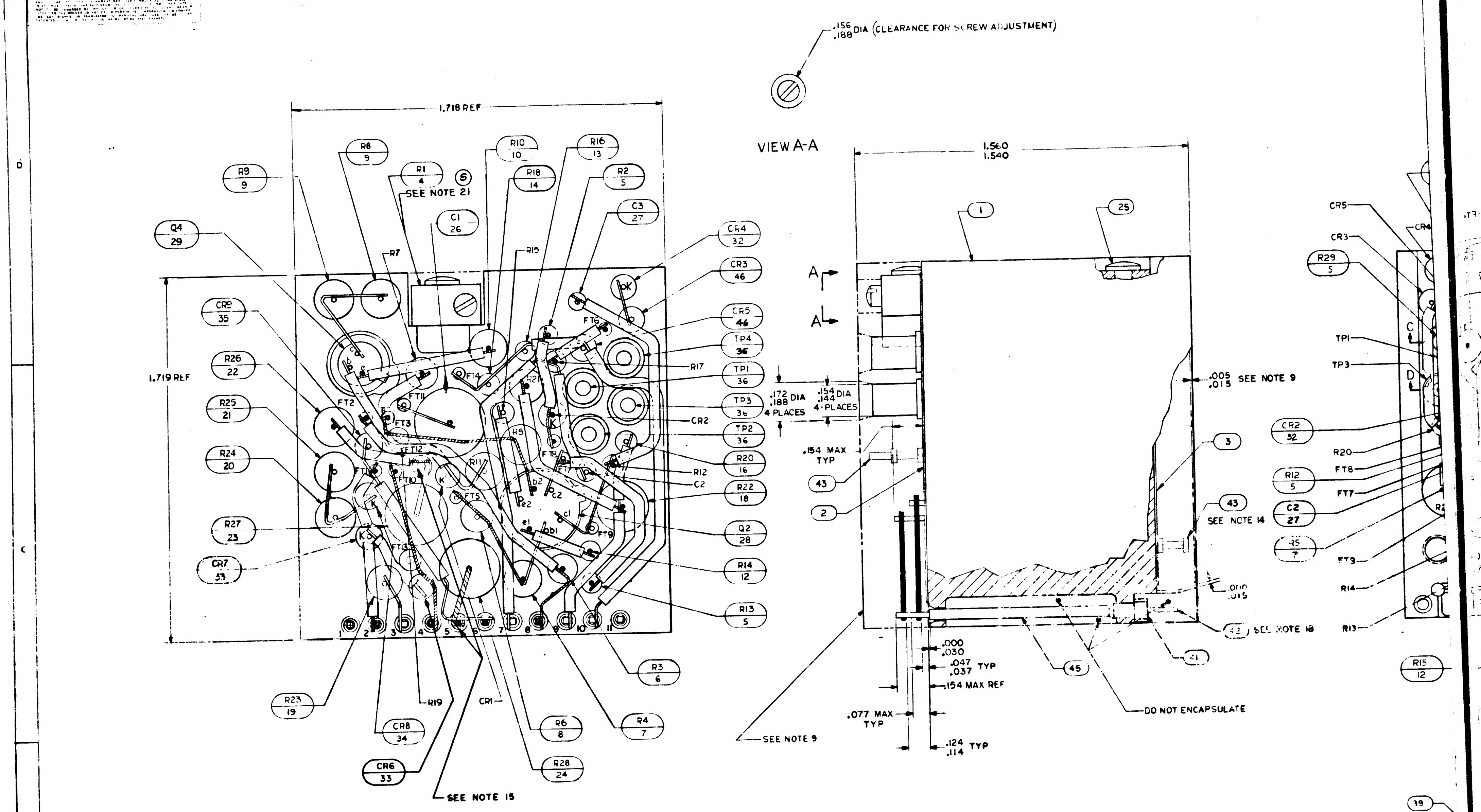
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN H. Hogan DATE 12-10-62
CHECKED W. F. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL W. J. Rhine 2-13-63
MIT APPROV. 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO 80230 SIZE J NASA DRAWING NO. 1007007
SCALE 5:1 WT SHEET 1 OF 1

1007007 U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1.560 1.540
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R8 9
Q4 29
R1 4 SEE NOTE 21
5
C1 26
R10 10
R18 14
R16 13
R2 5
C3 27
R7
R15
CR9 35
R26 22
R25 21
R24 20
R27 23
CR7 33
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R19
CR1
SEE NOTE 15
R6 8
R28 24
R4 7
R3 6
R13 5
R14 12
Q2 28
R22 18
R20 16
TP2 36
TP3 36
TP1 36
TP4 36
CR5 46
CR3 46
CR4 32
R17
CR2
R12
C2
FT2
FT3
FT11
FT12
FT14
FT5
FT9
.172 .188 DIA 4 PLACES
.154 .144 DIA 4-PLACES
.154 MAX TYP
43
2
1
25
3
A
A
.005 .015 SEE NOTE 9
43 SEE NOTE 14
.010 .015
42 SEE NOTE 18
41
45
DO NOT ENCAPSULATE
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
SEE NOTE 9
CR5
CR3
R29 5
TP1
TP3
CR2 32
R20
FT8
R12 5
FT7
C2 27
R5 7
FT9
R14
R13
R15 12
39

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009

3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED

4.-~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~

5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING

6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING

7.-K INDICATES CATHODE SIDE OF DIODE

8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25

9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

10. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023 CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.

11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A

12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B

13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C

14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW

15. SOLDER PER MIL-S-6872

16 CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. 1007007

17 R26 AND R27 TO BE SELECTED PER A.T.P. 1007007

18 MUST MEET REQUIREMENTS OF ND 1002136

19. ASSEMBLE AND TEST PER ATP 1007007

20. PROCURE PER PS 1007007

21. SEAL CALIBRATION POT R1 PER ND-1002009, METHOD C, AFTER ALL THE REQUIREMENTS OF FTM-1007007 HAVE BEEN SATISFIED.

22. AFTER SEALING R1, MARK DATE OF SEALING PER ND-1002023(RED).

23. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~

24 CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.

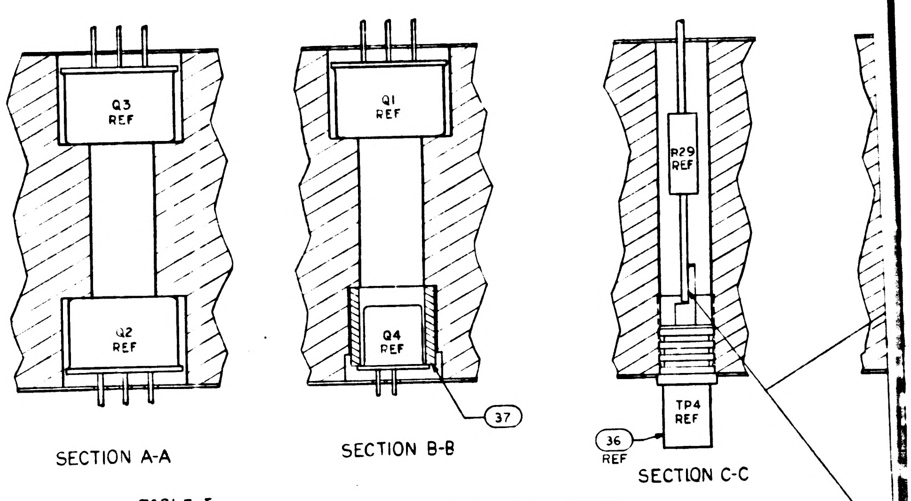

Q3 REF
Q2 REF
SECTION A-A
Q1 REF
Q4 REF
37
SECTION B-B
R29 REF
TP4 REF
36 REF
SECTION C-C

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE.	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ±.03 OF EXTERNAL EDGE

1/1007007

SYM	DESCRIPTION	DATE	
A	REVISED PER TDRR 01009	4-25-63	DT WK
B	REVISED PER TDRR 01180	5-8-63	DT WK
C	REVISED PER TDRR 01313	5-22-63	AUU WR
D	REVISED PER TDRR 01781	6-26-63	JJM WK
E	REVISED PER TDRR 02069	7-17-63	PDK WK
F	REVISED PER TDRR 02348	7-31-63	JJM WK
G	REVISED PER TDRR 03315	7/29/63	JJM
H	REVISED PER TDRR 03313	9/26/63	WK
J	REVISED PER TDRR 04468	5 NOV 63	WK
K	REVISED PER TDRR 05481	12/17/63	WK
L	REVISED PER TDRR 06461	18 FEB 64	WR
M	REVISED PER TDRR 07127	7 APR 64	S.W.D. EF
N	REVISED PER TDRR 07284	6 APR 64	RWT
P	REVISED PER TDRR 08071	11 MAY 64	J.E.G.
R	REVISED PER TDRR 10909	28 JUL 64	JJJ AU
S	REVISED PER TDRR 10922	30 JUL 64	JWP J.E.G.
T	REVISED PER TDRR 17335	12 MAR 65	JHK EF
U	REVISED PER TDRR 19471	1 JUN 65	JWP EF
V	REVISED PER TDRR 19479	5 JUN 65	

REVISIONS TDRR 00

1007007 V

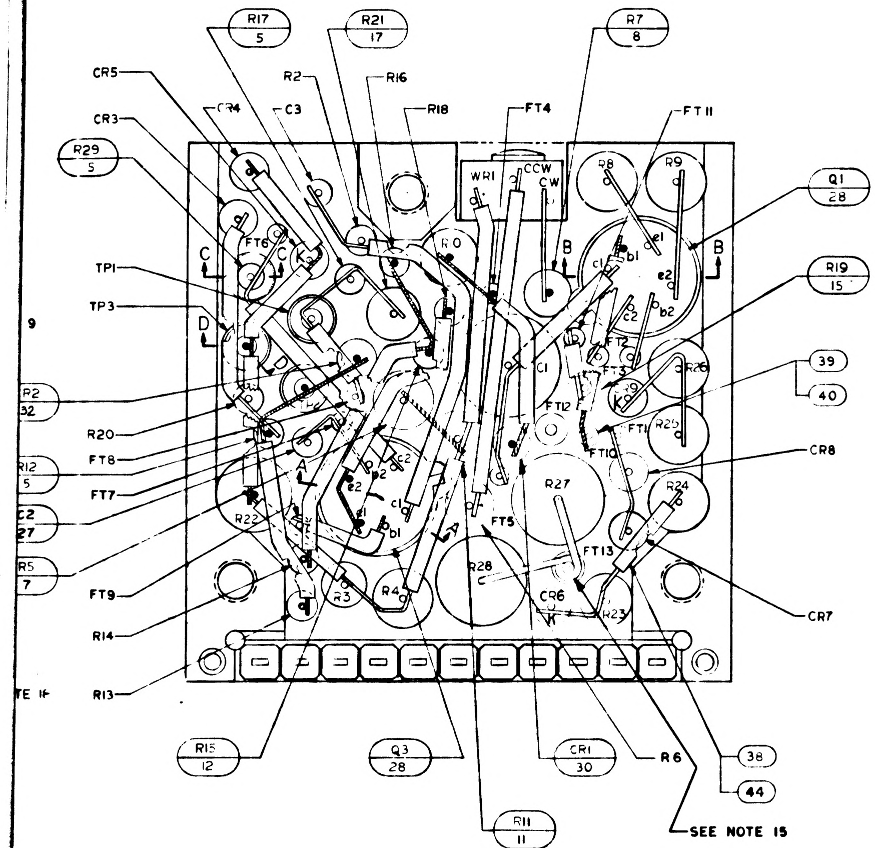


CHART A

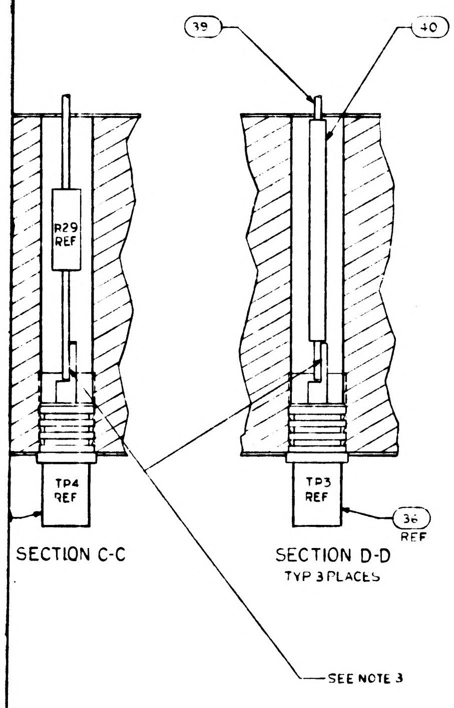
PART NO.	VALUE	PART NO.	VALUE
1010377 - 26	600 Ω	1010377 - 325	740 Ω
- 27	650 Ω	- 326	810 Ω
- 28	700 Ω	- 327	890 Ω
- 30	775 Ω	- 328	960 Ω
- 31	850 Ω	- 329	1050 Ω
- 32	925 Ω	- 330	1150 Ω
- 33	1000 Ω		
- 34	1100 Ω		
1010377 - 35	1200 Ω		

CHART B

PART NO.	VALUE
1010377 - 57	1 Ω
- 58	2 Ω
- 59	3 Ω
- 60	4 Ω
- 61	5 Ω
- 62	6 Ω
- 63	7 Ω
- 64	8 Ω
- 65	9 Ω
- 66	10 Ω
- 67	11 Ω
- 68	12 Ω
- 69	13 Ω
- 70	14 Ω
- 71	15 Ω
- 72	16 Ω
- 73	17 Ω
- 74	18 Ω
1010377 - 75	19 Ω
1006757 - 8	0 Ω

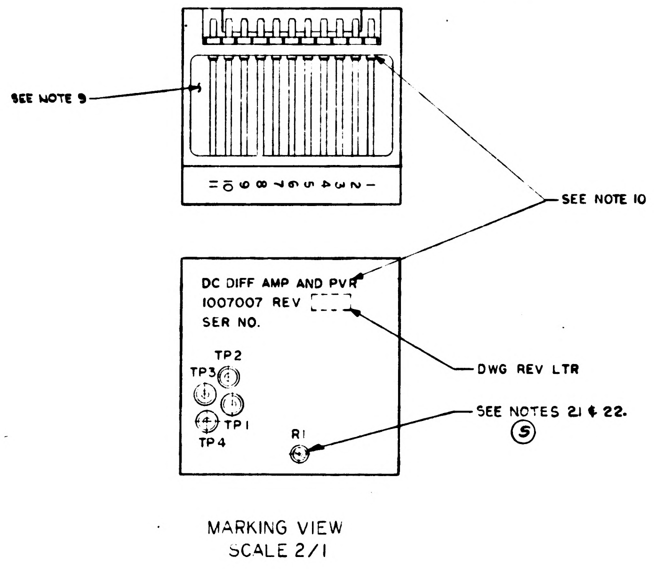
CHART C

PART NO.	VALUE
1010254 - 1	100 Ω
- 2	120
- 3	140
- 4	160
- 5	180
- 6	200
- 7	220
- 8	240
- 9	260
- 10	280
- 11	300
- 12	320
- 13	340
- 14	360
- 15	380
- 16	400
- 17	420
- 18	440
- 19	460
- 20	480
- 21	500



SECTION C-C

SECTION D-D
TYP 3 PLACES



MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1010830-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010830-27	DIODE	32
~~1~~	~~1010372-32~~	~~DIODE~~	~~31~~
1	1010372-3	DIODE	30
1	1010357-1	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
2	1010618-3	SCREW, BUTTON HD	25
1	1010836-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-15	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-35	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 174K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN H. Hogan DATE 12-10-62
CHECKED W. J. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL 2-13-63
MIT APPROVAL 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

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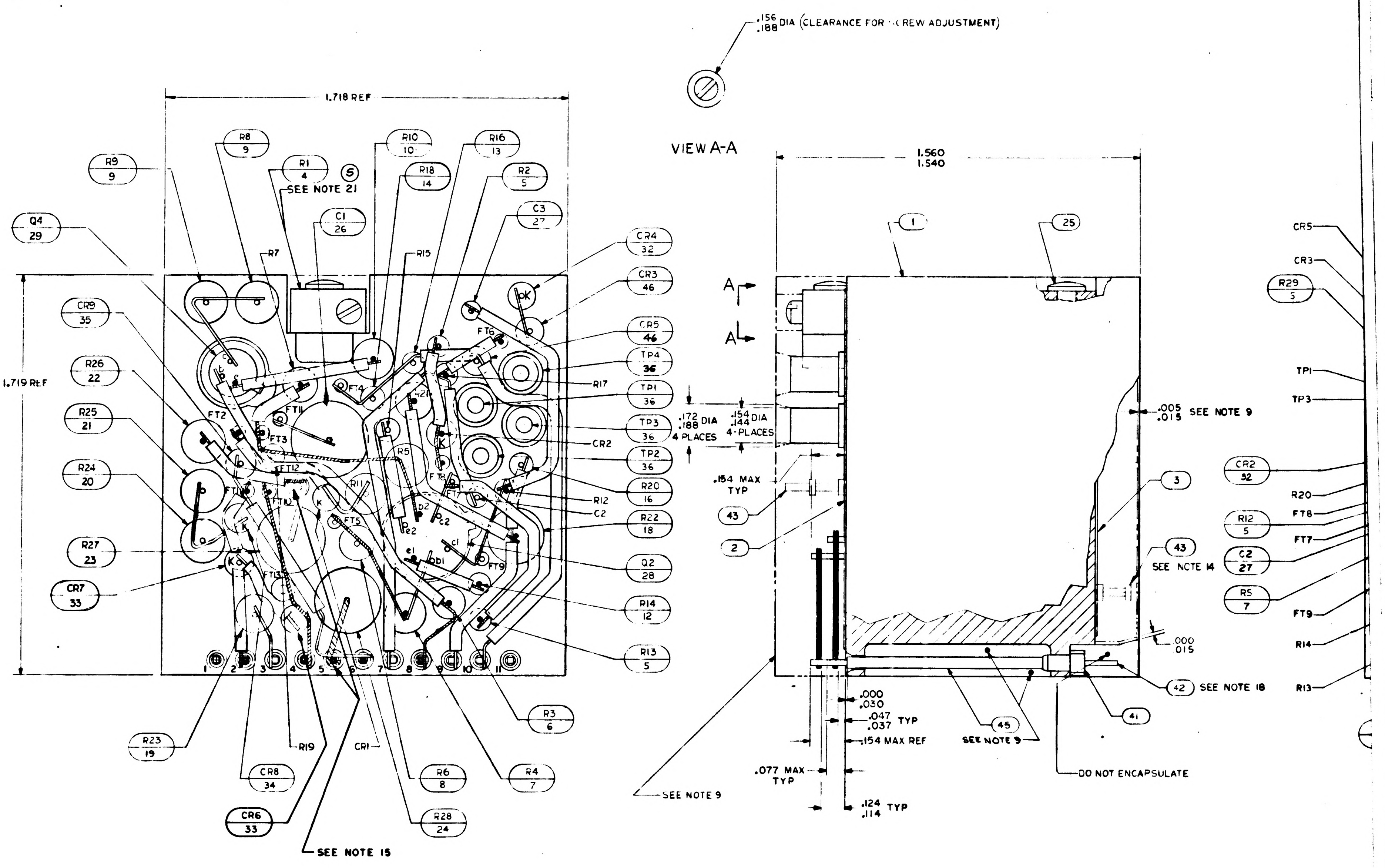
SHEET 1 OF 1

2/1007007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R8 9
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C1 26
R7
R15
Q4 29
CR9 35
R26 22
R25 21
R24 20
R27 23
CR7 33
CR4 32
CR3 46
CR5 46
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TP1 36
TP3 36
TP2 36
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R22 18
Q2 28
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R17
CR2
R12
C2
R3 6
R4 7
R6 8
R28 24
CR8 34
CR6 33
R23 19
R19
CR1
SEE NOTE 15
FT2
FT3
FT12
FT6
FT9
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11
.156 / .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.560 / 1.540
1
25
A
A
.172 / .188 DIA 4 PLACES
.154 / .144 DIA 4-PLACES
.154 MAX TYP
43
2
.005 / .015 SEE NOTE 9
3
43 SEE NOTE 14
.000 / .015
42 SEE NOTE 18
41
45
SEE NOTE 9
DO NOT ENCAPSULATE
.000 / .030
.047 / .037 TYP
.154 MAX REF
.077 MAX TYP
.124 / .114 TYP
SEE NOTE 9
CR5
CR3
R29 5
TP1
TP3
CR2 32
R20
FT8
FT7
R12 5
C2 27
R5 7
FT9
R14
R13

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009 METHOD H

3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED

~~4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~

5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING

6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING

7.-K INDICATES CATHODE SIDE OF DIODE

8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25

9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

10. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023 CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.

11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A

12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B

13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C

14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW

15. SOLDER PER MIL-S-6872

16 CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. 1007007

17 R26 AND R27 TO BE SELECTED PER A.T.P. 1007007

18 MUST MEET REQUIREMENTS OF ND 1002136

19. ASSEMBLE AND TEST PER ATP 1007007

20. PROCURE PER PS 1007007

21. SEAL CALIBRATION POT R1 PER ND-1002009, METHOD C, AFTER ALL THE REQUIREMENTS OF FTM-1007007 HAVE BEEN SATISFIED.

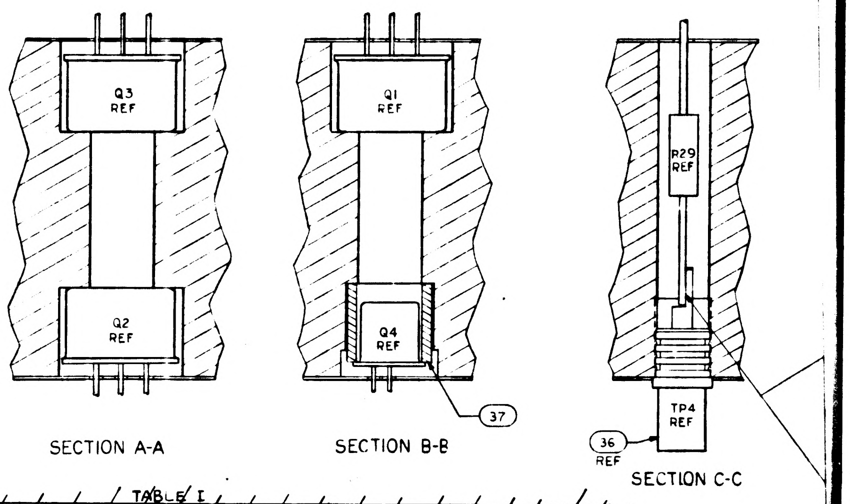
22. AFTER SEALING R1, MARK DATE OF SEALING PER ND-1002023(RED).

23. ~~BOND A .25 MIN WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~

~~24 CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~

25. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.

26. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.


Q3 REF
Q2 REF
SECTION A-A
Q1 REF
Q4 REF
37
SECTION B-B
R29 REF
TP4 REF
36 REF
SECTION C-C

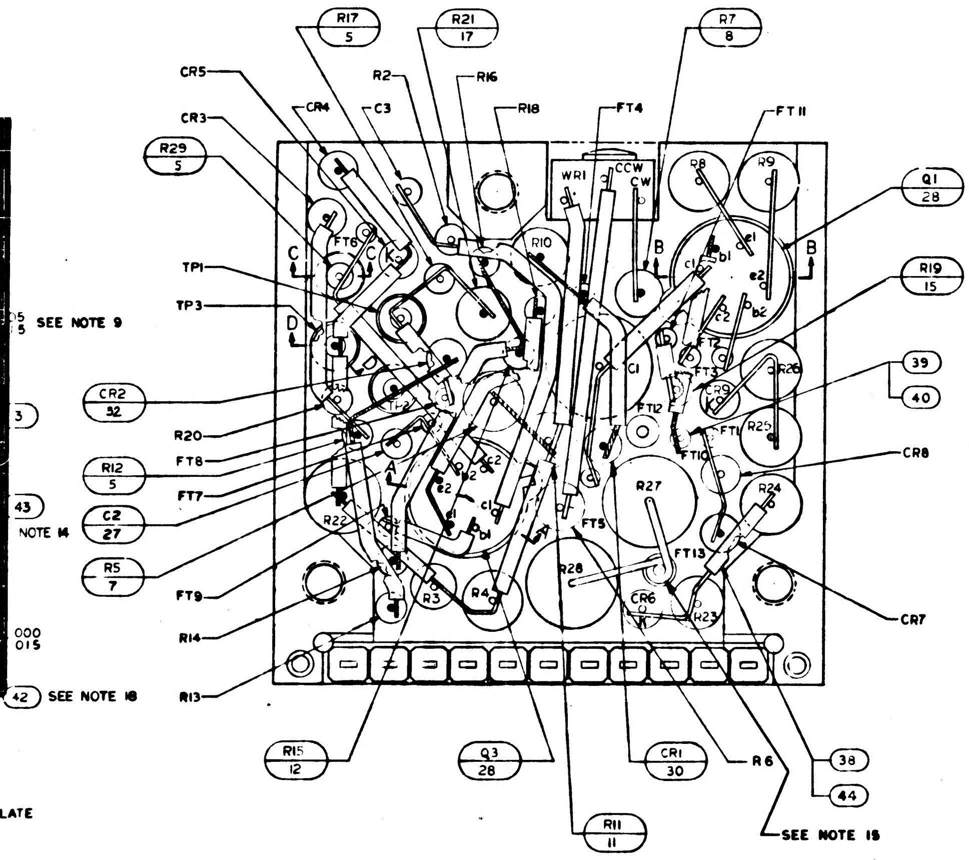
~~TABLE I~~

~~CONFIGURATION~~	~~BOND BETWEEN WAFER AND HEATSINK~~	~~TOP OF WAFER~~	~~HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE~~
~~WAFER AND FLAT HEATSINK~~	~~100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~WAFER AND ADJACENT VERTICAL HEATSINK SURFACE.~~	~~CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~HEATSINK FOAM CONTACT SURFACE PERIMETER~~	~~N/A~~	~~N/A~~	~~.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ± .03 OF EXTERNAL EDGE~~

1007007 V

1/1007007

2/1007007


R17
5
R21
17
R7
8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
R29
5
CR3
WR1
CCW
CW
R8
R9
Q1
28
TP1
TP3
C
D
B
R10
R19
15
5 SEE NOTE 9
CR2
32
3
R20
FT8
R12
5
FT7
43
NOTE 14
C2
27
R5
7
FT9
R14
R13
000
015
42 SEE NOTE 18
41
R15
12
Q3
28
R11
11
CR1
30
R6
R22
R3
R4
R27
R28
CR6
R23
R24
R25
R26
FT13
FT5
FT12
FT10
CR8
CR7
39
40
38
44
SEE NOTE 15
C1
e1
e2
b1
b2
c1
c2
FT6
FT2
FT3
FT1
10 NOT ENCAPSULATE

⑤

CHART A			
PART NO.	VALUE	PART NO.	VALUE
1010377 – 26	600 Ω	1010377 – 325	740 Ω
– 27	650 Ω	– 326	810 Ω
– 28	700 Ω	– 327	890 Ω
– 30	775 Ω	– 328	960 Ω
– 31	850 Ω	– 329	1050 Ω
– 32	925 Ω	– 330	1150 Ω
– 33	1000 Ω		
– 34	1100 Ω		
1010377 – 35	1200 Ω		

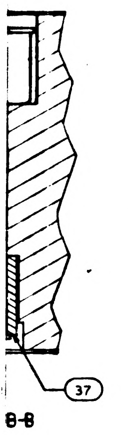
CHART B	
PART NO.	VALUE
1010377-57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω
Ⓡ 1006757 – 8	0 Ω

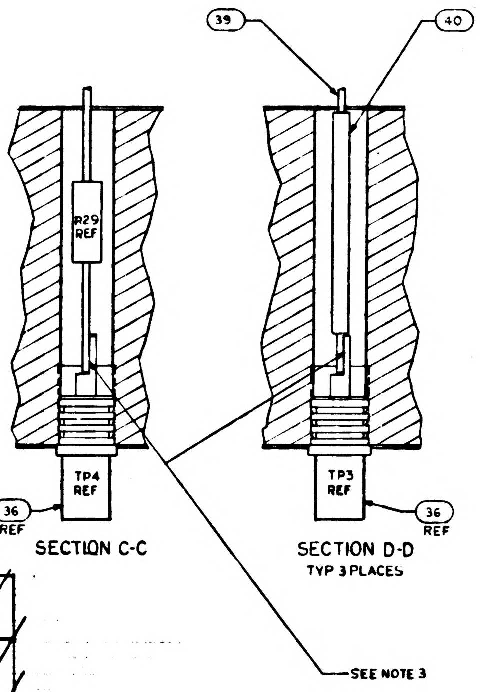
CHART C	
PART NO.	VALUE
1010254 – 1	100 Ω
– 2	120
– 3	140
– 4	160
– 5	180
– 6	200
– 7	220
– 8	240
– 9	260
– 10	280
– 11	300
– 12	320
– 13	340
– 14	360
– 15	380
– 16	400
– 17	420
– 18	440
– 19	460
– 20	480
– 21	500

REVISIONS TDRR 0028

	SYM	DESCRIPTION	DATE	APPROVAL
(M)	A	REVISED PER TDRR 01009	4-25-63	J.T. WK
	B	REVISED PER TDRR 01180	5-8-63	D.T. WK
(M)	C	REVISED PER TDRR 01313	5-22-63	AVV WR
	D	REVISED PER TDRR 01781	6-26-63	[illegible] WK
(M)	E	REVISED PER TDRR 02065	7-17-63	BPK [illegible]
(M)	F	REVISED PER TDRR 02348	7-31-63	JJW WR
(M)	G	REVISED PER TDRR 03315	9/11/63	JJW 9/26 WK
(M)	H	REVISED PER TDRR 03313	9/26/63	WK
(M)	J	REVISED PER TDRR 04468	5 NOV 63	[illegible] WK
	K	REVISED PER TDRR 05481	12/17/63	[illegible] WR
(M)	L	REVISED PER TDRR 06461	10 FEB 64	[illegible] WR
	M	REVISED PER TDRR 07127	7 APR 64	S.W. EF
(M)	N	REVISED PER TDRR 07284	6 APR 64	RWT
(M)	P	REVISED PER TDRR 08071	11 MAY 64	J.E.G.
	R	REVISED PER TDRR 10909	28 JUL 64	JJJ AU
(M)	S	REVISED PER TDRR 10922	30 JUL 64	JWP J.E.G.
(M)	T	REVISED PER TDRR 17335	12 MAR 65	JHK EF
(M)	U	REVISED PER TDRR 19471	1 JUN 65	JWP EF
(M)	V	REVISED PER TDRR 19479	5 JUN 65	[illegible]
	W	REVISED PER TDRR 23297	22 OCT 65	CMK MEM

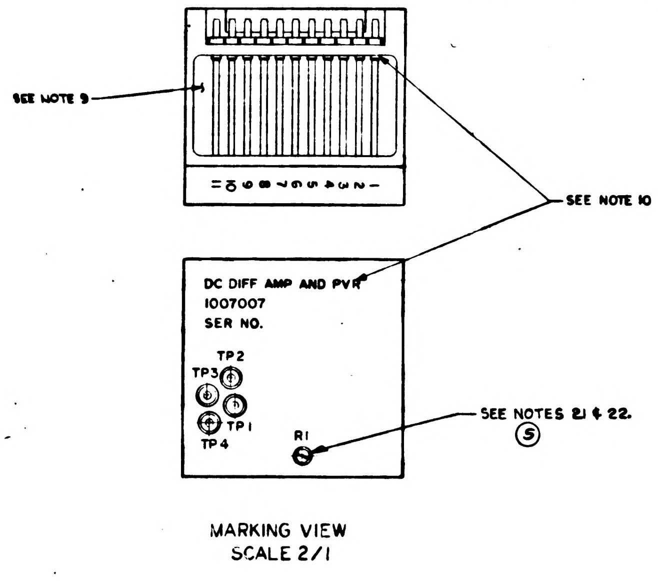
1007007 V




39
40
R29
REF
TP4
REF
TP3
REF
36
REF
36
REF
SEE NOTE 3

SECTION C-C

SECTION D-D
TYP 3 PLACES


SEE NOTE 9
SEE NOTE 10
=3 0 8 - 6 5 4 3 2 N -
DC DIFF AMP AND PVR
1007007
SER NO.
TP2
TP3
TP1
TP4
R1
SEE NOTES 21 & 22.
⑤

MARKING VIEW
SCALE 2/1

K-FOAM CONTACT
E ADJACENT TO
NK
AL SURFACE

N/A

N/A

WIDTH OR TOTAL
BLE ON 90% OF
ETER TO WITHIN .03
F EXTERNAL EDGE

☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1010830-26	DIODE	46
AR	1006776-20	INSULATION SLEEVING	45
AR	1006776-21	INSULATION SLEEVING	44
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006757-8	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1008152	DIODE	35
1	1010372-19	DIODE	34
2	1010372-15	DIODE	33
2	1010830-27	DIODE	32
~~1~~	~~1010372-32~~	~~DIODE~~	~~31~~
1	1010372-3	DIODE	30
1	1010357-1	TRANSISTOR	29
3	1010376-3	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10%	27
1	1010264-24	CAPACITOR, MYLAR, .082 UF, 200V, 5%	26
2	1010618-3	SCREW, BUTTON HD	25
1	1010836-22	RESISTOR, FIXED WW, 6K, 1/8W, 0.1%	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02%	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5%	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1%	21
1	1010377-25	RESISTOR, FIXED WW, 400Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820Ω, 1/2W, 2%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 2%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 2%	16
1	1006750-1	RESISTOR, FIXED FILM, 51Ω, 1/4W, 2%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 2%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	13
2	1006750-16	RESISTOR, FIXED FILM, 220Ω, 1/4W, 2%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 2%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 174K, 1/8W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1
REQD	IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007007 V

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

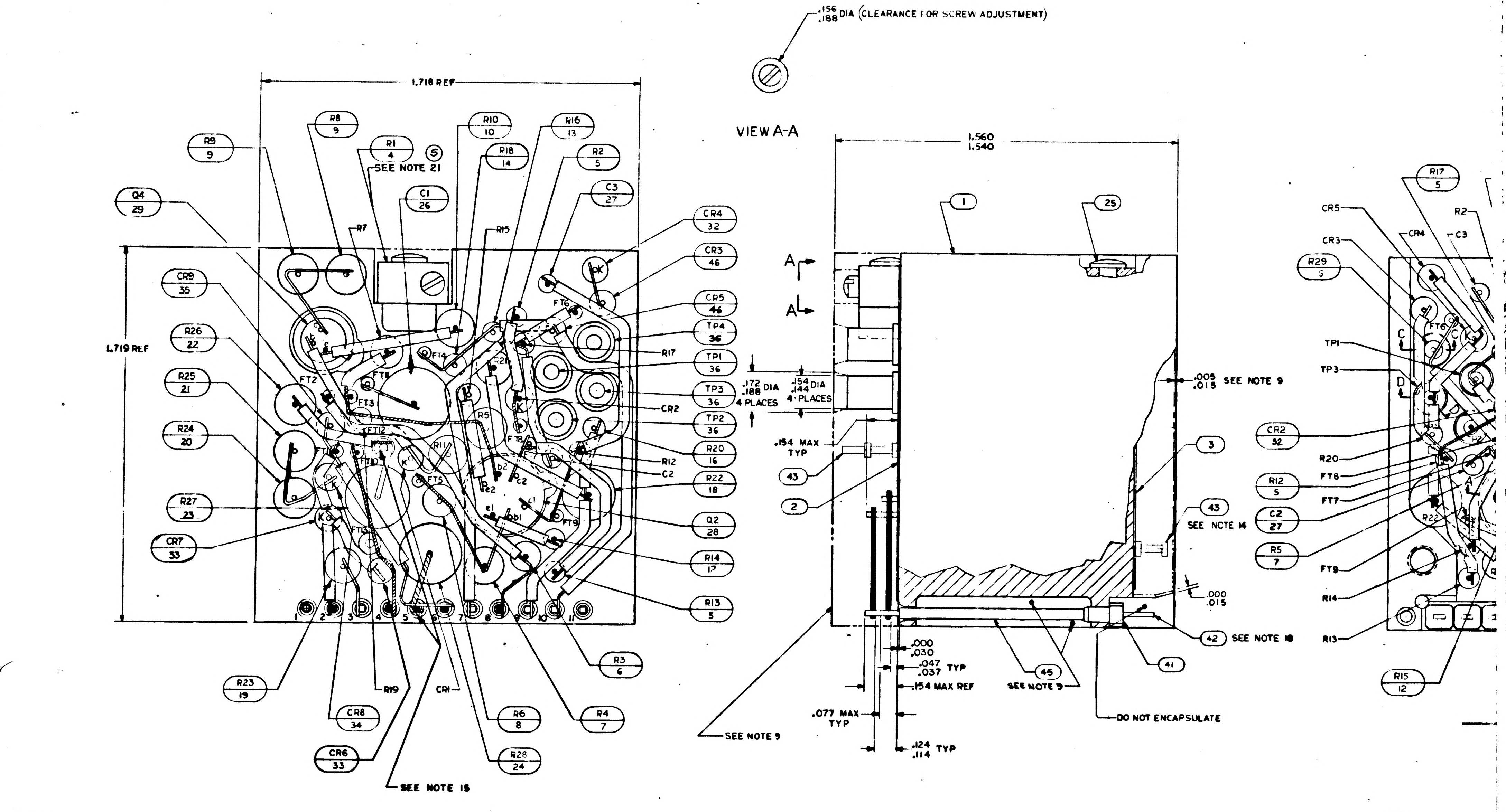
MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN H. Horgan DATE 12-10-62
CHECKED W. J. Gifford 6 FEB 63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL W. J. Rhine 2-13-63
MIT APPROVAL W. Kupfer 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER &
PVR

CODE IDENT NO 80230
SIZE J
DRAWING NO. 1007007
SCALE 5:1
WT
SHEET 1 OF 1

17/1007007


.156 .188 DIA (CLEARANCE FOR SCREW ADJUSTMENT)
VIEW A-A
1.718 REF
1.719 REF
1.560 1.540
R9 9
R8 9
R1 4
⑤ SEE NOTE 21
R10 10
R16 13
R18 14
R2 5
C3 27
C1 26
Q4 29
R7
R15
CR9 35
R26 22
R25 21
R24 20
R27 23
CR7 33
CR4 32
CR3 46
CR5 46
TP4 36
TP1 36
TP3 36
TP2 36
R17
CR2
R20 16
R12
C2
R22 18
Q2 28
R14 17
R13 5
R3 6
R4 7
R6 8
R28 24
R23 19
CR8 34
CR6 33
R19
CR1
SEE NOTE 15
FT1
FT2
FT3
FT4
FT5
FT6
FT8
FT9
FT10
FT12
FT13
FT14
FT15
1 2 3 4 5 6 7 8 9 10 11
A A
1
25
3
43
2
43 SEE NOTE 14
42 SEE NOTE 18
41
45 SEE NOTE 9
.005 .015 SEE NOTE 9
.172 .188 DIA 4 PLACES
.154 .144 DIA 4-PLACES
.154 MAX TYP
.000 .015
.000 .030
.047 .037 TYP
.154 MAX REF
.077 MAX TYP
.124 .114 TYP
SEE NOTE 9
DO NOT ENCAPSULATE
R17 5
R2
CR5
CR4
C3
CR3
R29 5
TP1
TP3
CR2 32
R20
FT8
R12 5
FT7
C2 27
R22
R5 7
FT9
R14
R13
R15 12

NOTES:

1.-INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

2.-STAKE ALL COMPONENTS AND FIND NO. 36,37 PER ND1002009 METHOD J.

3.-ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE NOTED

~~4.-WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002005~~

5.-WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING

6.-BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING

7.-K INDICATES CATHODE SIDE OF DIODE

8.-APPLY ZINC CHROMATE PRIMER SPEC MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 25

9.-ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSION MAY EXCEED THE NORMAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

10. MARK PIN NUMBERS .08 HIGH (WHITE) AND ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002019. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE. SERIALIZE PER ND 1002023.

11. AT ELECTRICAL TEST, R25 TO BE SELECTED FROM CHART A

12. AT ELECTRICAL TEST R26 TO BE SELECTED FROM CHART B

13. AT ELECTRICAL TEST R27 TO BE SELECTED FROM CHART C

14. CUT F13 AT TOP OF TURRET AS SHOWN IN SIDE VIEW

15. SOLDER PER ND1002071.

16 CR6, CR7, CR8, CR9, R23, R24, R25 TO BE SELECTED PER A.T.P. 1007007

17 R26 AND R27 TO BE SELECTED PER A.T.P. 1007007

18 MUST MEET REQUIREMENTS OF ND 1002136

19. ASSEMBLE AND TEST PER ATP 1007007

20. PROCURE PER PS 1007007

21. SEAL CALIBRATION POT R1 PER ND-1002009, METHOD J, AFTER ALL THE REQUIREMENTS OF FTM-1007007 HAVE BEEN SATISFIED.

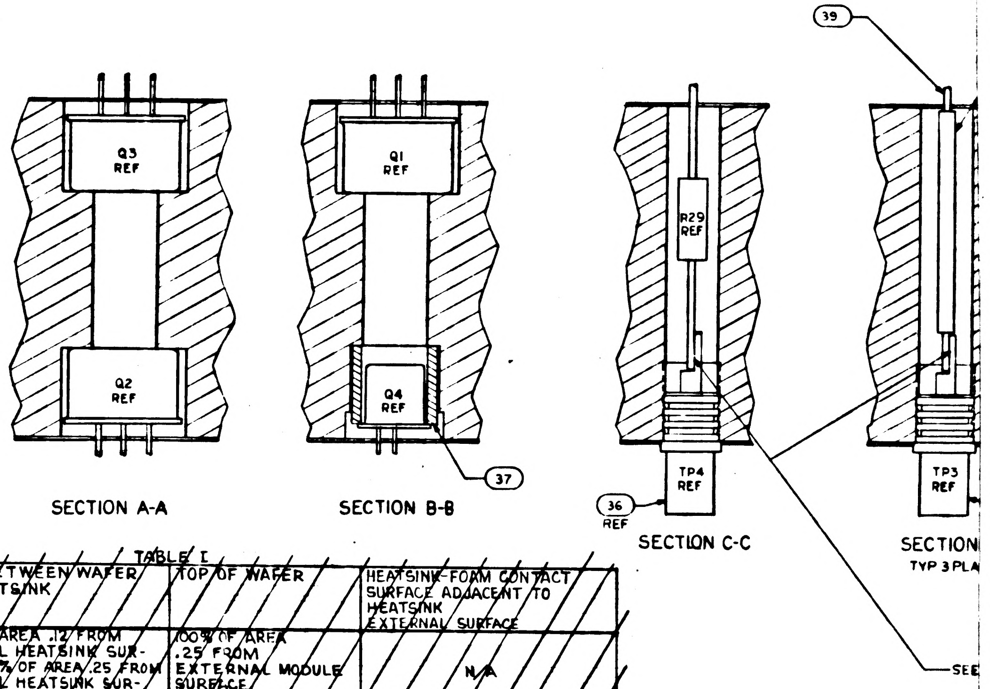
22. AFTER SEALING R1, MARK DATE OF SEALING PER ND-1002019 (RED).

23. ~~BOND A .25 MIN WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE V.~~

~~24. CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~

25. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.

26. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND1002279 USING 1010992 PRIMER AND 1008809-4 PAINT. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.


39
Q3 REF
Q2 REF
Q1 REF
Q4 REF
37
R29 REF
TP4 REF
TP3 REF
36 REF
SEE

SECTION A-A

SECTION B-B

SECTION C-C

SECTION
TYP 3 PLA

~~TABLE I~~

~~CONFIGURATION~~	~~BOND BETWEEN WAFER AND HEATSINK~~	~~TOP OF WAFER~~	~~HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE~~
~~WAFER AND FLAT HEATSINK~~	~~100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~WAFER AND ADJACENT VERTICAL HEATSINK SURFACE.~~	~~CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~HEATSINK FOAM CONTACT SURFACE PERIMETER~~	~~N/A~~	~~N/A~~	~~.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ± .03 OF EXTERNAL EDGE~~

1007007 V

1007007	REVISIONS TDRR00381		
SYM	DESCRIPTION	DATE	APPROVAL

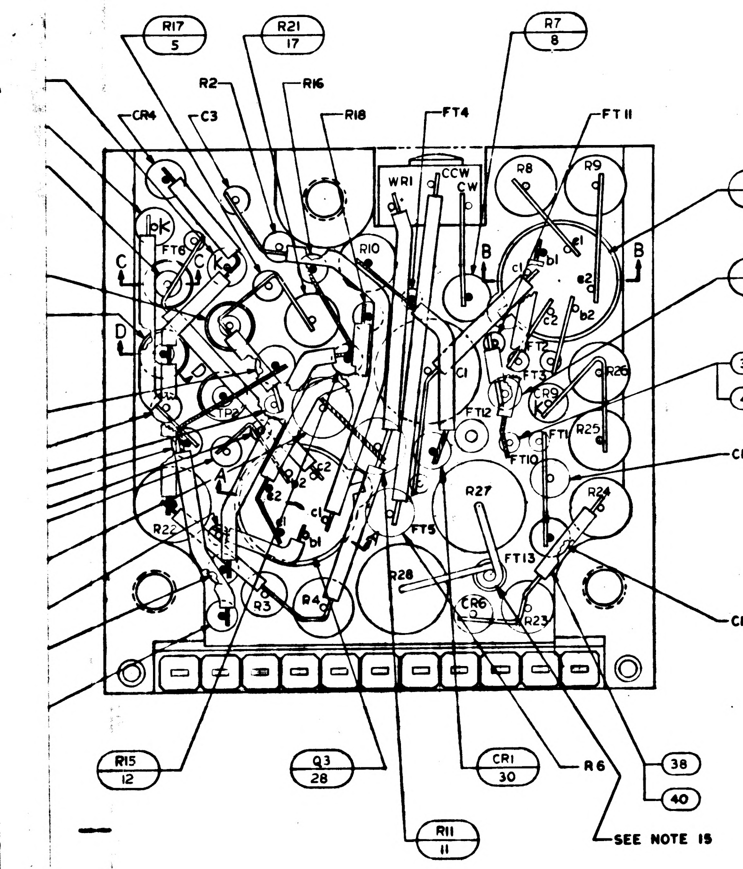

R17
5
R21
17
R7
8
R2
R16
R18
FT4
FT11
CR4
C3
WR1
CCW
CW
R8
R9
R10
C
D
B
Q1
28
R19
15
39
40
CR8
R25
R27
R24
R28
FT12
FT13
FT5
R22
R23
R3
R4
CR6
CR7
R15
12
Q3
28
CR1
30
R6
38
40
R11
11
SEE NOTE 15

CHART A

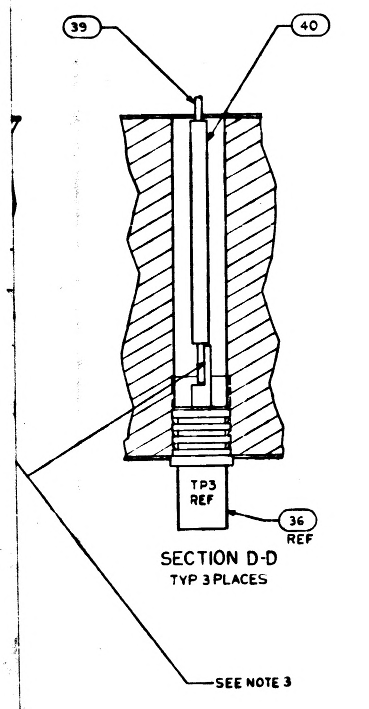
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B

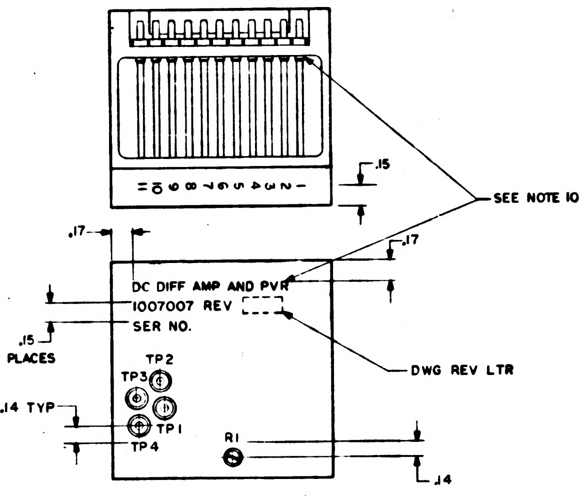
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C

PART NO.	VALUE
1010254 –	100 Ω
–	120
–	140
–	160
–	180
–	200
–	220
–	240
–	260
–	280
–	300
–	320
–	340
–	360
–	380
–	400
–	420
–	440
–	460
–	480
–	500


39
40
TP3
REF
36
REF
SEE NOTE 3

SECTION D-D
TYP 3 PLACES


1
2
3
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.15
SEE NOTE 10
.17
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
DWG REV LTR
.15
2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1
.14

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010008	ELEC SCHEMATIC DIAGRAM	REF
2	1006784-6	TERMINAL, FEEDTHRU, INSULATED	43
11	1006782-4	CONTACT, WRAPOST-MALE, MIN	42
11	1006775	INSULATOR, WRAPOST-MALE, MIN	41
AS REQ	1006776-22	INSULATION, SLEEVING	40
AS REQ	1006787-2	WIRE, ELEC .020 DIA	39
AS REQ	1006757-1	WIRE, ELEC .010 X .020	38
1	1008025-1	INSULATOR, BUSHING	37
4	1010292-2	TERMINAL, FEEDTHRU, INSULATED	36
1	1010259	DIODE	35
1	1010260	DIODE	34
2	1010258	DIODE	33
2	1010257 –	DIODE	32
2	1010257 –	DIODE	31
1	1010280	DIODE	30
1	1010357	TRANSISTOR	29
3	1010376 - 1	TRANSISTOR	28
2	1006777-6	CAPACITOR, CER, 37UUF, 100V, 10 %	27
1	1010264	CAPACITOR, MYLAR, .082 UF, 200V, 10 %	26
2	1006783-11	SCREW, BUTTON HD	25
1	1010254 –	RESISTOR, FIXED WW, 6K, 1/8W, 0.1 %	24
1	SEE NOTE 13	RESISTOR, FIXED WW, 1/8 W, .02 %	23
1	SEE NOTE 12	RESISTOR, FIXED WW, 1/10 W, 0.5 %	22
1	SEE NOTE 11	RESISTOR, FIXED WW, 1/10 W, 1 %	21
1	1010377-25	RESISTOR, FIXED WW, 400 Ω, 1/10W, 1%	20
1	1006760-30	RESISTOR, FIXED MF, 820 Ω, 1/2W, 5%	19
1	1010399-49	RESISTOR, FIXED WW, 15K, 5W, 5%	18
1	1006760-46	RESISTOR, FIXED MF, 3.9K, 1/2W, 5%	17
1	1006750-68	RESISTOR, FIXED FILM, 33K, 1/4W, 5%	16
1	1006750-1	RESISTOR, FIXED FILM, 51 Ω, 1/4W, 5%	15
1	1006750-84	RESISTOR, FIXED FILM, 150K, 1/4W, 5%	14
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 5%	13
2	1006750-16	RESISTOR, FIXED FILM, 220 Ω, 1/4W, 5%	12
1	1006760-48	RESISTOR, FIXED MF, 4.7K, 1/2W, 5%	11
1	1010377-36	RESISTOR, FIXED WW, 3.3K, 1/10W, 1%	10
2	1010377-23	RESISTOR, FIXED WW, 50 Ω, 1/10W, 1%	9
2	1010364-681	RESISTOR, FIXED FILM, 175K, 1/8 W, 1%	8
2	1010377-39	RESISTOR, FIXED WW, 35K, 1/10W, 1%	7
1	1010374-126	RESISTOR, FIXED CARBON FILM, 6.32M, 1/8W, 1%	6
5	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 5%	5
1	1010373-12	RESISTOR, VARIABLE, 50K, 1W, 5%	4
1	1008010-2	INSULATOR BOTTOM	3
1	1008010-1	INSULATOR TOP	2
1	1007003	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN H. Hoagan DATE 2-18-62
CHECKED W. F. Gifford 6FEB63
APPROVAL 2/7/63
APPROVAL
NASA APPROVAL W. J. Rhine 2-13-63
MIT APPROVAL 13 Feb 63

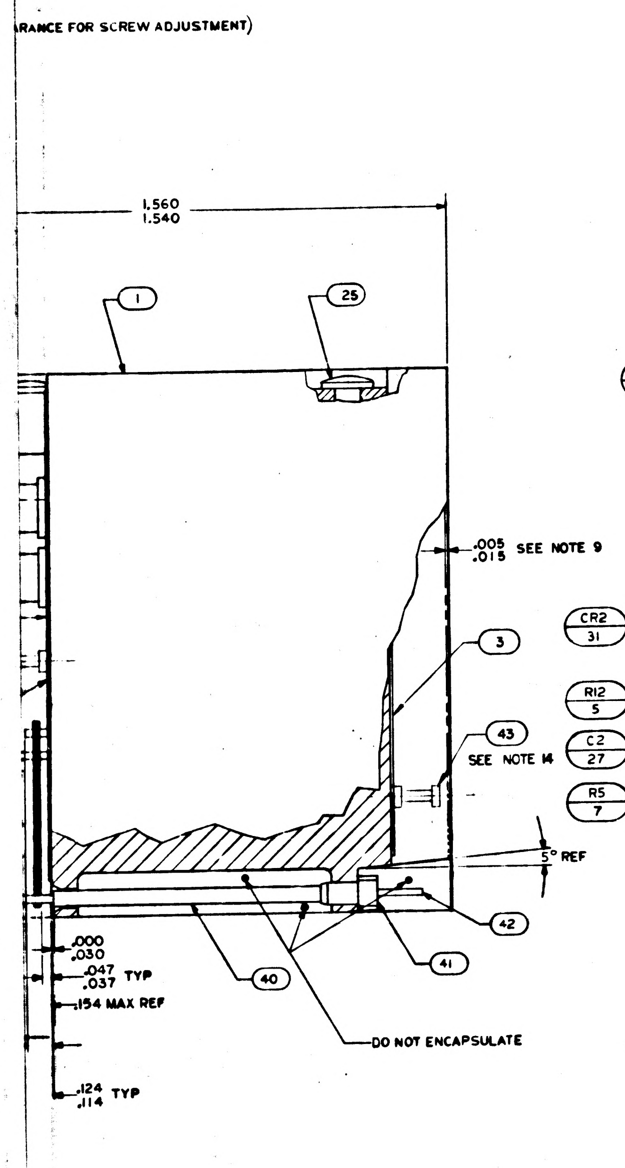
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ASSEMBLY
DC DIFFERENTIAL AMPLIFIER & PVR

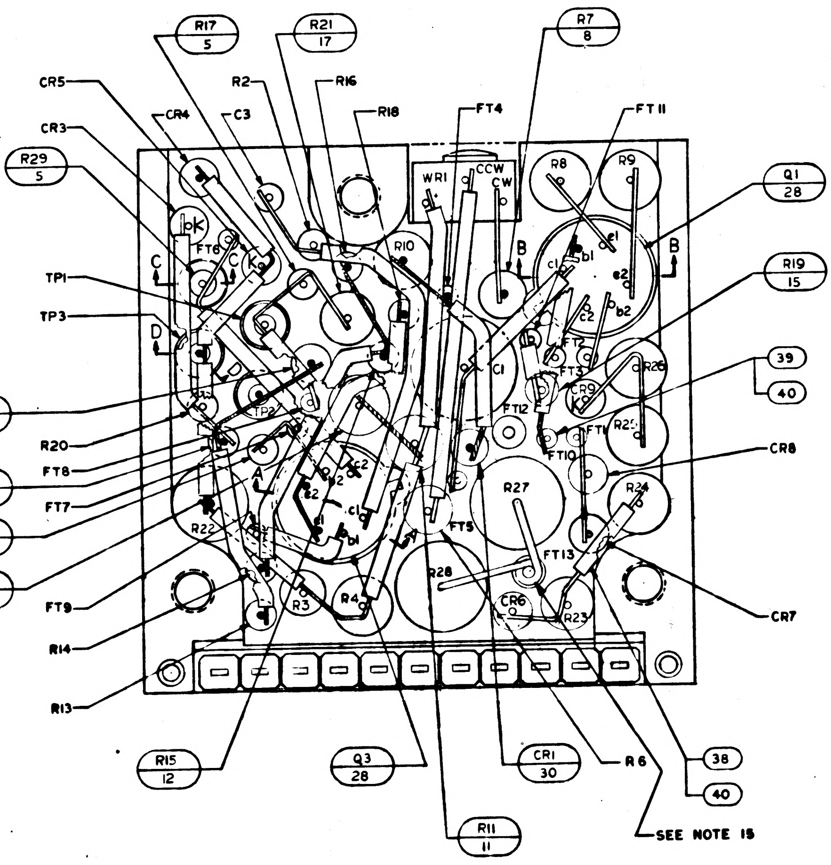
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007007
SCALE 5:1
WT
SHEET 1 OF 1

1007007

1007007



RANCE FOR SCREW ADJUSTMENT)
1.560
1.540
1
25
.005
.015 SEE NOTE 9
3
43
SEE NOTE 14
5° REF
42
41
40
.000
.030
.047
.037 TYP
.154 MAX REF
.124
.114 TYP
DO NOT ENCAPSULATE

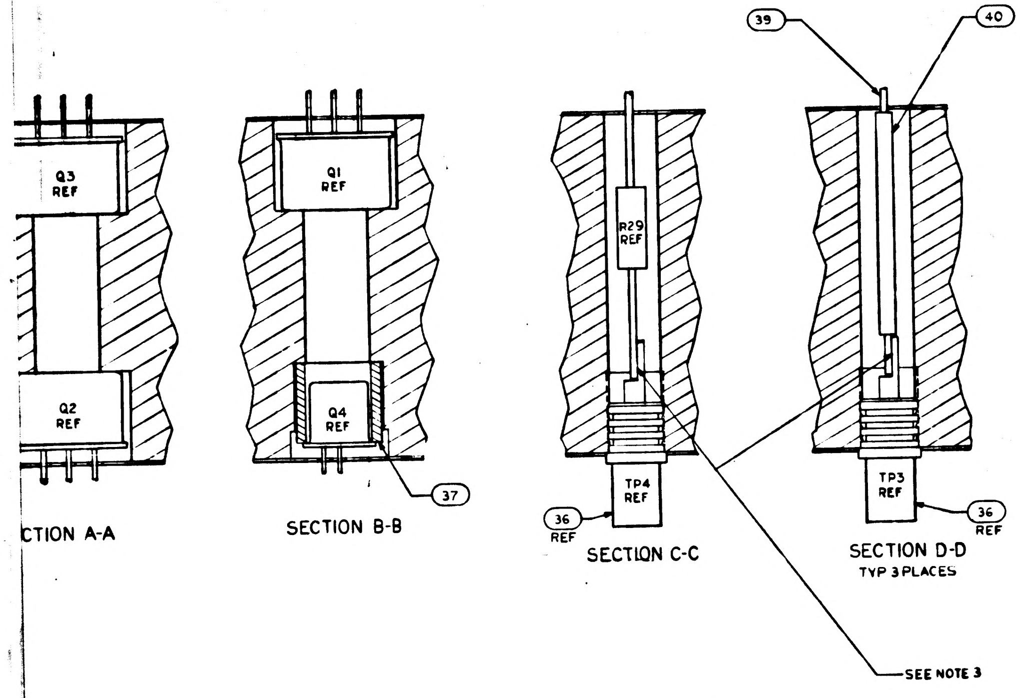


R17
5
R21
17
R7
8
CR5
CR4
C3
R2
R16
R18
FT4
FT11
CR3
R29
5
WR1
CCW
CW
R8
R9
Q1
28
TP1
TP3
C
D
B
B
R19
15
R10
FT6
CR2
31
R20
FT8
FT7
R12
5
C2
27
R5
7
FT9
R14
R13
R22
R3
R4
R28
R27
C1
FT12
FT10
FT3
CR9
R26
R25
R24
39
40
CR8
CR7
FT13
CR6
R23
FT5
R15
12
Q3
28
R11
11
CR1
30
R6
38
40
SEE NOTE 15

CHART A	
PART NO.	VALUE
1010377 – 26	600 Ω
– 27	650 Ω
– 28	700 Ω
– 30	775 Ω
– 31	850 Ω
– 32	925 Ω
– 33	1000 Ω
– 34	1100 Ω
1010377 – 35	1200 Ω

CHART B	
PART NO.	VALUE
1010377 – 57	1 Ω
– 58	2 Ω
– 59	3 Ω
– 60	4 Ω
– 61	5 Ω
– 62	6 Ω
– 63	7 Ω
– 64	8 Ω
– 65	9 Ω
– 66	10 Ω
– 67	11 Ω
– 68	12 Ω
– 69	13 Ω
– 70	14 Ω
– 71	15 Ω
– 72	16 Ω
– 73	17 Ω
– 74	18 Ω
1010377 – 75	19 Ω

CHART C	
PART NO.	VALUE
1010254 –	100 Ω
–	120
–	140
–	160
–	180
–	200
–	220
–	240
–	260
–	280
–	300
–	320
–	340
–	360
–	380
–	400
–	420
–	440
–	460
–	480
–	500



Q3
REF
Q2
REF
CTION A-A
Q1
REF
Q4
REF
37
SECTION B-B
R29
REF
TP4
REF
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SECTION C-C
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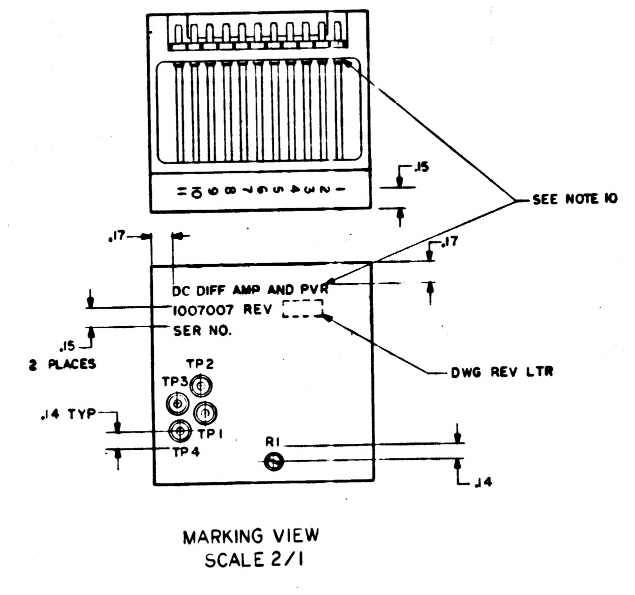
TP3
REF
36
REF
SECTION D-D
TYP 3 PLACES
SEE NOTE 3



= 10 9 8 7 6 5 4 3 2 1
.15
SEE NOTE 10
.17
.17
DC DIFF AMP AND PVR
1007007 REV
SER NO.
DWG REV LTR
.15
2 PLACES
TP2
TP3
TP1
TP4
.14 TYP
R1
.14

MARKING VIEW
SCALE 2/1

MASTER

QTY REQD	PART OR IDENTIFYING
☒	1010008
2	1006784-6
11	1006782-4
11	1006775
AS REQ	1006776-22
AS REQ	1006787-2
AS REQ	1006757-1
1	1008025-1
4	1010292-2
1	1010259
1	1010260
2	1010258
2	1010257-
2	1010257-
1	1010280
1	1010357
3	1010376-1
2	1006777-6
1	1010264
2	1006783-11
1	1010254-
1	SEE NOTE 13
1	SEE NOTE 12
1	SEE NOTE 11
1	1010377-25
1	1006760-30
1	1010399-49
1	1006760-46
1	1006750-68
1	1006750-1
1	1006750-84
1	1006750-66
2	1006750-16
1	1006760-48
1	1010377-36
2	1010377-23
2	1010364-681
2	1010377-39
1	1010374-126
5	1006750-80
1	1010373-12
1	1008010-2
1	1008010-1
1	1007003

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL

HEAT TREATMENT

FINAL FINISH

NEXT ASSY	USED ON
APPLICATION	

MIT
INSTRUMENTATION LA
CAMBRIDGE MASS

DRAWN A. Hagan DATE
CHECKED W. J. Gifford 6F
APPROVAL
APPROVAL

NASA APPROVAL

MIT APPROVAL

APOLLO G&N SPECIFICATION
PS-1007007
31 January 1964
Class A Release
TDRR 06060

PROCUREMENT SPECIFICATION
FOR
ASSEMBLY, DC DIFFERENTIAL
AMPLIFIER AND PVR

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 6 inclusive.

PROCUREMENT SPECIFICATION
FOR
ASSEMBLY, DC DIFFERENTIAL
AMPLIFIER AND PVR

The purpose of this document is to establish the requirements for the procurement of the DC Differential Amplifier and PVR Assembly for use in the APOLLO Guidance and Navigation Equipment.

W A Kupfer 31 Jan 64
MIT/IL DATE

W S Swingle 1/31/64
NASA/MSC APPROVAL DATE

PROCUREMENT SPECIFICATION
FOR
ASSEMBLY, DC DIFFERENTIAL
AMPLIFIER AND PVR

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the DC Differential Amplifier and PVR Assembly, Drawing 1007007, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007007	Final Test Method for Assembly, DC Differential Amplifier and PVR

DRAWINGS

APOLLO G&N

1007007	Assembly, DC Differential Amplifier and PVR

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N SPECIFICATION
PS-1007007
31 January 1964

Class A Release
TDRR 06060

PROCUREMENT SPECIFICATION
FOR
ASSEMBLY, DC DIFFERENTIAL
AMPLIFIER AND PVR

Ⓜ

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i
to iii and 1 to 6 inclusive.

APOLLO G&N Specification
PS-1007007
31 January 1964

PROCUREMENT SPECIFICATION
FOR
ASSEMBLY, DC DIFFERENTIAL
AMPLIFIER AND PVR

1. SCOPE

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2. APPLICABLE DOCUMENTS

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FTM-1007007	Final Test Method for Assembly, DC Differential Amplifier and PVR

DRAWINGS

APOLLO G&N

1007007	Assembly, DC Differential Amplifier and PVR

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 [illegible]. The assembly provides the voltage reference and electronic control circuitry to maintain a constant current source suitable for the pulse torquing of the associated accelerometer or gyroscope.

3.3 FUNCTIONAL REQUIREMENTS

3.3.1 Electrical Inputs. The assembly shall perform as specified herein when supplied with any combination of the following electrical inputs:

a. +25 to +36 variable dc, 20 ma nominal load current

b. +105 to +135 variable dc, 135 ma nominal load current

3.3.2 Insulation Resistance. The resistance between the assembly pins and the assembly mounting screws shall be equal to or greater than 100 megohms.

3.3.3 Test Point Voltages. The voltages at the test points shall be as specified in Table I.

TABLE I

TEST POINT VOLTAGES

TEST POINT	VOLTAGE (vdc)
1	100±5
2	76±4.5
3	26±1.5
4	85±2

3.3.4 Noise. The noise fluctuation shall be less than 100 μv pp measured across the simulated scale-factor resistor (60 Ω) as shown in Figure 3, FTM-1007007.

3.3.5 DC Gain and Saturation. The amplifier gain shall be equal to or greater than 0.5×10^{6} V/V over an output voltage range of ±7.5V about the nominal measured at pin 7, Figure 3, FTM-1007007.

3.3.6 Regulation. For an input voltage variation of ±10 percent, the output voltage shall change less than 35 ppm.

3.3.7 Temperature Coefficient. Over an assembly temperature range from 30° to 40°C, the output voltage shall change less than 3 ppm/degree C.

3.3.8 Output Voltage. The output voltage shall be 6.000000 vdc absolute to within a tolerance as specified in Table II when measured across the scale factor resistor as shown in Figure 3, FTM-1007007, under the conditions as specified in JDC-09336 of FTM-1007007.

TABLE II

OUTPUT VOLTAGE TOLERANCES

WEEK *	TOLERANCE (μv)	WEEK	TOLERANCE (μv)
Initial Adjustment	10.0	27	108.0
1	23.0	28	110.0
2	31.0	29	112.0
3	37.0	30	114.0
4	42.5	31	116.0
5	47.5	32	118.0
6	51.5	33	119.5
7	55.5	34	121.5
8	59.5	35	123.0
9	63.0	36	125.0
10	66.0	37	126.5
11	69.0	38	128.5
12	72.0	39	130.0
13	75.0	40	131.5
14	78.0	41	133.0
15	81.0	42	135.0
16	83.5	43	136.5
17	86.0	44	138.0
18	88.5	45	139.5
19	91.0	46	141.0
20	93.0	47	142.5
21	95.5	48	144.0
22	98.0	49	145.5
23	100.0	50	147.0
24	102.0	51	148.5
25	104.0	52	150.0
26	106.0	> 52	150.0

* Week during which test is being performed since final test and adjustment of assembly.

3.3.9 Stability. With the temperature of the assembly stabilized at +35°C for 2 hours and the output and time voltages measured for 80 hours at intervals of 60+3 minutes, the time - stability of the output shall be equal to or less than 50 ppm/yr. to be demonstrated by the method described in JDC 09343, FTM-1007007.

3.4 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.4.1 Service Life.

3.4.1.1 Operating Life. The assembly shall meet the performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.4.1.2 Shelf Life. The assembly shall have a shelf life of at least 2 years, without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.4.1.3 Reliability. Design objectives require maximum reliability of the assembly during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 3.0 failures per million hours.

4. QUALITY ASSURANCE PROVISIONS

4.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all the quality assurance provisions of Specification ND-1002210 shall form a part of this specification.

4.2 NASA ACCEPTANCE INSPECTION. The NASA acceptance inspection shall be in accordance with FTM-1007007.

5. PREPARATION FOR DELIVERY

5.1 GENERAL SPECIFICATION. The assembly shall be prepared for delivery in accordance with Specification ND-1002210.

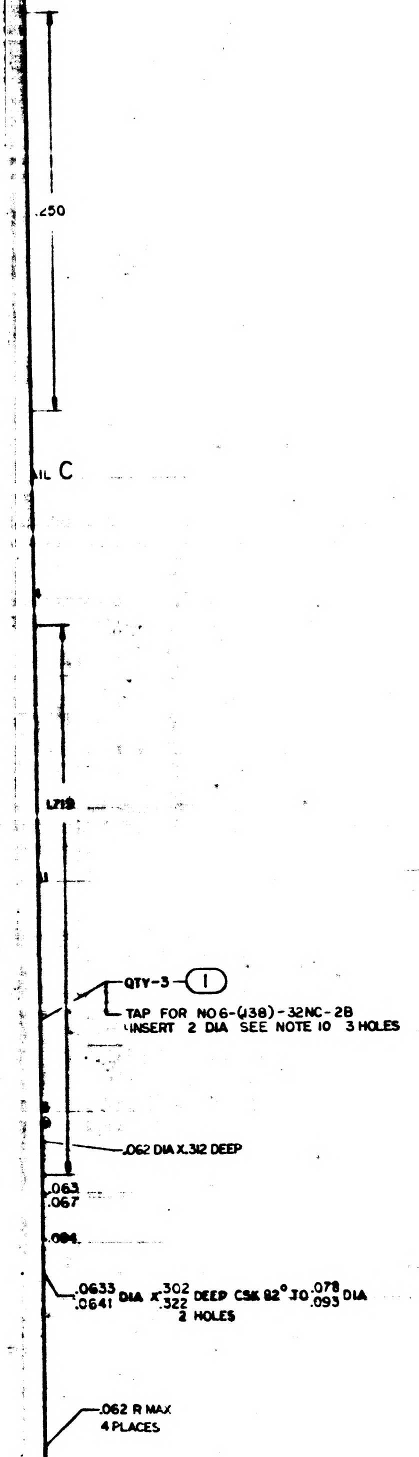
6. NOTES. None.

Notice: When APOLLO G&N drawings, specifications, or other data are used for any purpose other than in connection with a definitely related NASA procurement operation, NASA thereby incurs no responsibility nor any obligation whatsoever, and the fact that NASA may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

RTP:pbv

REVISIONS TORR 00411				
SYM	DESCRIPTION	DATE	APPROVAL	
A	REVISED PER TDRR00873	4 7 63	O.T. WR	

1007008 A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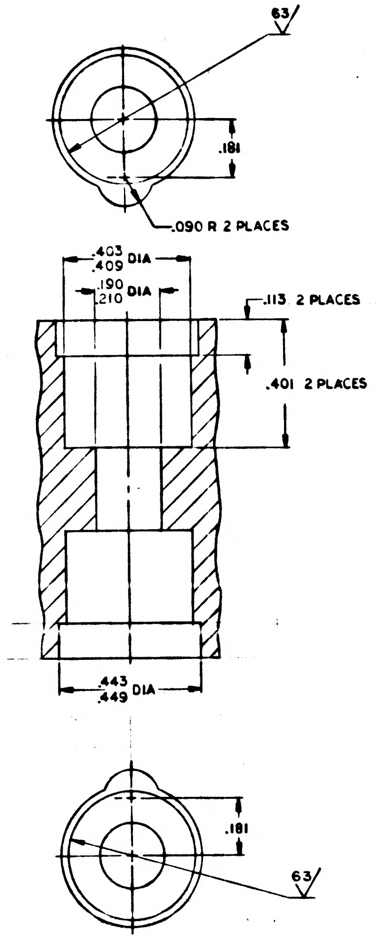
AIL C
L.719
QTY-3 ①
TAP FOR NO6-(138)-32NC-2B
INSERT 2 DIA SEE NOTE 10 3 HOLES
.062 DIA X.312 DEEP
.063
.067
.094
.0633 .0641 DIA X .302 .322 DEEP CSK 82° TO .078 .093 DIA
2 HOLES
.062 R MAX
4 PLACES


63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2 PLACES
.401 2 PLACES
.443 .449 DIA
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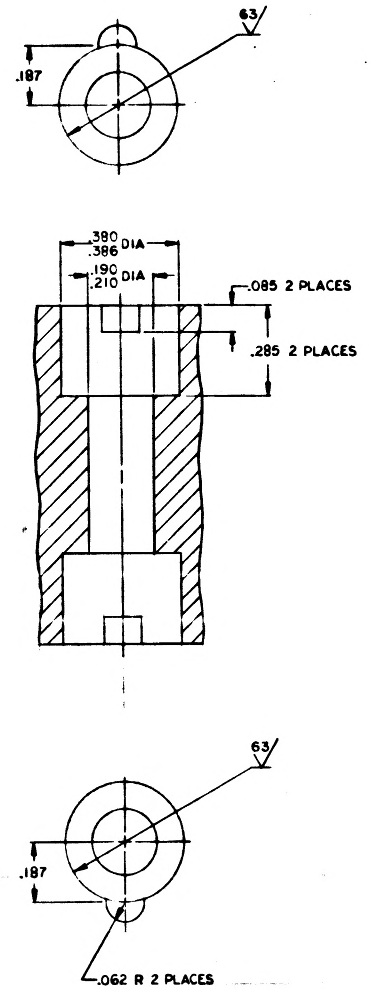
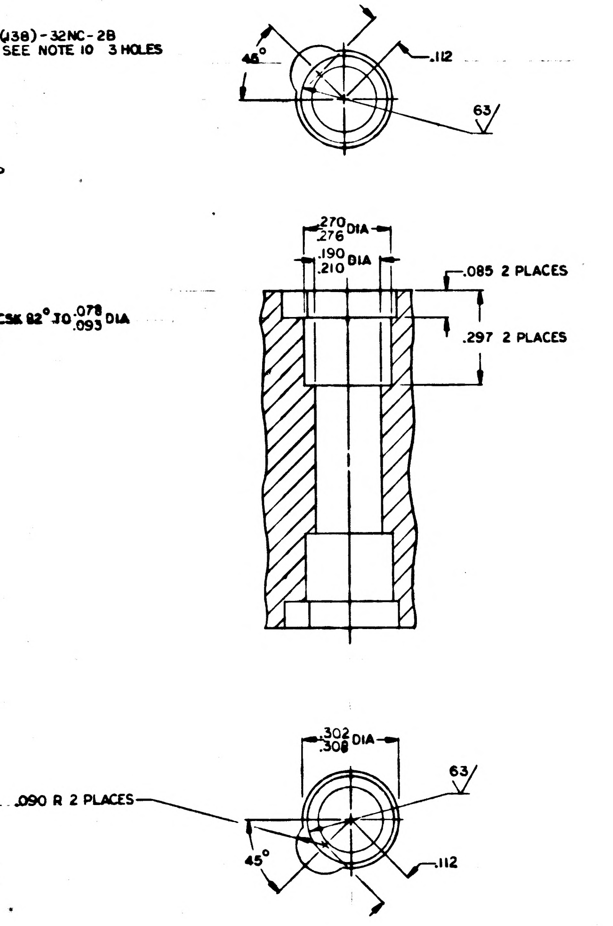
63

DETAIL A
1 P HOLE


63
.187
.380 .386 DIA
.190 .210 DIA
.085 2 PLACES
.285 2 PLACES
63
.187
.062 R 2 PLACES

DETAIL C
2 L HOLES


45°
.112
63
.270 .276 DIA
.190 .210 DIA
.085 2 PLACES
.297 2 PLACES
.302 .308 DIA
63
.090 R 2 PLACES
45°
.112

DETAIL B
3 J HOLES

3	NAS 1222-06E	INSERT, SCREW LOCKING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± .005 ANGLES ± 1/2° DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
		MATERIAL SEE NOTE 2	DRAWN Ed Ferraro DATE 8 Jan 63 CHECKED APPROVAL APPROVAL	HEATSINK TERNARY CURRENT SWITCH COMPUTER OUTPUT
1007016		HEAT TREATMENT —	NASA APPROVAL 2/11/63	CODE IDENT NO. / SIZE J / NASA DRAWING NO. 1007008
NEXT ASSY	USED ON	FINAL FINISH SEE NOTE 11	MIT APPROVAL	SCALE 5/1 / WT / SHEET 1 OF 1
APPLICATION				

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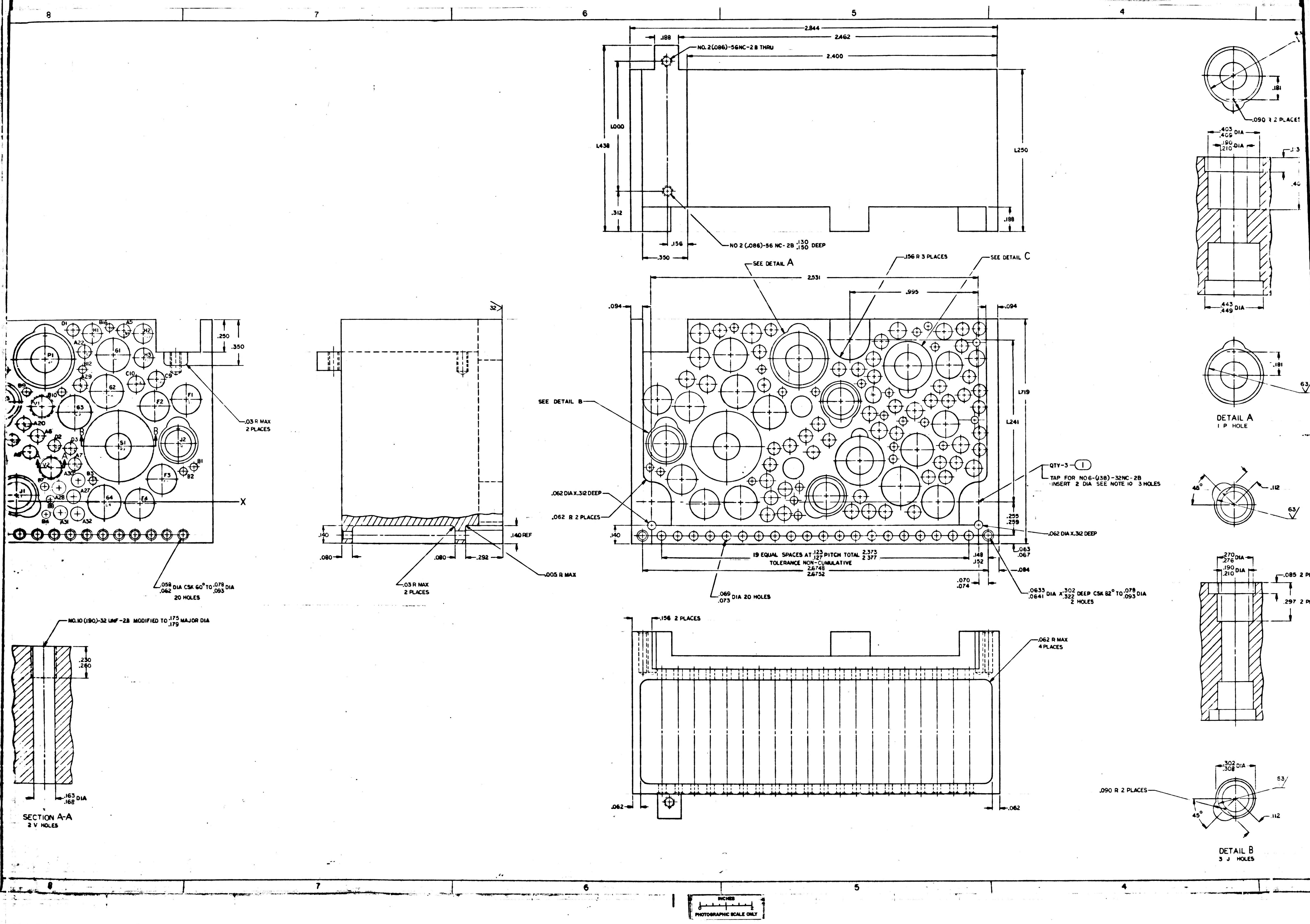
PHOTOGRAPHIC SCALE ONLY

1007008 A

1007008


8
7
6
5
4
2.844
2.462
.188
NO. 2 (.086)-56NC-2B THRU
2.400
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B $\frac{.130}{.150}$ DEEP
SEE DETAIL A
.156 R 3 PLACES
SEE DETAIL C
2.531
.995
.094
.094
1.719
1.241
SEE DETAIL B
QTY-3 ①
TAP FOR NO6-(.138)-32NC-2B INSERT 2 DIA SEE NOTE 10 3 HOLES
.062 DIA X .312 DEEP
.062 R 2 PLACES
.255 .259
.062 DIA X .312 DEEP
.140
.063 .067
19 EQUAL SPACES AT $\frac{.123}{.127}$ PITCH TOTAL $\frac{2.373}{2.377}$
TOLERANCE NON-CUMULATIVE
$\frac{2.6748}{2.6752}$
.148 .152
.084
.070 .074
$\frac{.069}{.073}$ DIA 20 HOLES
$\frac{.0633}{.0641}$ DIA X $\frac{.302}{.322}$ DEEP CSK 82° TO $\frac{.078}{.093}$ DIA 2 HOLES
.156 2 PLACES
.062 R MAX 4 PLACES
.062
.062
D1
B16
A5
H1
H2
A22
P1
G1
H3
B12
A29
C10
C9
B9
B10
G2
F2
F1
V1
G3
A20
A6
D2
D3
B
B
S1
J2
A
A
A7
V2
A30
B3
B1
B2
F3
B7
J1
A28
A27
G4
F4
B8
X
B4
A31
A32
.250
.350
.03 R MAX 2 PLACES
$\frac{.058}{.062}$ DIA CSK 60° TO $\frac{.078}{.093}$ DIA 20 HOLES
32
.140
.140 REF
.080
.080
.292
.03 R MAX 2 PLACES
.005 R MAX
NO.10 (.190)-32 UNF-2B MODIFIED TO $\frac{.175}{.179}$ MAJOR DIA
.230 .260
$\frac{.163}{.168}$ DIA
SECTION A-A
2 V HOLES
.090 R 2 PLACES
.181
$\frac{.403}{.409}$ DIA
$\frac{.190}{.210}$ DIA
.13
.40
$\frac{.443}{.449}$ DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
$\frac{.270}{.276}$ DIA
$\frac{.190}{.210}$ DIA
.085 2 PLAC
.297 2 PLA
$\frac{.302}{.308}$ DIA
.090 R 2 PLACES
63
45°
.112
DETAIL B
3 J HOLES
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

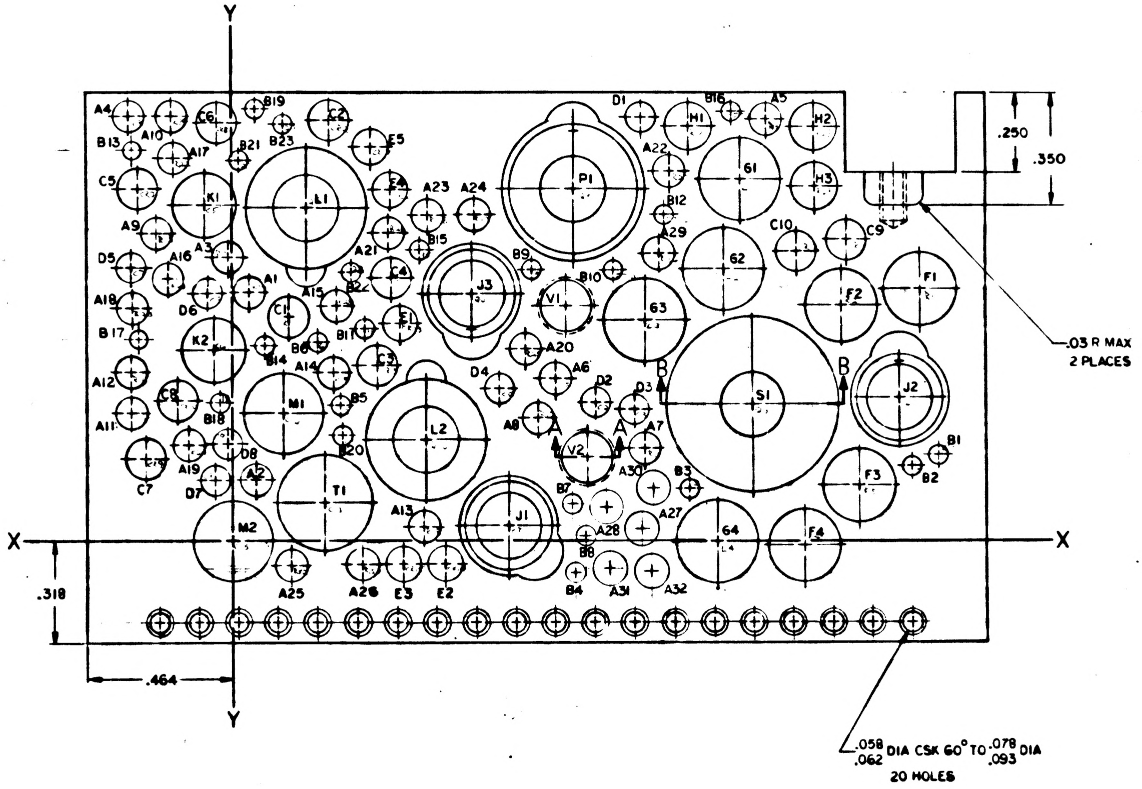
[illegible]

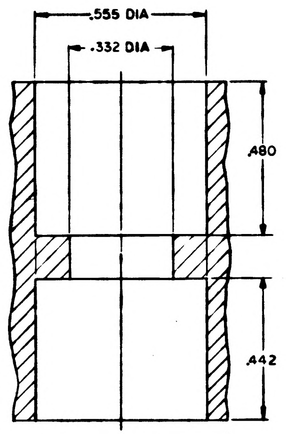
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.052	.774	.006	.100 .104	32
A2	.073	.191			
A3	−.015	.884			
A4	−.332	1.326			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	−.245	.961			
A10	−.195	1.326			
A11	−.324	.400			
A12	−.322	.528			
A13	.605	.044			
A14	.318	.526			
A15	.331	.735			
A16	−.207	.819			
A17	−.188	1.197			
A18	−.321	.728			
A19	−.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	−.076			
A26	.408	−.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268	.006	.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	-0.100			
B5	.340	.422			
B6	.271	.620			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	−.303	1.222			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	−.295	.629			
B18	−.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.177	.700	.006	.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	−.303	1.098			
C6	−.049	1.307			
C7	−.276	.258			
C8	−.176	.438			
C9	1.940	.943			
C10	1.779	.905			

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
D1	1.292	1.324	.006	.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	−.324	.852			
D6	−.080	.774			
D7	−.056	.191			
D8	−.018	.304			
E1	.530	.677	.006	.108 .112	5
E2	.670	−.071			
E3	.538	−.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787	.006	.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	−.012			
G1	1.604	1.132	.006	.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295	.006	.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048	.006	SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	−.090	1.048	.006	.202 .206	2
K2	−.061	.596			
L1	.233	1.040	.006	SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398	.006	.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100	.006	SEE DETAIL A	1
S1	1.641	.428	.006	SEE SECTION B-B	1
T1	.290	.120	.006	.300 .307	1
V1	1.054	.734	.006	SEE SECTION A-A	2
V2	1.120	.260			

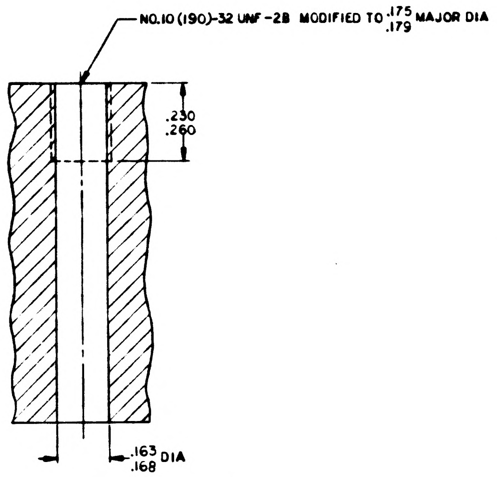
NOTES

1. INTERPRET DRAWINGS IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. TRUE POSITIONING AS SHOWN IN CHART.
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO. 1 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO. 1 PER MS 33537 EXCEPT DIM F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: ANODIZE PER MIL-M-3171A TYPE IV


Y
X
.250
.350
.03 R MAX
2 PLACES
.318
.464
.058 .062 DIA CSK 60° TO .078 .093 DIA
20 HOLES
A
A
B
B
A4
A10
B13
C6
B19
B21
B23
C2
E5
A17
C5
K1
L1
E4
A23
A24
P1
D1
H1
B16
A5
H2
A22
G1
H3
B12
A29
C10
C9
A9
A3
A16
D5
A1
A21
C4
B15
J3
B9
V1
B10
G2
F1
F2
A18
D6
C1
A15
B22
E1
G3
B17
K2
B6
B11
A20
B14
A14
C3
D4
A6
D2
D3
S1
J2
A12
C8
M1
B5
L2
A8
V2
A7
A11
B18
B20
A30
B3
B1
B2
F3
C7
A19
D8
A2
D7
T1
A13
J1
B7
A28
A27
G4
F4
M2
B8
A25
A26
E3
E2
B4
A31
A32


.555 DIA
.332 DIA
.480
.442

SECTION B-B

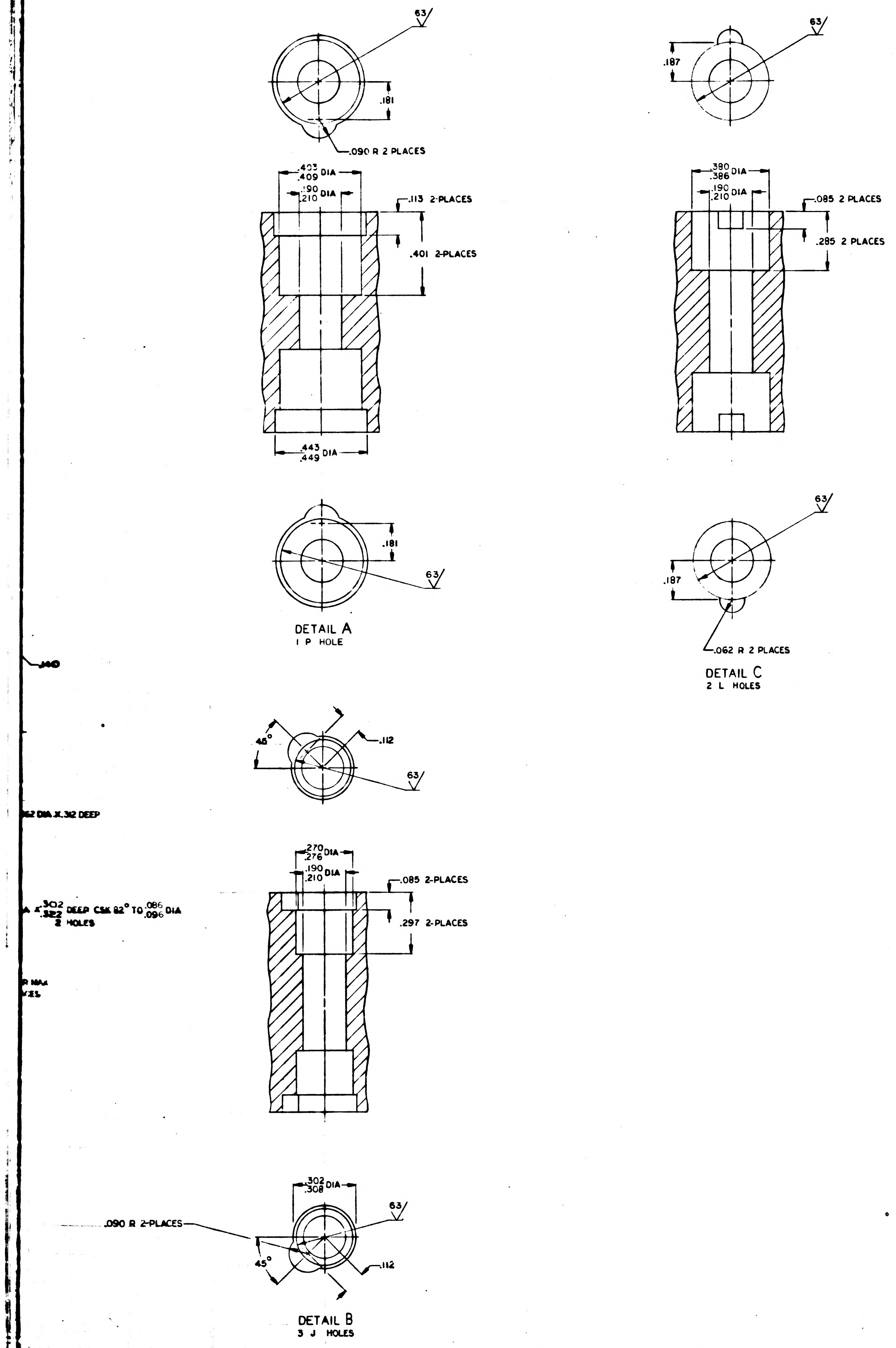

NO.10 (190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA
.230 .260
.163 .168 DIA

SECTION A-A
2 V HOLES

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TORR 00411		
A	REVISED PER TDRR 00873	4-?-63	O.T. WR
B	REVISED PER TDRR		
C	REVISED PER TDRR 01177	5-8-63	O.T. W/C

1007008 C



63
.181
.090 R 2 PLACES
.187
.403/.409 DIA
.190/.210 DIA
.113 2-PLACES
.401 2-PLACES
.380/.386 DIA
.190/.210 DIA
.085 2 PLACES
.285 2 PLACES
.443/.449 DIA
.181
63
DETAIL A
1 P HOLE
63
.187
.062 R 2 PLACES
DETAIL C
2 L HOLES
.040
45°
.112
63
.062 DIA X .312 DEEP
.270/.276 DIA
.190/.210 DIA
.085 2-PLACES
.297 2-PLACES
A × .302/.322 DEEP CSK 82° TO .086/.096 DIA
2 HOLES
R MAX
VES
.302/.308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
3 J HOLES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS 1222-06E	INSERT, SCREW LOCKING	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007016	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS .005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

HEAT TREATMENT —

FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT

DRAWN Ed Parsons DATE 8 Jan 63
CHECKED C.P. Kingsbury 14 Feb 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL 2/19/63
APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

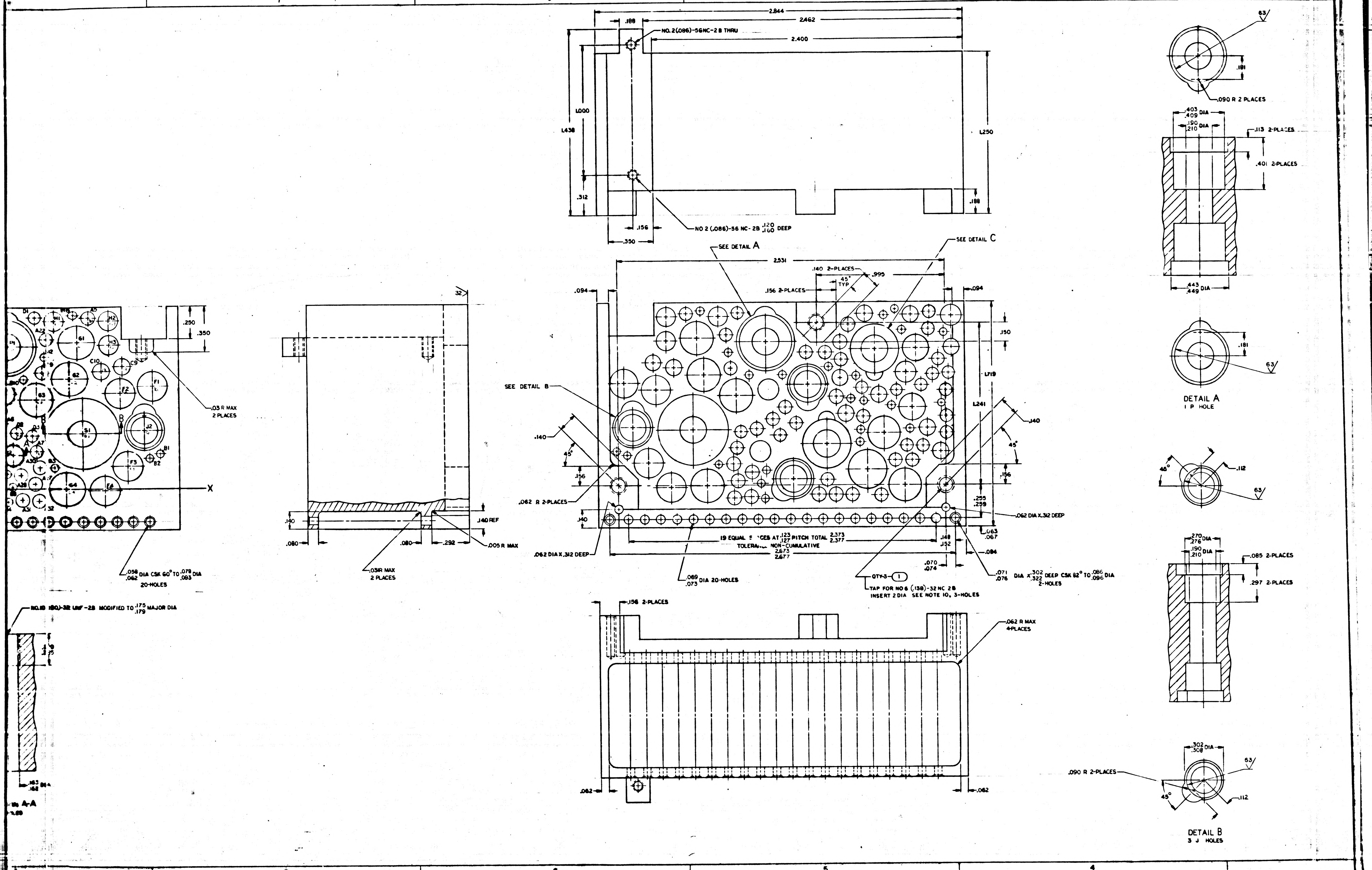
HEATSINK
TERNARY CURRENT SWITCH
COMPUTER OUTPUT

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007008

SCALE 5/1 | WT | SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007008


7
6
5
4
2.844
2.462
.188
NO. 2(.086)-56NC-2B THRU
2.400
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120/.160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
45° TYP
.995
.156 2-PLACES
.094
.150
1.719
1.241
SEE DETAIL B
.140
45°
.156
.062 R 2-PLACES
.255/.259
.062 DIA X .312 DEEP
.063/.067
19 EQUAL SPACES AT .123/.127 PITCH TOTAL 2.373/2.377
TOLERANCE NON-CUMULATIVE
2.673/2.677
.148/.152
.084
.070/.074
.071/.076 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA 2-HOLES
QTY-3 1
TAP FOR NO 6 (.138)-32 NC 2B INSERT 2 DIA SEE NOTE 10, 3-HOLES
.069/.073 DIA 20-HOLES
.062 DIA X .312 DEEP
32
.140 REF
.140
.080
.292
.005 R MAX
.031R MAX 2 PLACES
.250
.350
.03 R MAX 2 PLACES
X
A
B
.058/.062 DIA CSK 60° TO .079/.083 DIA 20-HOLES
NO.10 (.190)-32 UNF-2B MODIFIED TO .175/.179 MAJOR DIA
.183/.188 DIA
A-A
.156 2-PLACES
.062 R MAX 4-PLACES
.062
.062
63
.181
.090 R 2 PLACES
.403/.409 DIA
.190/.210 DIA
.113 2-PLACES
.401 2-PLACES
.443/.449 DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
.270/.276 DIA
.190/.210 DIA
.085 2-PLACES
.297 2-PLACES
.302/.308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
3 J HOLES
7
6
5
4

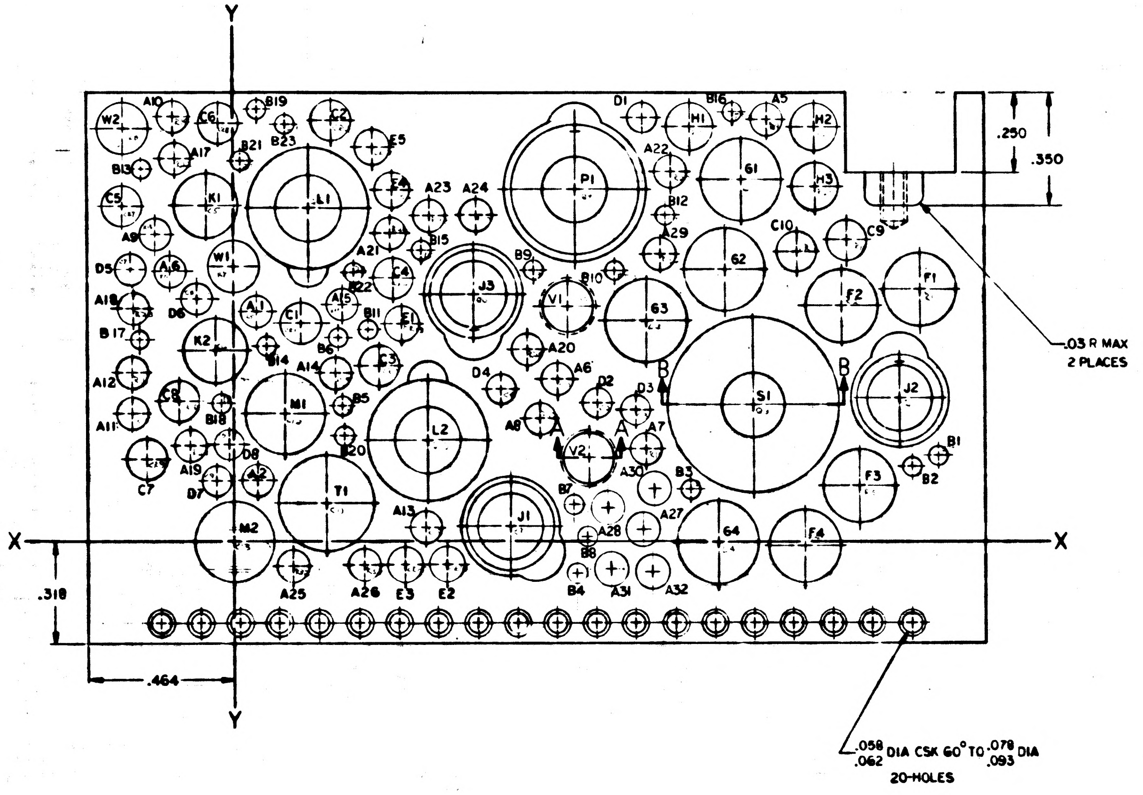
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

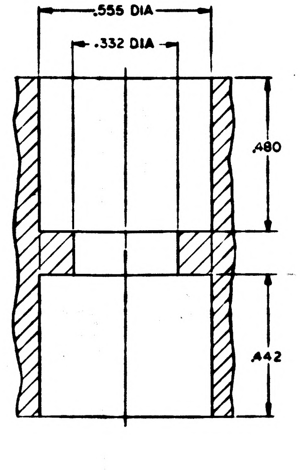
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.072	.718	.006	.100 .104	30
A2	.073	.151			
~~A3~~	~~-.015~~	~~.884~~			
~~A4~~	~~-.332~~	~~1.326~~			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	-.250	.961			
A10	-.195	1.326			
A11	-.324	.400			
A12	-.322	.528			
A13	.605	.044			
A14	.318	.526			
A15	.340	.740			
A16	-.207	.844			
A17	-.188	1.197			
A18	-.321	.728			
A19	-.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	-.076			
A26	.408	-.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268	.006	.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	-0.100			
B5	.340	.422			
B6	.324	.636			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	-.292	1.164			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	-.295	.629			
B18	-.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.210	.684	.006	.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	-.354	1.048			
C6	-.049	1.307			
C7	-.276	.258			
C8	-.176	.438			
C9	1.940	.943			
C10	1.779	.905			

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
D1	1.292	1.324	.006	.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	-.332	.852			
D6	-.118	.760			
D7	-.056	.191			
D8	-.018	.304			
E1	.530	.677	.006	.108 .112	5
E2	.670	-.071			
E3	.538	-.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787	.006	.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	-.012			
G1	1.604	1.132	.006	.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295	.006	.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048	.006	SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	-.090	1.048	.006	.202 .206	2
K2	-.061	.596			
L1	.233	1.040	.006	SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398	.006	.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100	.006	SEE DETAIL A	1
S1	1.641	.428	.006	SEE SECTION B-B	1
T1	.290	.120	.006	.300 .307	1
V1	1.054	.734	.006	SEE SECTION A-A	2
V2	1.120	.260			
W1	0.000	.860	.006	.165 .169	2
W2	-.352	1.292			

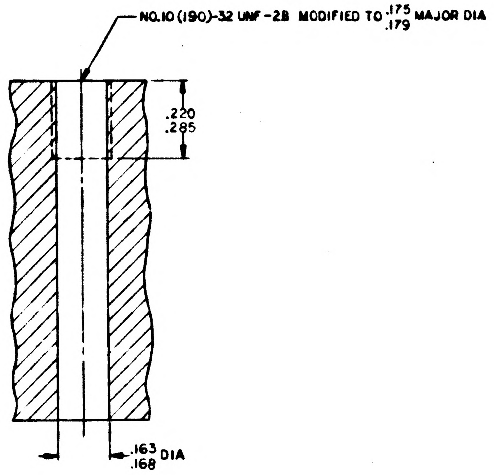
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. TRUE POSITIONING AS SHOWN IN CHART.
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO. 1 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO. 1 PER MS 33537 EXCEPT DIM F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: ANODIZE PER MIL-M-3171A TYPE IV


Y
X
W2
A10
C6
B19
C2
B23
B21
E5
A17
B13
K1
L1
E4
A23
A24
P1
D1
B16
A5
H1
H2
A22
G1
H3
B12
C5
A9
A6
W1
A21
B15
J3
B9
B10
A29
G2
C10
C9
F1
F2
D5
A18
D6
A1
C1
A15
B22
B11
E1
C4
V1
G3
B17
K2
B14
B6
C3
A20
A12
C8
A14
D4
A6
B
S1
J2
D2
D3
M1
B5
L2
A8
A
V2
A7
A11
B18
B20
C7
A19
D8
A2
D7
T1
A30
B3
B1
B2
F3
B7
A13
J1
A28
A27
M2
G4
F4
B8
A25
A26
E3
E2
B4
A31
A32
.250
.350
.03 R MAX
2 PLACES
.318
.464
$^{.058}_{.062}$ DIA CSK 60° TO $^{.078}_{.093}$ DIA
20-HOLES


.555 DIA
.332 DIA
.480
.442

SECTION B-B


NO.10 (190)-32 UNF-2B MODIFIED TO $^{.175}_{.179}$ MAJOR DIA
.220
.285
$^{.163}_{.168}$ DIA

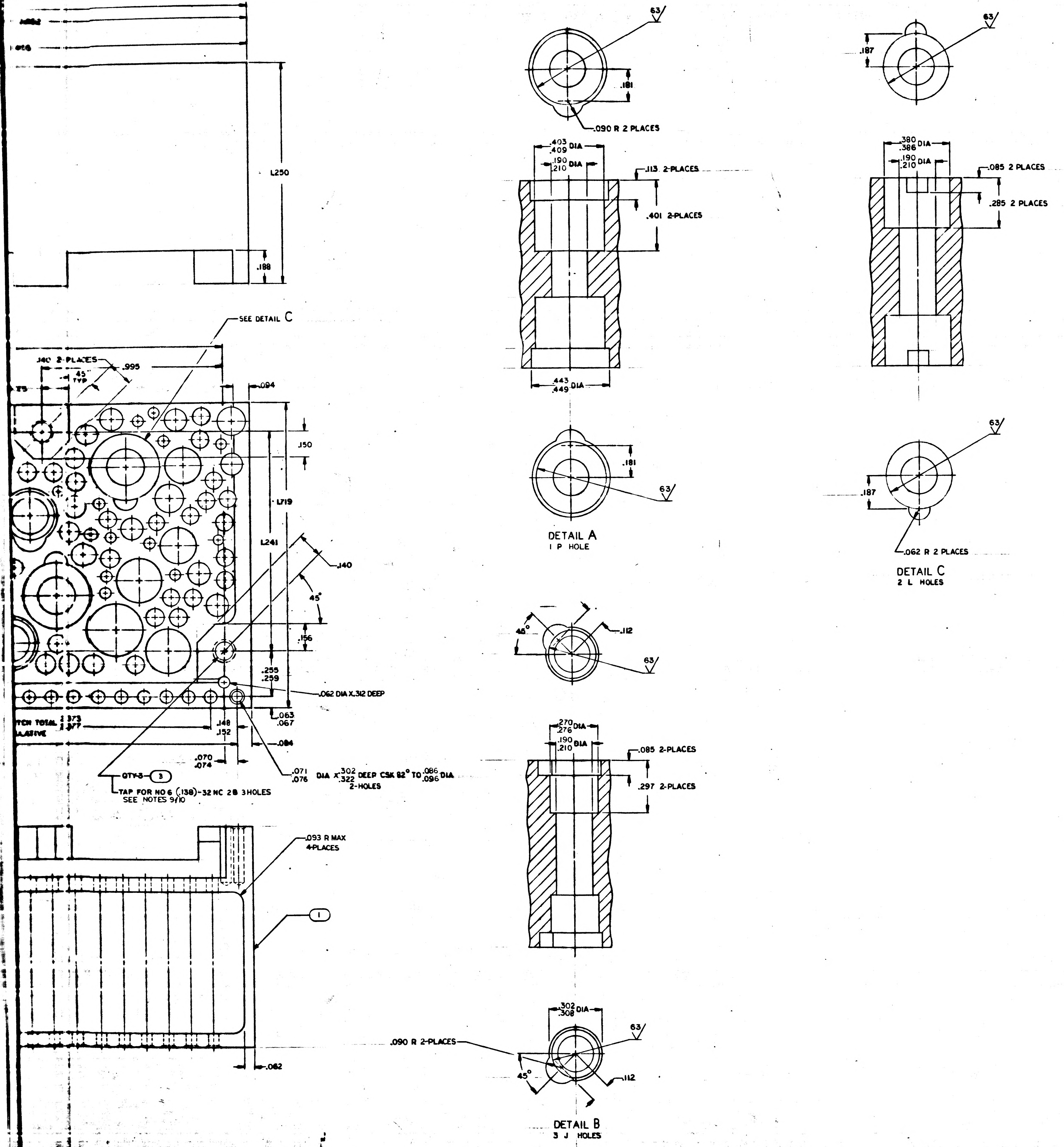
SECTION A-A
2 V HOLES

INCHES
PHOTOGRAPHIC SCALE ONLY

D 1007008

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	4-1-63	O.T. WR
B	REVISED PER TDRR		
C	REVISED PER TDRR 01177	5-8-63	O.T. WR
D	REVISED PEP TDRR 01861	7-2-63	JJM. WR

REVISIONS TDRR 00411



1.250
.188
SEE DETAIL C
.140 2-PLACES
.995
45° TYP
.094
.150
1.719
1.241
.140
45°
.156
.255
.259
.062 DIA X .312 DEEP
.063
.067
PITCH TOTAL 2.373 2.377
CUMULATIVE
.148
.152
.084
.070
.074
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
QTY-3 ③
TAP FOR NO 6 (.138)-32 NC 2B 3 HOLES
SEE NOTES 9/10
.093 R MAX 4-PLACES
①
.062
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
DETAIL A
1 P HOLE
.187
.380 .386 DIA
.190 .210 DIA
.085 2 PLACES
.285 2 PLACES
.062 R 2 PLACES
DETAIL C
2 L HOLES
45°
.112
.270 .276 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
.090 R 2-PLACES
DETAIL B
3 J HOLES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS 1222-06E	INSERT, SCREW LOCKING	2
1	1007008-1	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007016	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .02 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 11

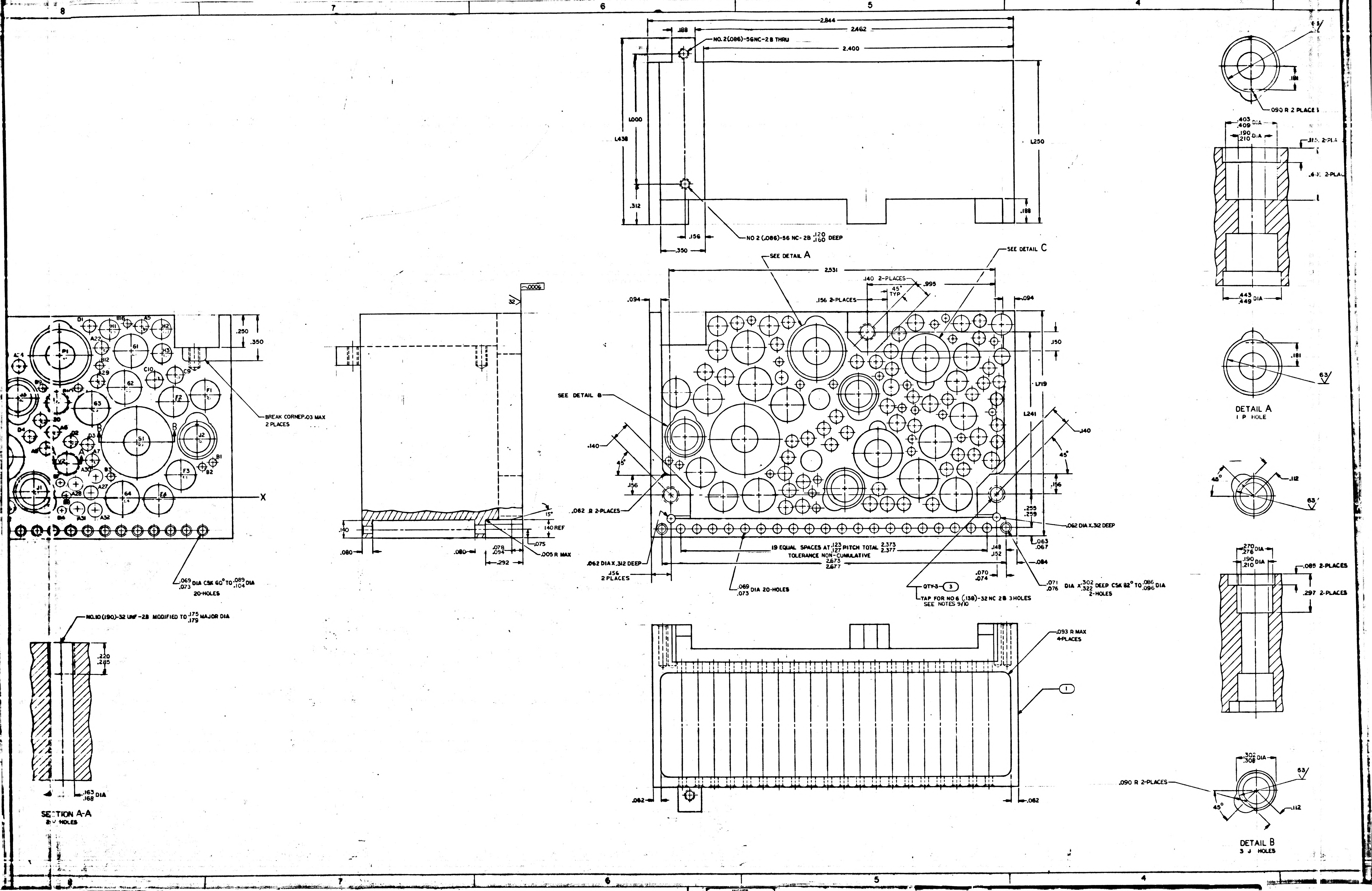
MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Ed. Rosenman DATE 8 Jan 63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
TERNARY CURRENT SWITCH
COMPUTER OUTPUT

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007008
SCALE 5/1
WT
SHEET 1 OF 1

E3 1007008



8
7
6
5
4
2.844
2.462
2.400
.188
NO. 2(086)-56NC-2B THRU
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120 .160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
.995
45° TYP
.156 2-PLACES
.094
.094
.150
1.719
1.241
SEE DETAIL B
.140
.140
45°
45°
.156
.156
.062 R 2-PLACES
.255 .259
.062 DIA X .312 DEEP
.062 DIA X .312 DEEP
19 EQUAL SPACES AT .123 .127 PITCH TOTAL 2.373 2.377
TOLERANCE NON-CUMULATIVE
2.673 2.677
.148 .152
.063 .067
.084
.070 .074
.156 2 PLACES
.069 .073 DIA 20-HOLES
QTY-3- 3
TAP FOR NO 6 (.138)-32 NC 2B 3 HOLES
SEE NOTES 9/10
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
.0006
32
15°
.140 REF
.140
.080
.080
.078 .094
.075
.005 R MAX
.292
.250
.350
BREAK CORNER .03 MAX 2 PLACES
X
.069 .073 DIA CSK 60° TO .089 .104 DIA 20-HOLES
D1
B16
A5
H1
H2
P1
A22
61
H3
B12
C10
C9
A29
62
F1
F2
63
S1
J2
F3
B1
B2
64
F4
J1
A27
A28
A31
A32
B
B
A
NO.10 (190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA
.220 .285
.163 .168 DIA
SECTION A-A
20 HOLES
.093 R MAX 4-PLACES
1
.062
.062
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.443 .449 DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
3 J HOLES

INCHES
PHOTOGRAPHIC SCALE ONLY

E-2 1007008

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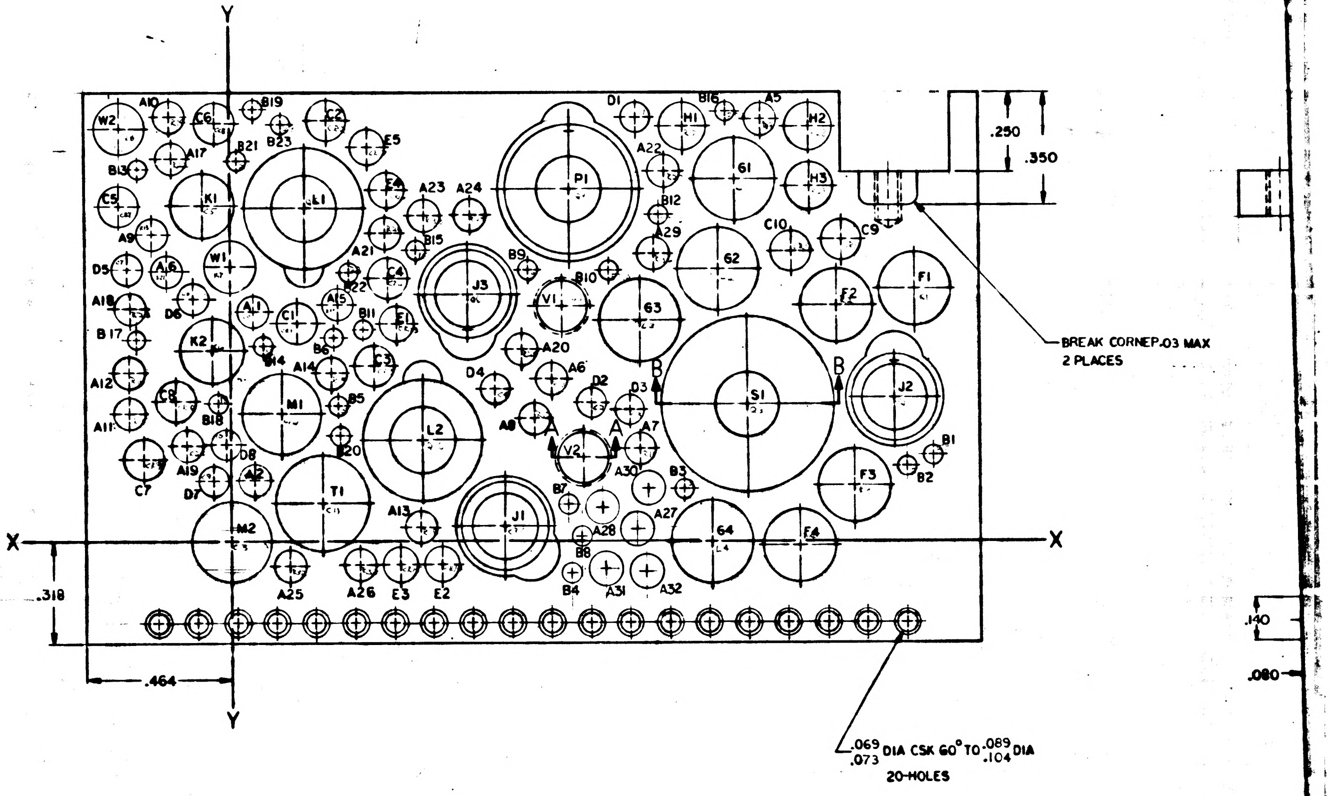
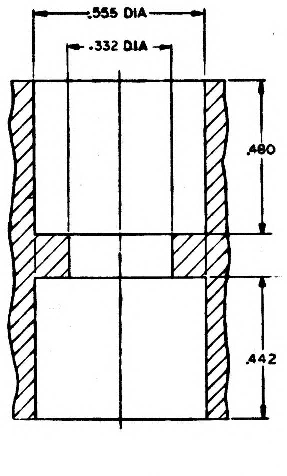
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.072	.718	.006	.100 .104	30
A2	.073	.191			
~~A3~~	~~−.015~~	~~.884~~			
~~A4~~	~~−.332~~	~~1.326~~			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	−.280	.961			
A10	−.195	1.326			
A11	−.324	.400			
A12	−.322	.528			
A13	.605	.044			
A14	.318	.526			
A15	.340	.740			
A16	−.207	.844			
A17	−.188	1.197			
A18	−.321	.728			
A19	−.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	−.076			
A26	.408	−.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	−0.088			
A32	1.320	−0.096			
B1	2.229	.268	.006	.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	−0.100			
B5	.340	.422			
B6	.324	.636			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	−.292	1.164			
B14	.099	.611			
315	.590	.908			
B16	1.577	1.343			
B17	−.295	.629			
B18	−.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.210	.684	.006	.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	−.354	1.048			
C6	−.049	1.307			
C7	−.276	.258			
C8	−.176	.438			
C9	1.940	.943			
C10	1.779	.905			

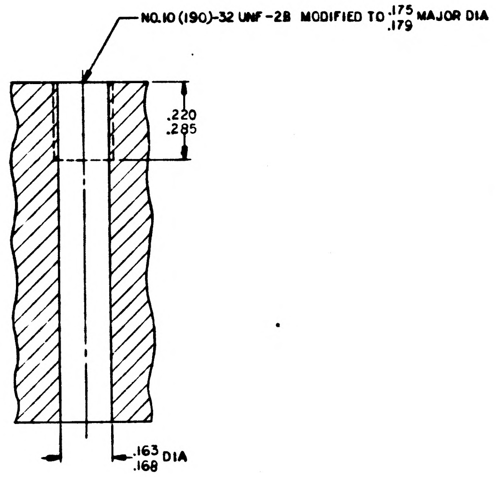
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
D1	1.292	1.324	.006	.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	−.332	.852			
D6	−.118	.760			
D7	−.056	.191			
D8	−.018	.304			
E1	.530	.677	.006	.108 .112	5
E2	.670	−.071			
E3	.538	−.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787	.006	.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	−.012			
G1	1.604	1.132	.006	.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295	.006	.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048	.006	SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	−.090	1.048	.006	.202 .206	2
K2	−.061	.596			
L1	.233	1.040	.006	SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398	.006	.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100	.006	SEE DETAIL A	1
S1	1.641	.428	.006	SEE SECTION B-B	1
T1	.290	.120	.006	.300 .307	1
V1	1.054	.734	.006	SEE SECTION A-A	2
V2	1.120	.260			
W1	0.000	.860	.006	.165 .169	2
W2	−.352	1.292			



Y
X
.250
.350
.318
.464
.140
.080
A
B
W2 A10 C6 B19 C2 E5 D1 B16 A5 H1 H2 G1 H3 P1 K1 L1 J3 J2 S1 F1 F2 F3 F4 G2 G3 G4 M1 M2 T1 L2 J1 V1 V2
BREAK CORNEP.03 MAX
2 PLACES
.069/.073 DIA CSK 60° TO .089/.104 DIA
20-HOLES



SECTION B-B



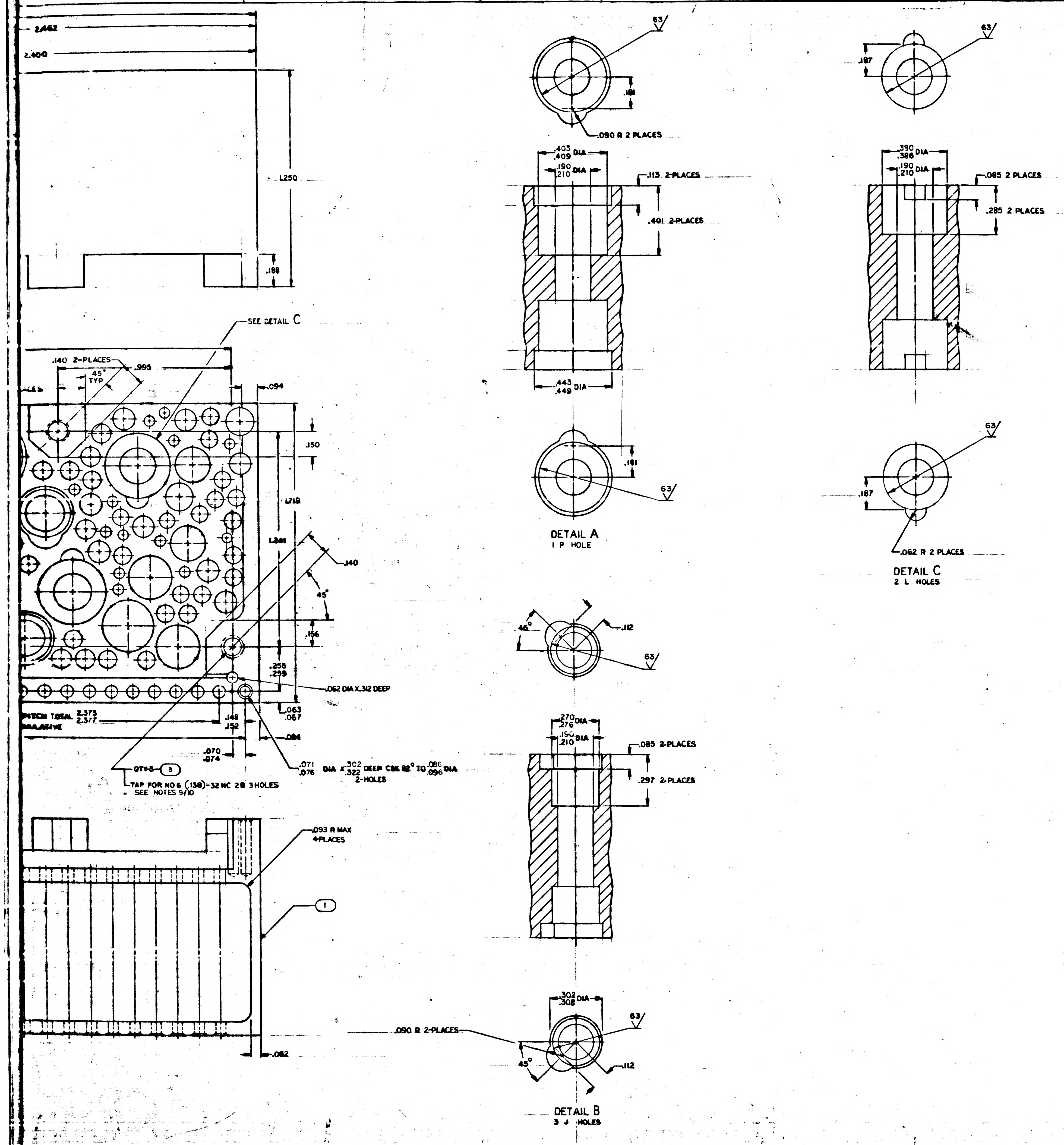
SECTION A-A
2 V HOLES

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. TRUE POSITIONING AS SHOWN IN CHART.
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125√ ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIM F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV

INCHES
0 2
PHOTOGRAPHIC SCALE ONLY

1007008 F

REVISIONS TDRR 00411			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	4-7-63	O.T. WK
B	REVISED PER TDRR		
C	REVISED PER TDRR 01177	5-8-63	O.T. WK
D	REVISED PEP TDRR 01861	7-2-63	J.J.M. WK
E	REVISED PER TDRR 03851	8-15-63	
F	REVISED PER TDRR 03853	8-15-63	


5
4
3
2
1
D
C
B
A
2.462
2.400
1.250
.188
SEE DETAIL C
.140 2-PLACES
45° TYP
.995
.094
.150
1.719
1.241
.140
45°
.156
.255
.259
.062 DIA X .312 DEEP
.063
.067
.084
PITCH TOTAL 2.373 2.377
CUMULATIVE
.148
.152
.070
.074
.071
.076
DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
QTY-3 3
TAP FOR NO 6 (.138)-32 NC 2B 3 HOLES
SEE NOTES 9/10
.093 R MAX 4-PLACES
1
.062
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
DETAIL A
1 P HOLE
.187
.390 .386 DIA
.190 .210 DIA
.085 2 PLACES
.285 2 PLACES
.062 R 2 PLACES
DETAIL C
2 L HOLES
48°
.112
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
.090 R 2-PLACES
45°
DETAIL B
3 J HOLES

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS1209-C0620	INSERT, SCREW LOCKING	2
1	1007008-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007016	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS .XXX ± .005 .XX ± .02 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN Ed Ponzo DATE 8 Jan 63
CHECKED 14 Feb 63
APPROVAL 15 Feb 63
APPROVAL
NASA APPROVAL 4/10/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
TERNARY CURRENT SWITCH
COMPUTER OUTPUT

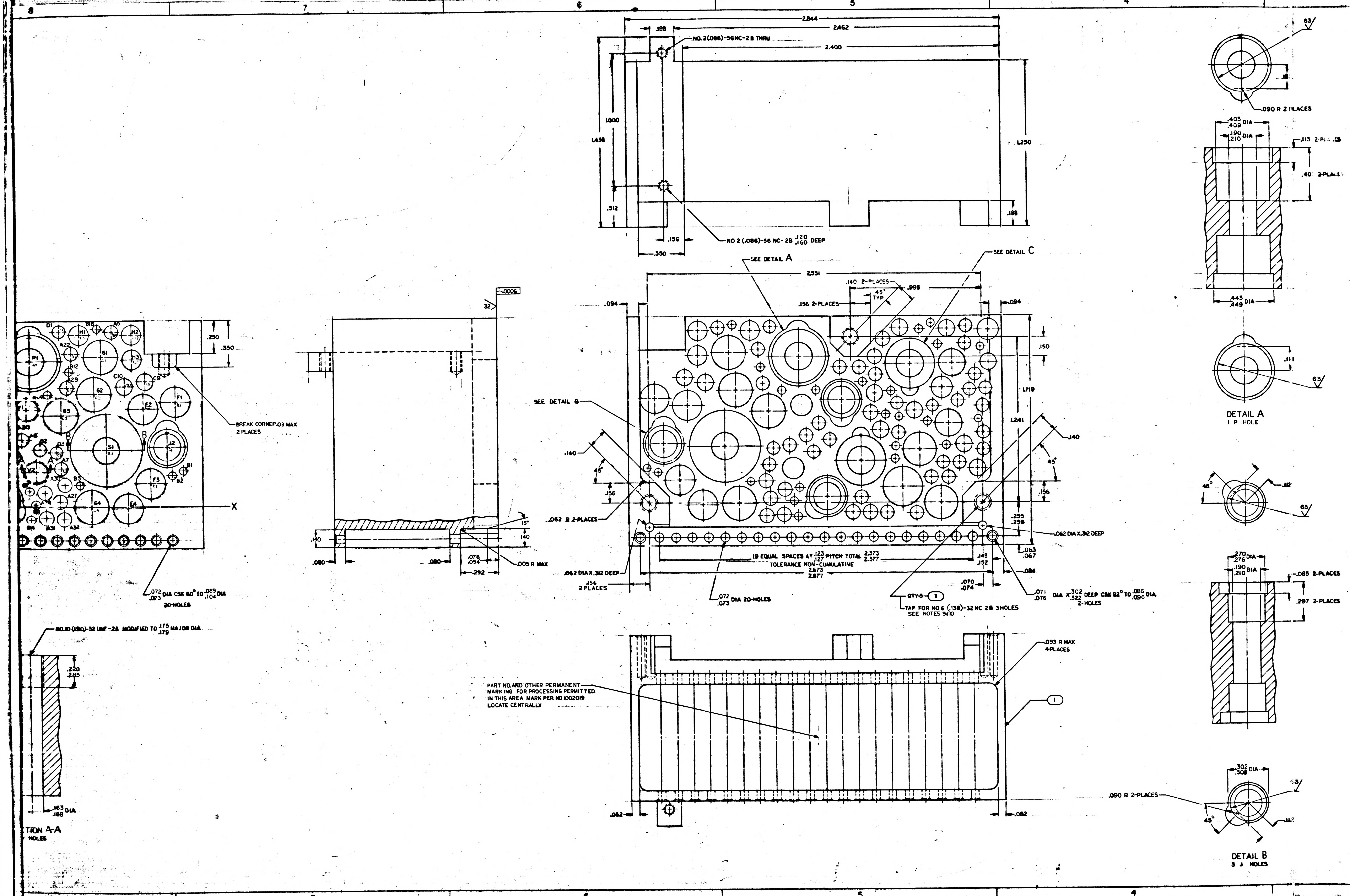
CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007008
SCALE 5/1 | WT | SHEET OF

1007008 F

INCHES
PHOTOGRAPHIC SCALE ONLY

E3

1007008


8
7
6
5
4
2.844
2.462
.188
NO. 2(.086)-56NC-2B THRU
2.400
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120 .160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
.995
45° TYP
.156 2-PLACES
.094
.094
.150
1.719
1.241
SEE DETAIL B
.140
.140
45°
45°
.156
.156
.062 R 2-PLACES
.255
.259
.062 DIA X .312 DEEP
.063
.067
.062 DIA X .312 DEEP
19 EQUAL SPACES AT .123 .127 PITCH TOTAL 2.373 2.377
TOLERANCE NON-CUMULATIVE
2.673
2.677
.148
.152
.084
.156 2 PLACES
.070
.074
.072 .073 DIA 20-HOLES
QTY-3 3
TAP FOR NO 6 (.138)-32 NC 2B 3HOLES
SEE NOTES 9/10
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA
2-HOLES
.0006
32
.080
.080
.140
.140
15°
.078
.094
.292
.005 R MAX
D1
B16
A5
H1
H2
A22
G1
H3
P1
B12
C10
C9
A29
G2
F2
F1
G3
A6
B2
D3
S1
J2
A7
V2
A37
B3
F3
B1
B2
A27
G4
E4
A31
A32
B
B
A
X
.250
.350
BREAK CORNER .03 MAX
2 PLACES
.072 .073 DIA CSK 60° TO .089 .104 DIA
20-HOLES
NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA
.220
.285
.163
.168 DIA
TION A-A
HOLES
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA MARK PER ND 1002019 LOCATE CENTRALLY
.093 R MAX
4-PLACES
1
.062
.062
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.115 2-PLACES
.40 2-PLACES
.443 .449 DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
3 J HOLES

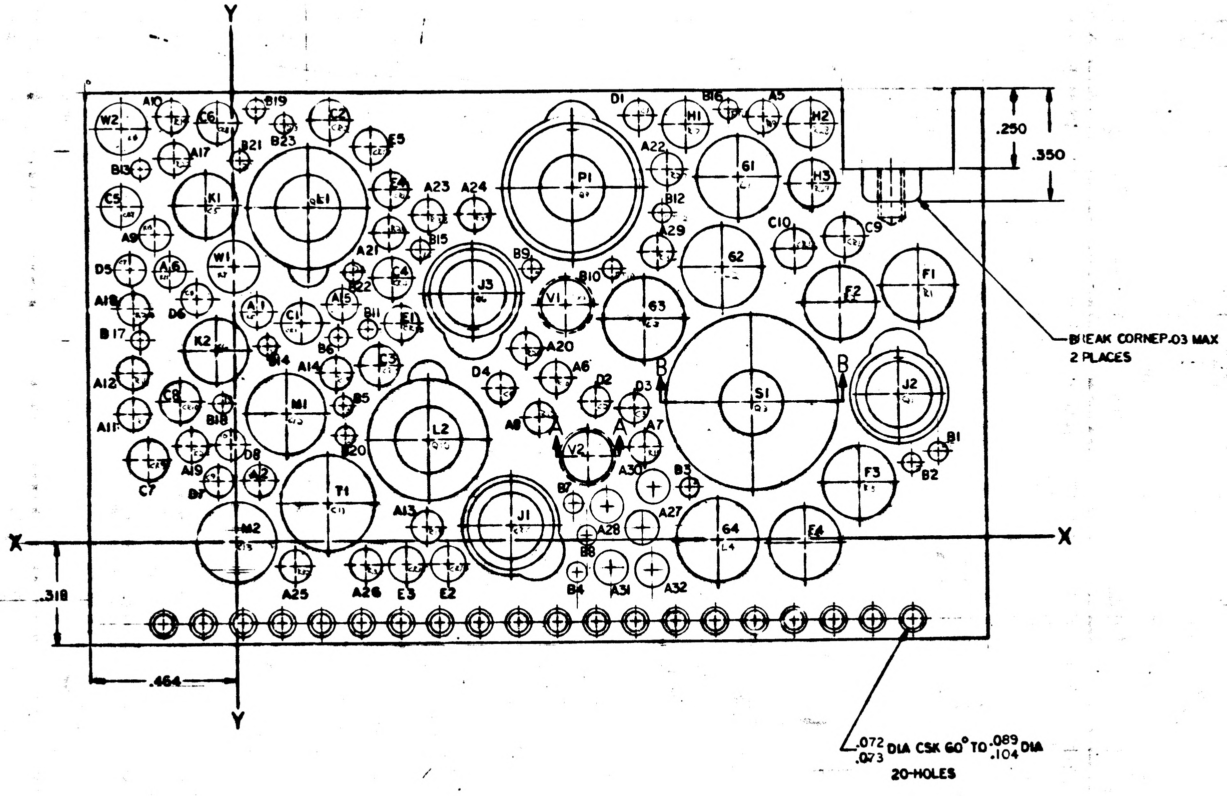
INCHES
0 2
PHOTOGRAPHIC SCALE ONLY

1-2

1007008

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⊕ DIA	HOLE DIA	QTY
A1	.072	.718	.006	.100 .104	30
A2	.073	.191			
~~A3~~	~~-.015~~	~~.884~~			
~~A4~~	~~-.332~~	~~1.326~~			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	-.280	.961			
A10	-.195	1.326			
A11	-.324	.400			
A12	-.322	.528			
A13	.605	.044			
A14	.318	.526			
A15	.340	.740			
A16	-.207	.844			
A17	-.188	1.197			
A18	-.321	.728			
A19	-.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	-.076			
A26	.408	-.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268	.006	.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	-0.100			
B5	.340	.422			
B6	.324	.636			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	-.292	1.164			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	-.295	.629			
B18	-.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.210	.684	.006	.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	-.354	1.048			
C6	-.049	1.307			
C7	-.276	.258			
C8	-.176	.438			
C9	1.940	.943			
C10	1.779	.905			

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⊕ DIA	HOLE DIA	QTY
D1	1.292	1.324	.006	.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	-.332	.852			
D6	-.118	.760			
D7	-.056	.151			
D8	-.018	.304			
E1	.530	.677	.006	.108 .112	5
E2	.670	-.071			
E3	.538	-.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787	.006	.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	-.012			
G1	1.604	1.132	.006	.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295	.006	.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048	.006	SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	-.090	1.048	.006	.202 .206	2
K2	-.061	.596			
L1	.233	1.040	.006	SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398	.006	.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100	.006	SEE DETAIL A	1
S1	1.641	.428	.006	SEE SECTION B-B	1
T1	.290	.120	.006	.300 .307	1
V1	1.054	.734	.006	SEE SECTION A-A	2
V2	1.120	.260			
W1	0.000	.860	.006	.165 .169	2
W2	-.352	1.292			


Y
Y
X
X
.250
.350
.318
.464
BREAK CORNER .03 MAX
2 PLACES
B
B
A
A
W2
A10
C6
B19
B21
B23
E5
D1
B16
H1
A5
H2
B13
A17
K1
E1
P1
A22
G1
H3
C5
A23
A24
B12
C10
C9
A9
A21
B15
B9
A29
G2
F2
F1
D5
A16
D6
W1
B22
J3
B10
V1
G3
A18
A11
C1
A14
B11
E4
A20
B17
K2
A1
B14
B6
C3
D4
A6
S1
J2
A12
C8
M1
B5
L2
A8
D2
D3
A7
A15
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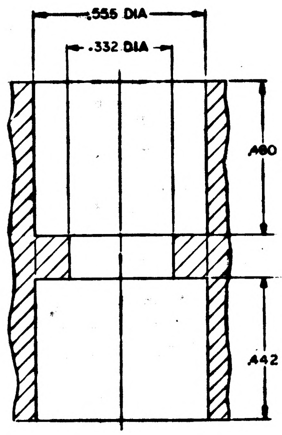
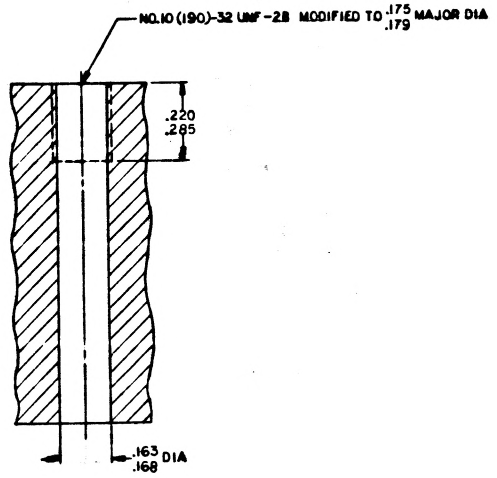
B20
V2
A30
B1
B2
C7
A19
D8
A2
T1
B7
B3
F3
A13
J1
A27
M2
A28
B8
G4
E4
A25
A26
E3
E2
B4
A31
A32
.072/.073 DIA CSK 60° TO .089/.104 DIA
20-HOLES


.555 DIA
.332 DIA
.480
.442

SECTION B-B


NO.10 (190)-32 UNF-2B MODIFIED TO .175/.179 MAJOR DIA
.220
.285
.163/.168 DIA

SECTION A-A
2 V HOLES

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. TRUE POSITIONING AS SHOWN IN CHART.
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIM F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV

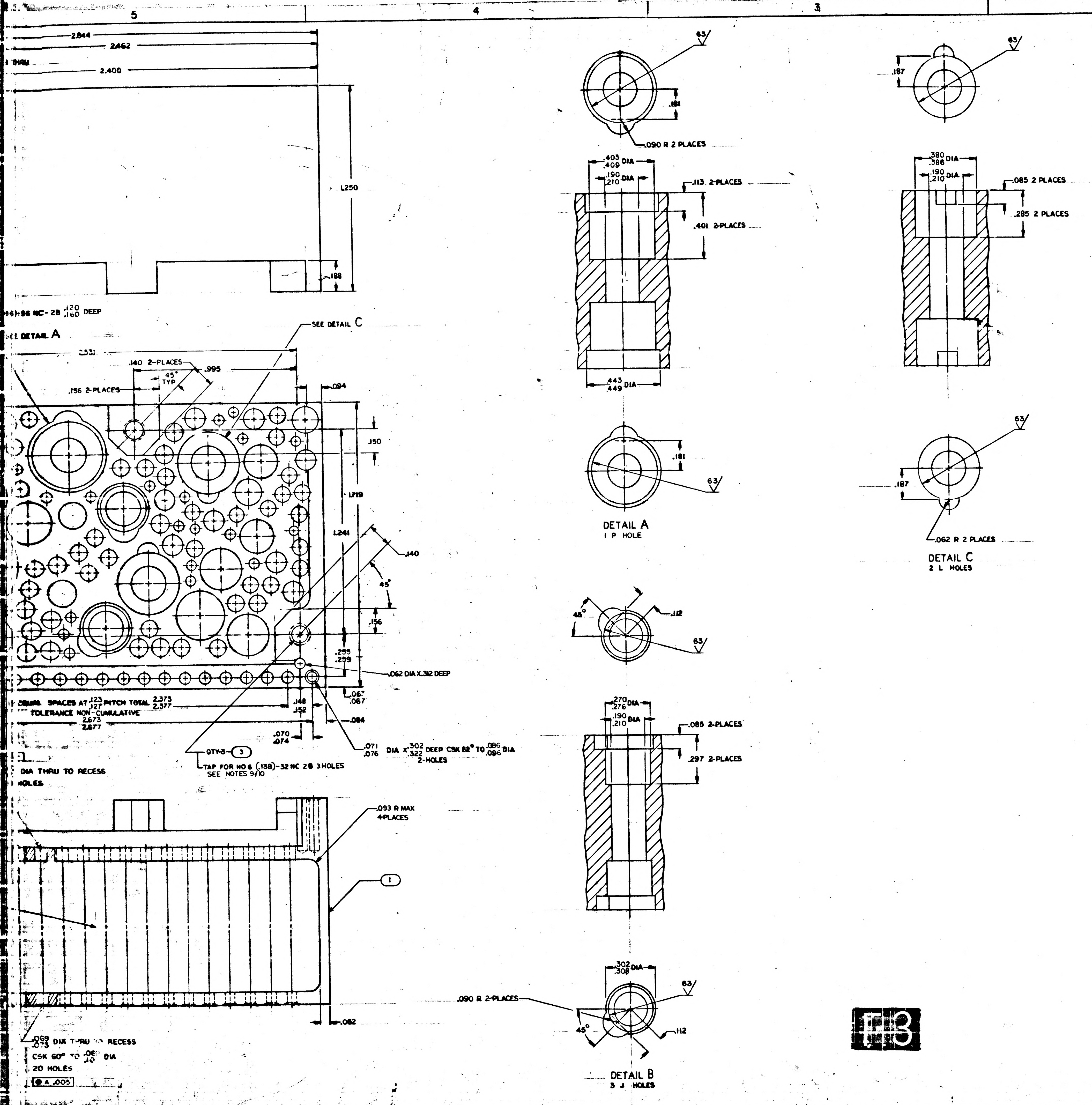
INCHES
PHOTOGRAPHIC SCALE ONLY

F1

1007008 G

REVISIONS TDRR 08 11

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	[illegible]	G.T. WR
B	REVISED PER TDRR		
C	REVISED PER TDRR 01177	5-8-63	R.T. WJC
D	REVISED PER TDRR 01861	7-2-63	[illegible]
E	REVISED PER TDRR 03851	[illegible]	[illegible]
F	REVISED PER TDRR 03853	[illegible]	[illegible]
G	REVISED PER TDRR 05452	[illegible]	[illegible]



5
4
3
2
1
D
C
B
A
2.844
2.462
2.400
THRU
1.250
.188
(.138)-36 NC-2B .120/.160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
.995
45° TYP
.156 2-PLACES
.094
.150
1.119
1.241
.140
45°
.156
.255/.259
.062 DIA X .312 DEEP
.067/.067
EQUAL SPACES AT .123/.127 PITCH TOTAL 2.373/2.377
TOLERANCE NON-CUMULATIVE
2.673/2.677
.148/.152
.084
.070/.074
.071/.076 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA 2-HOLES
QTY-3 ③
TAP FOR NO 6 (.138)-32 NC 2B 3 HOLES
SEE NOTES 9/10
DIA THRU TO RECESS
HOLES
.093 R MAX 4-PLACES
①
.082
.069/.073 DIA THRU TO RECESS
CSK 60° TO .085/.10 DIA
20 HOLES
⊕ A .005
63
.181
.090 R 2 PLACES
.403/.409 DIA
.190/.210 DIA
.113 2-PLACES
.401 2-PLACES
.443/.449 DIA
DETAIL A
1 P HOLE
.187
.380/.386 DIA
.190/.210 DIA
.085 2 PLACES
.285 2 PLACES
.062 R 2 PLACES
DETAIL C
2 L HOLES
45°
.112
.270/.276 DIA
.190/.210 DIA
.085 2-PLACES
.297 2-PLACES
.302/.308 DIA
.090 R 2-PLACES
DETAIL B
3 J HOLES

F3

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS1209-C0620	INSERT, SCREW LOCKING	2
1	1007008-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007016	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ±.005 XX ±.02 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN Ed Rosseau DATE 8 Jan 63
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

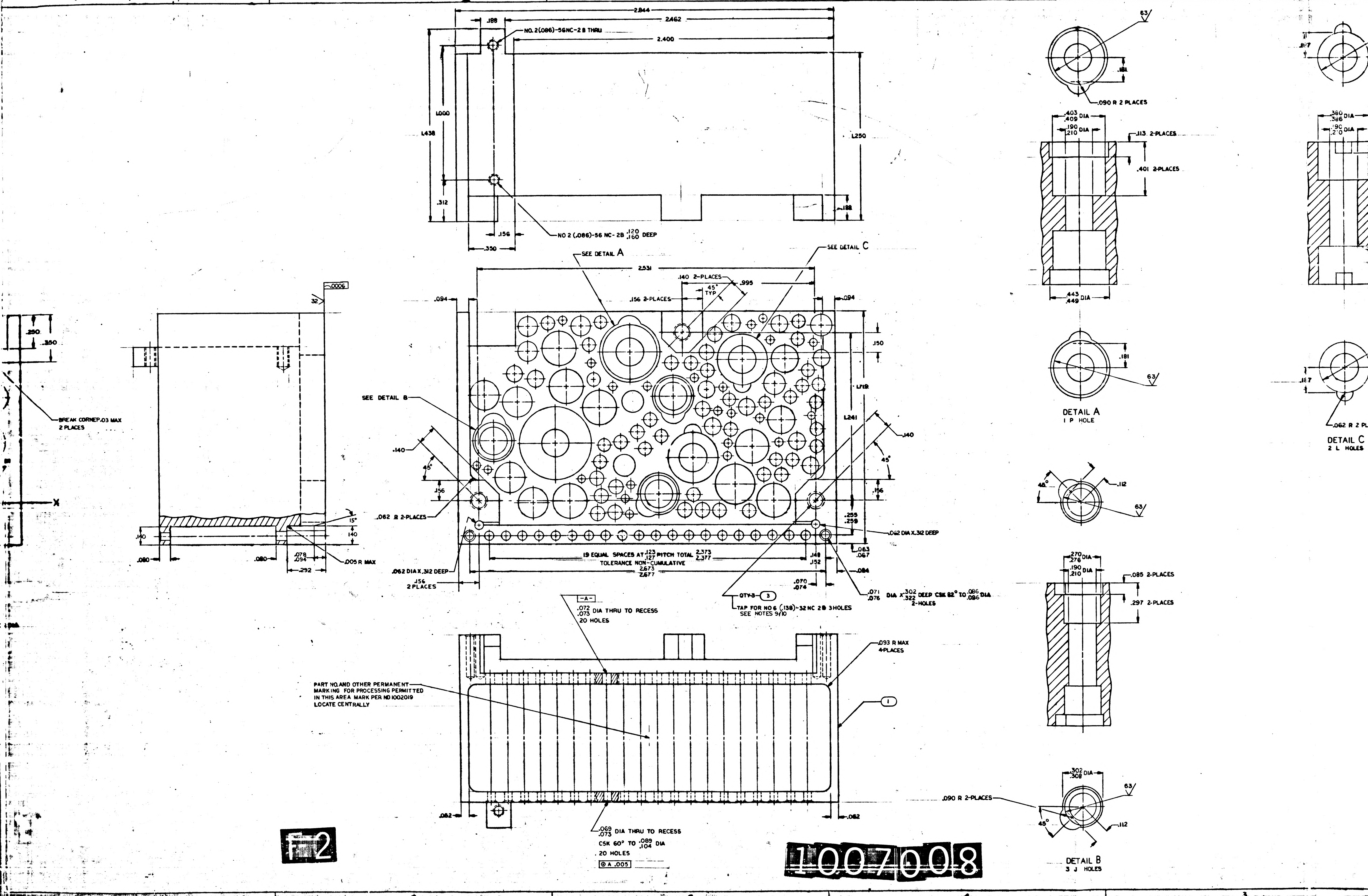
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
TERNARY CURRENT SWITCH
COMPUTER OUTPUT

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007008
SCALE 5/1 | WT | SHT 1 OF

1007008 G

INCHES
PHOTOGRAPHIC SCALE ONLY

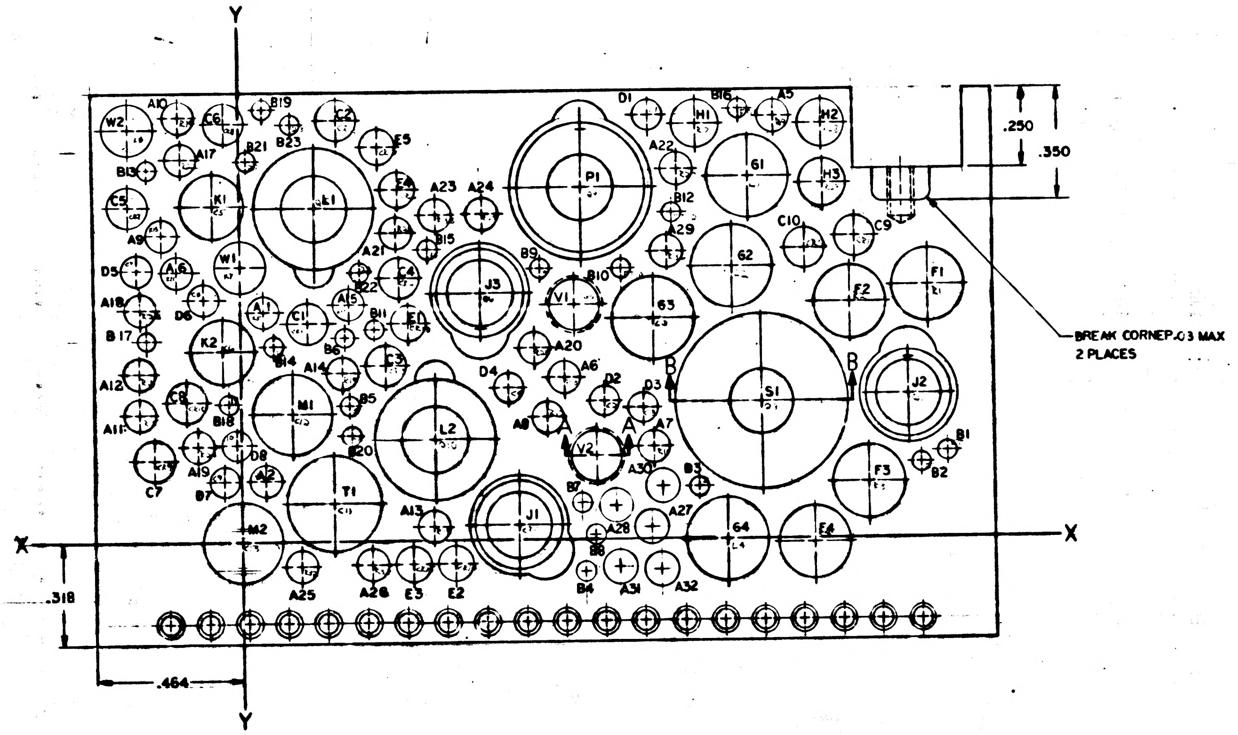

7
6
5
4
3
2.844
.188
2.462
NO. 2(.086)-56NC-2B THRU
2.400
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120 .160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
.995
45° TYP
.156 2-PLACES
.094
.094
.150
1.719
1.241
SEE DETAIL B
.140
45°
.140
45°
.156
.156
.062 R 2-PLACES
.255 .259
.062 DIA X .312 DEEP
.063 .067
19 EQUAL SPACES AT .123 .127 PITCH TOTAL 2.373 2.377
TOLERANCE NON-CUMULATIVE
2.673 2.677
.148 .152
.084
.062 DIA X .312 DEEP
.156 2 PLACES
.070 .074
QTY-3 (3)
TAP FOR NO 6 (.138)-32 NC 2B 3 HOLES SEE NOTES 9/10
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
.250
.350
BREAK CORNER .03 MAX 2 PLACES
X
32
.0005
15°
.140
.140
.080
.080
.078 .094
.292
.005 R MAX
-A-
.072 .073 DIA THRU TO RECESS 20 HOLES
.093 R MAX 4-PLACES
(1)
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA MARK PER ND 1002019 LOCATE CENTRALLY
.082
.082
.069 .073 DIA THRU TO RECESS
CSK 60° TO .089 .104 DIA
20 HOLES
◎ A .005
F 2
1007008
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
3 J HOLES
.187
.380 .386 DIA
.190 .210 DIA
.187
.062 R 2 PL
DETAIL C
2 L HOLES
INCHES
PHOTOGRAPHIC SCALE ONLY

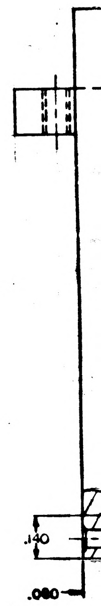
SEE NOTE 12

HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
A1	.072	.718		.100 .104	30
A2	.073	.191			
~~A3~~	~~−.015~~	~~.884~~			
~~A4~~	~~−.332~~	~~1.326~~			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	−.250	.961			
A10	−.195	1.326			
A11	−.324	.400			
A12	−.322	.528			
A13	.605	.044			
A14	.318	.526			
A15	.340	.740			
A16	−.207	.844			
A17	−.188	1.197			
A18	−.321	.728			
A19	−.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	−.076			
A26	.408	−.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	−0.088			
A32	1.320	−0.096			
B1	2.229	.268		.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	−0.100			
B5	.340	.422			
B6	.324	.636			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	−.292	1.164			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	−.295	.629			
B18	−.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.210	.684		.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	−.354	1.048			
C6	−.049	1.307			
C7	−.276	.258			
C8	−.176	.438			
C9	1.940	.943			
C10	1.779	.905			

SEE NOTE 12

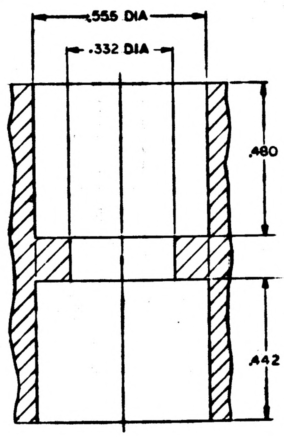
HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
D1	1.292	1.324		.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	−.332	.852			
D6	−.118	.760			
D7	−.056	.191			
D8	−.018	.304			
E1	.530	.677		.108 .112	5
E2	.670	−.071			
E3	.538	−.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787		.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	−.012			
G1	1.604	1.132		.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295		.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048		SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	−.090	1.048		.202 .206	2
K2	−.061	.596			
L1	.233	1.040		SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398		.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100		SEE DETAIL A	1
S1	1.641	.428		SEE SECTION B-B	1
T1	.290	.120		.300 .307	1
V1	1.054	.734		SEE SECTION A-A	2
V2	1.120	.260			
W1	0.000	.860		.165 .169	2
W2	−.352	1.292			



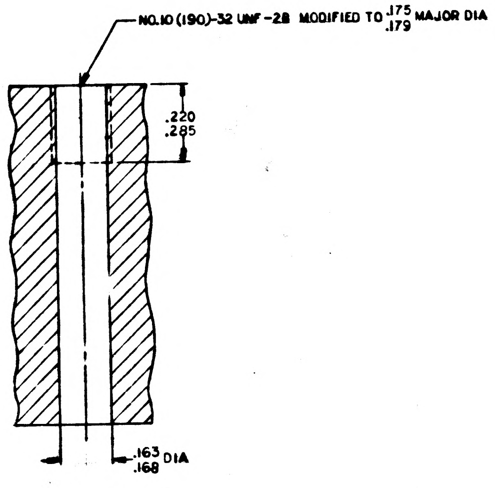


NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. ~~TRUE POSITIONING AS SHOWN IN CHART.~~
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO.2 PER MS 33646. BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV
12. THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN AN ADJACENT HOLE OR ON AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART



SECTION B-B



SECTION A-A
2 V HOLES

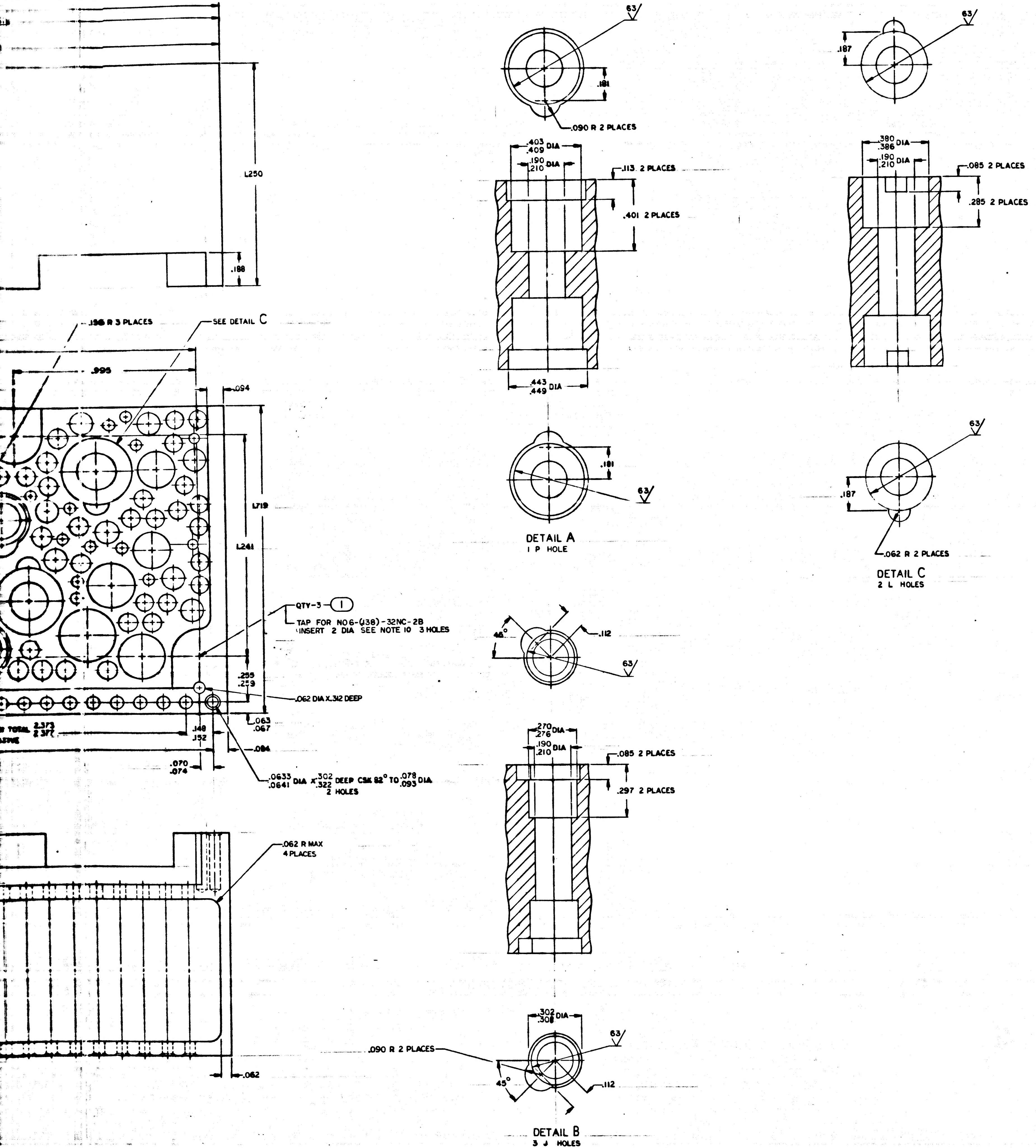
F-1

1007008

INCHES
PHOTOGRAPHED SCALE ONLY

1007008

	REVISIONS TORR 00411		
SYM	DESCRIPTION	DATE	APPROVAL


63
.181
.090 R 2 PLACES
.187
.403
.409 DIA
.190
.210 DIA
.113 2 PLACES
.401 2 PLACES
.443
.449 DIA
.380
.386 DIA
.190
.210 DIA
.085 2 PLACES
.285 2 PLACES
1.250
.188
.156 R 3 PLACES
SEE DETAIL C
.995
.094
1.719
1.241
DETAIL A
1 P HOLE
.062 R 2 PLACES
DETAIL C
2 L HOLES
QTY-3 (1)
TAP FOR NO 6-(.138)-32NC-2B
INSERT 2 DIA SEE NOTE 10 3 HOLES
40°
.112
.255
.259
.062 DIA X .312 DEEP
TOTAL 2.373
2.377
.148
.152
.063
.067
.084
.070
.074
.0633
.0641 DIA X .302
.322 DEEP CSK 82° TO .078
.093 DIA
2 HOLES
.270
.276 DIA
.190
.210 DIA
.085 2 PLACES
.297 2 PLACES
.062 R MAX
4 PLACES
.302
.308 DIA
.090 R 2 PLACES
45°
.112
.062
DETAIL B
3 J HOLES
4
3
2
1
D
C
B
A

MASTER

3	NAS 1222-06E	INSERT, SCREW LOCKING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±1/2°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT
—

FINAL FINISH
SEE NOTE 11

1007016	
NEXT ASSY	USED ON
APPLICATION	

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

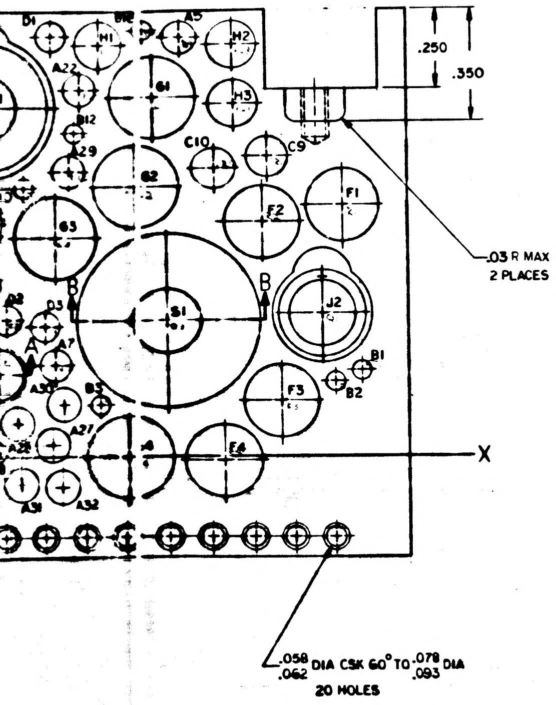
DRAWN Ed Powers DATE 8 Jul 63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 2/14/63
MIT APPROVAL

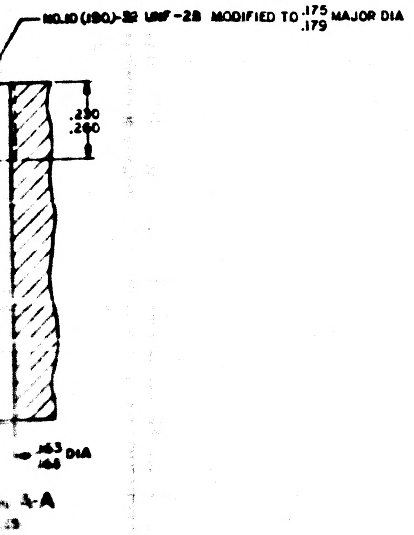
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

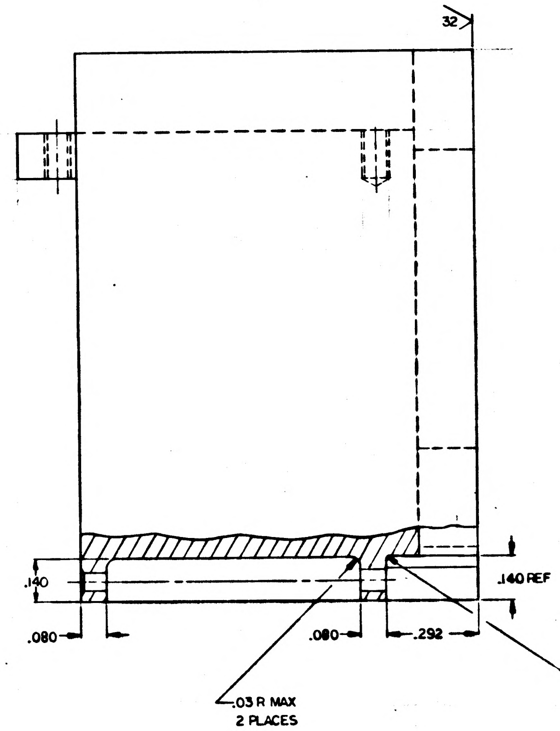
HEATSINK
TERNARY CURRENT SWITCH
COMPUTER OUTPUT

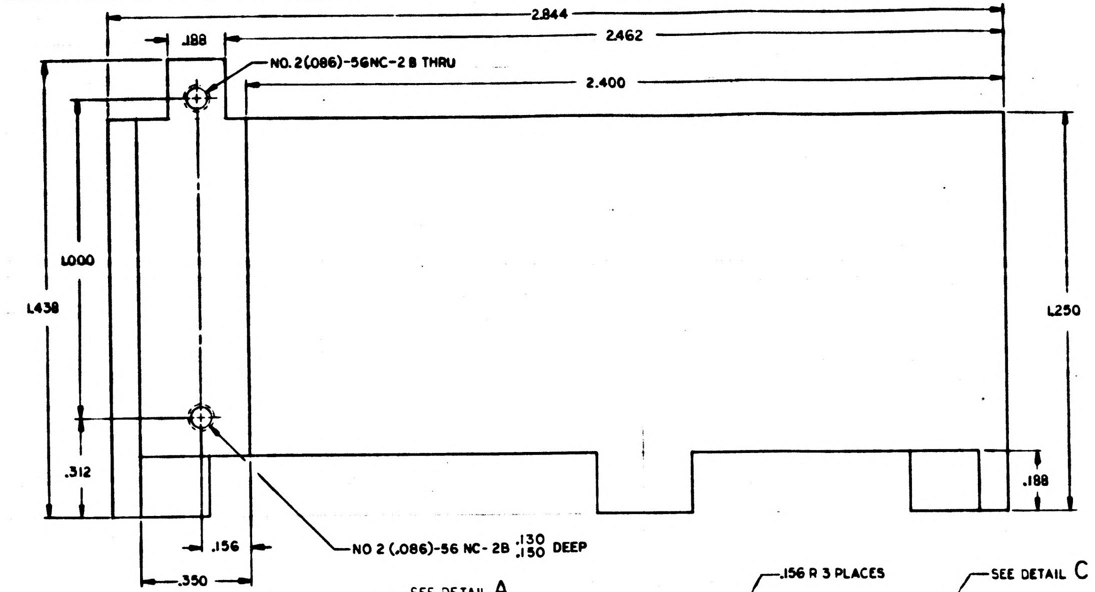
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007008
SCALE 5/1
WT
SHEET 1 OF 1

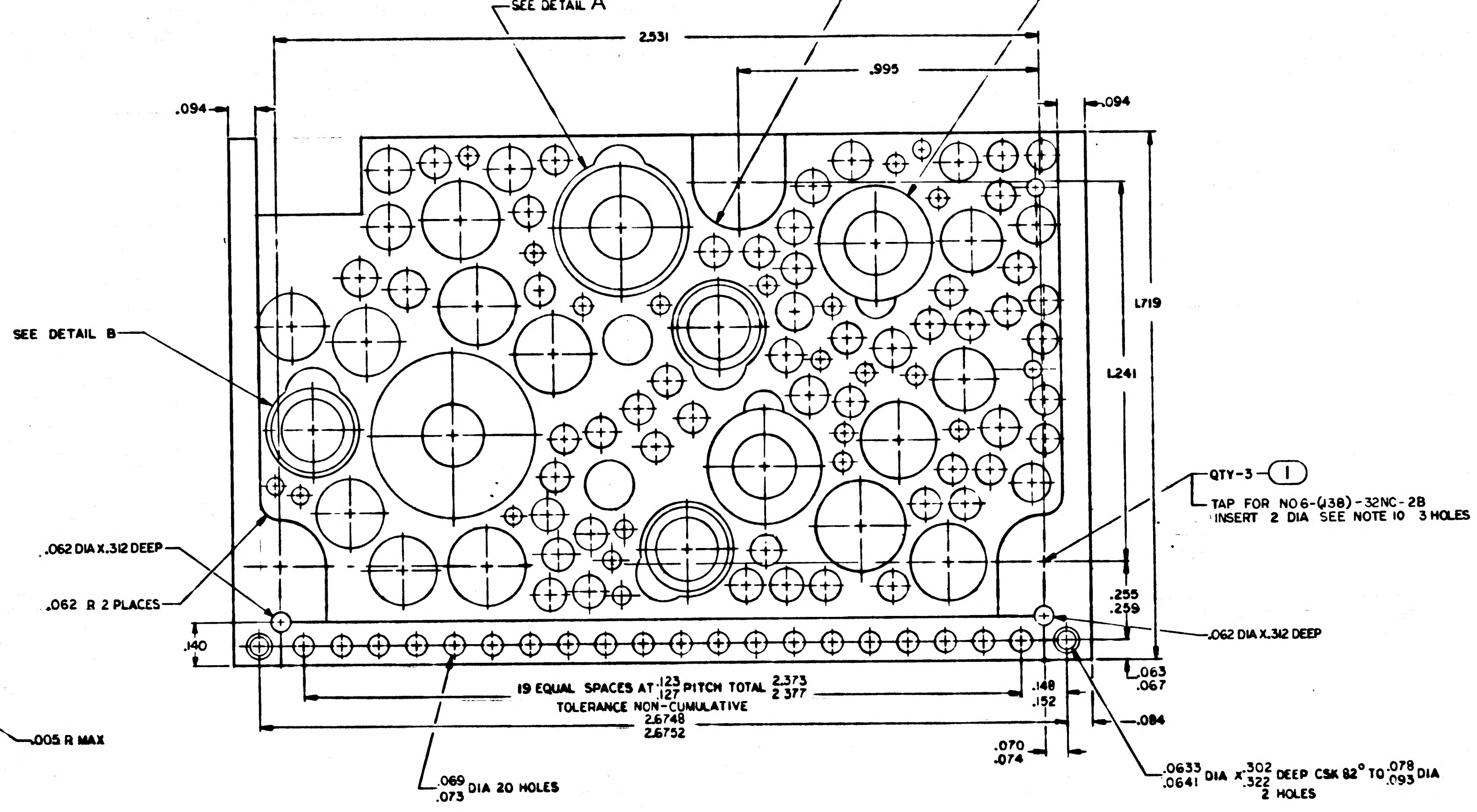
1007008

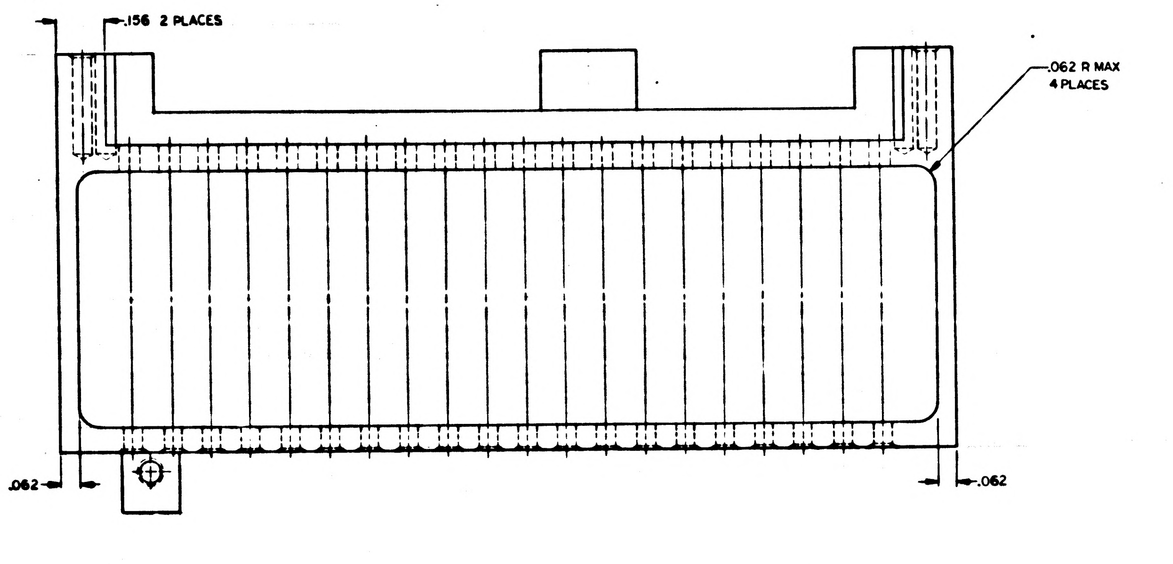

D1
H1
B12
A5
H2
A22
G1
H3
B12
A29
C10
C9
G2
F2
F1
G3
S1
B
B
J2
D3
A7
A
B1
B2
A30
B5
F3
A27
A28
E4
A31
A32
X
.250
.350
.03 R MAX
2 PLACES
.058
.062 DIA CSK 60° TO .078
.093 DIA
20 HOLES

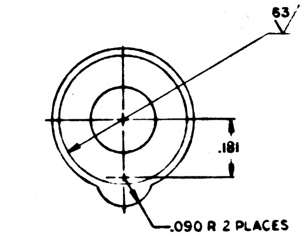

NO.10 (.190)-32 UNF-2B MODIFIED TO .175
.179 MAJOR DIA
.230
.260
.163
.166 DIA
A-A

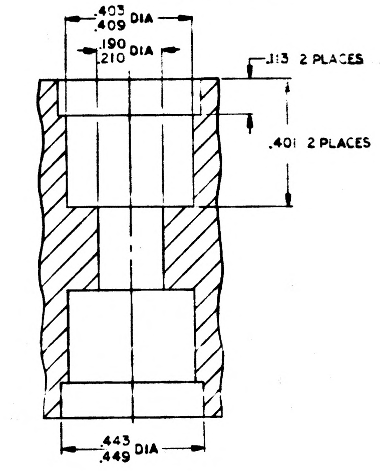

32
.140
.140 REF
.080
.080
.292
.03 R MAX
2 PLACES
.005 R MAX

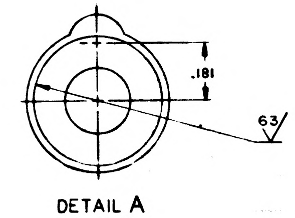

2.844
.188
2.462
NO. 2 (.086)-56NC-2B THRU
2.400
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .130
.150 DEEP


SEE DETAIL A
.156 R 3 PLACES
SEE DETAIL C
2.531
.995
.094
.094
1.719
1.241
SEE DETAIL B
QTY-3 — 1
TAP FOR NO 6-(.138)-32NC-2B
INSERT 2 DIA SEE NOTE 10 3 HOLES
.062 DIA X.312 DEEP
.062 R 2 PLACES
.255
.259
.062 DIA X.312 DEEP
.140
.063
.067
19 EQUAL SPACES AT .123
.127 PITCH TOTAL 2.373
2.377
TOLERANCE NON-CUMULATIVE
2.6748
2.6752
.148
.152
.084
.070
.074
.069
.073 DIA 20 HOLES
.0633
.0641 DIA X .302
.322 DEEP CSK 82° TO .078
.093 DIA
2 HOLES

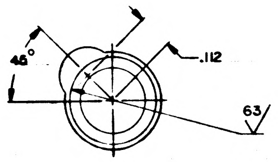

.156 2 PLACES
.062 R MAX
4 PLACES
.062
.062

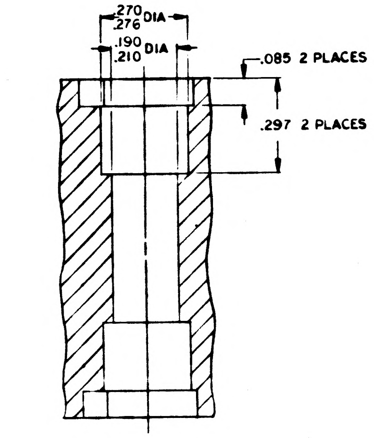

63
.181
.090 R 2 PLACES

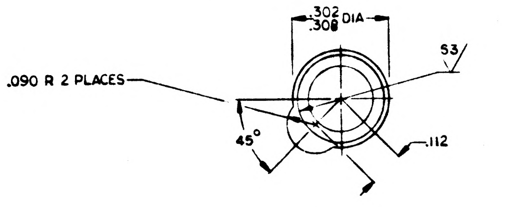

.403
.409 DIA
.190
.210 DIA
.113 2 PLACES
.401 2 PLACES
.443
.449 DIA



DETAIL A
1 P HOLE




.270
.276 DIA
.190
.210 DIA
.085 2 PLACES
.297 2 PLACES


.302
.308 DIA
53
.090 R 2 PLACES
45°
.112

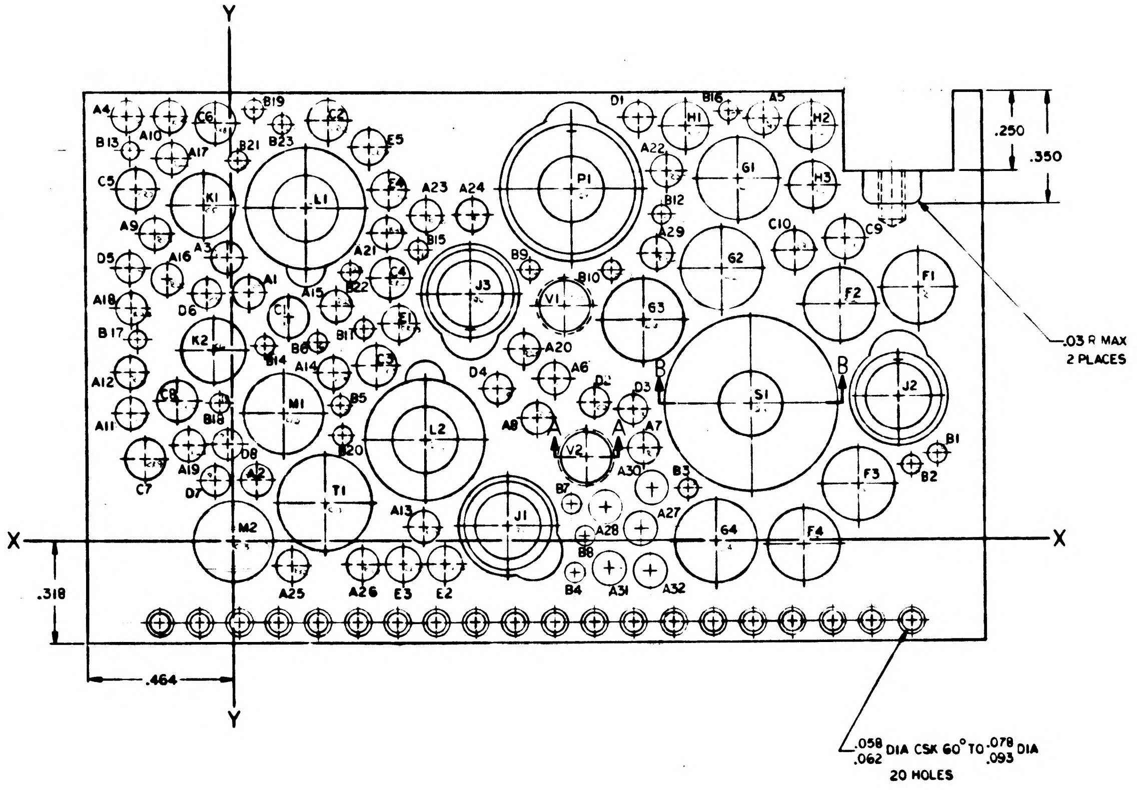
DETAIL B
3 J HOLES

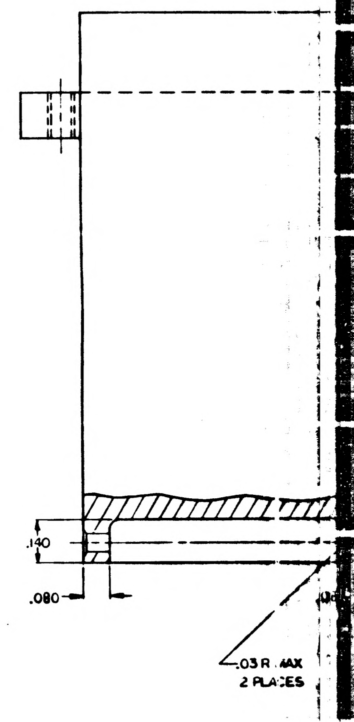
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.052	.774	.006	.100 .104	32
A2	.073	.191			
A3	−.015	.884			
A4	−.332	1.326			
A5	1.684	1.318			
A6	1.020	.50[illegible]			
A7	1.299	.291			
A8	.965	.385			
A9	−.245	.961			
A10	−.195	1.326			
A11	−.324	.400			
A12	−.322	.528			
A13	.605	.044			
A14	.318	.526			
A15	.331	.735			
A16	−.207	.819			
A17	−.188	1.197			
A18	−.321	.728			
A19	−.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	−.076			
A26	.408	−.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268	.006	.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	−0.100			
B5	.340	.422			
B6	.271	.620			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	−.303	1.222			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	−.295	.629			
B18	−.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.177	.700	.006	.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	−.303	1.098			
C6	−.049	1.307			
C7	−.276	.258			
C8	−.176	.438			
C9	1.940	.943			
C10	1.779	.905			

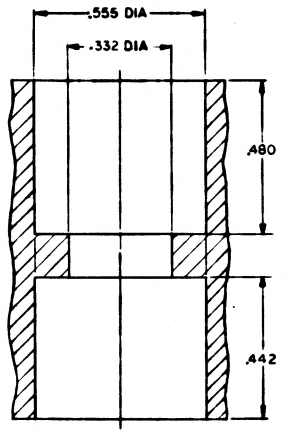
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
D1	1.292	1.324	.006	.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	−.324	.852			
D6	−.080	.774			
D7	−.056	.191			
D8	−.018	.304			
E1	.530	.677	.006	.108 .112	5
E2	.670	−.071			
E3	.538	−.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.737	.006	.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	−.012			
G1	1.604	1.132	.006	.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295	.006	.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048	.006	SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	−.090	1.048	.006	.202 .206	2
K2	−.061	.596			
L1	.233	1.040	.006	SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398	.006	.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100	.006	SEE DETAIL A	1
S1	1.641	.428	.006	SEE SECTION B-B	1
T1	.290	.120	.006	.300 .307	1
V1	1.054	.734	.006	SEE SECTION A-A	2
V2	1.120	.260			

NOTES

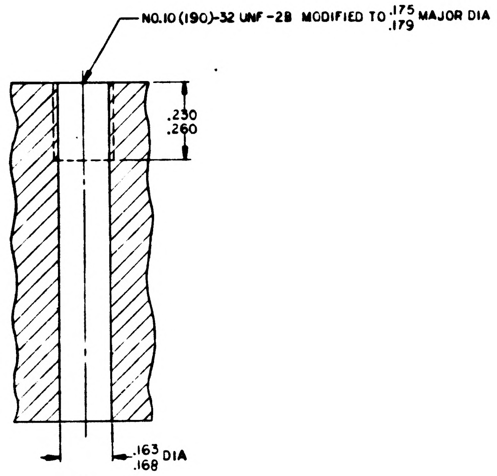
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL: ALUMINUM 6061-T6 PER QQ-A-325
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. TRUE POSITIONING AS SHOWN IN CHART.
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125√ ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO. 1 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO. 1 PER MS 33537 EXCEPT DIM F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: ANODIZE PER MIL-A-8625 DYED BLACK, PLUG INSERT HOLES


Y
X
.250
.350
.03 R MAX
2 PLACES
.318
.464
.058/.062 DIA CSK 60° TO .078/.093 DIA
20 HOLES
A
B
P1
S1
J1
J2
J3
L1
L2
M1
M2
T1
K1
K2
G1
G2
G3
G4
F1
F2
F3
F4
H1
H2
H3
V1
V2


.140
.080
.03 R MAX
2 PLACES


.555 DIA
.332 DIA
.480
.442

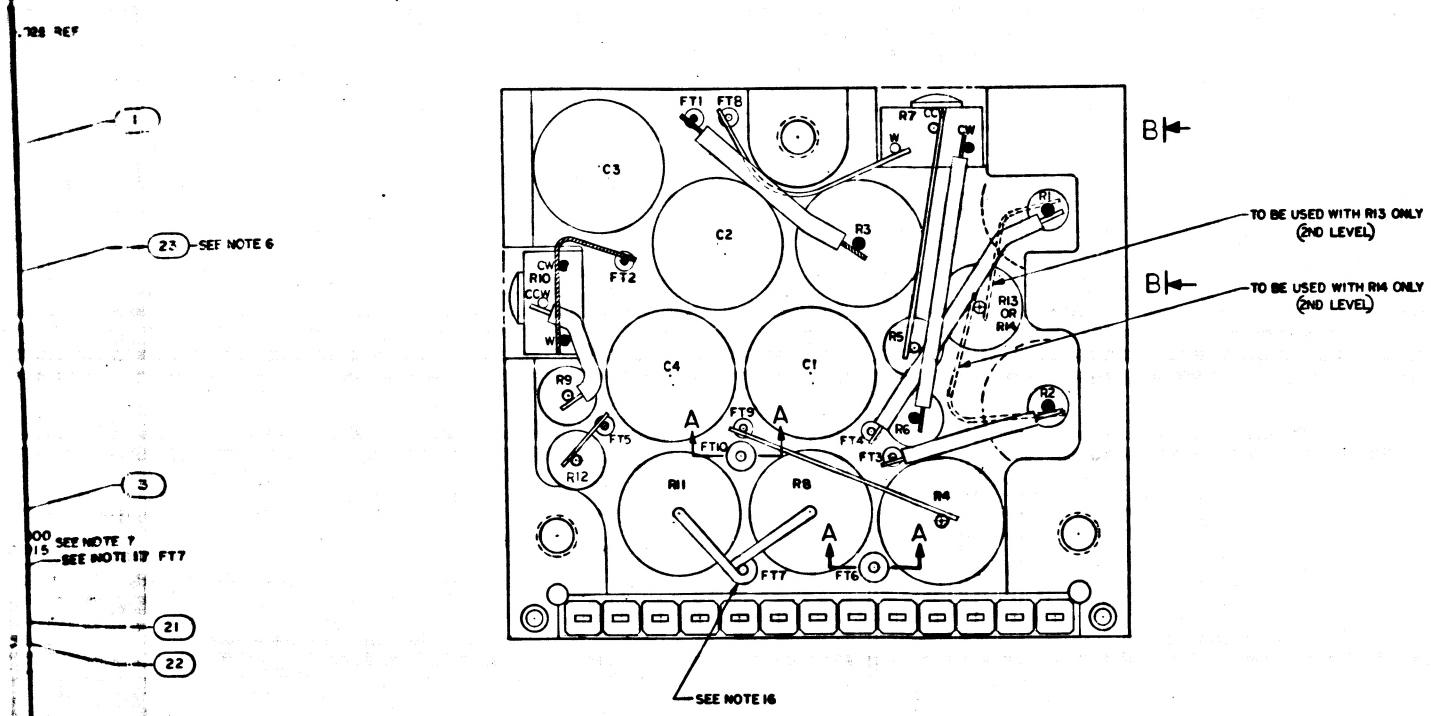
SECTION B-B


NO.10 (190)-32 UNF-2B MODIFIED TO .175/.179 MAJOR DIA
.230
.260
.163/.168 DIA

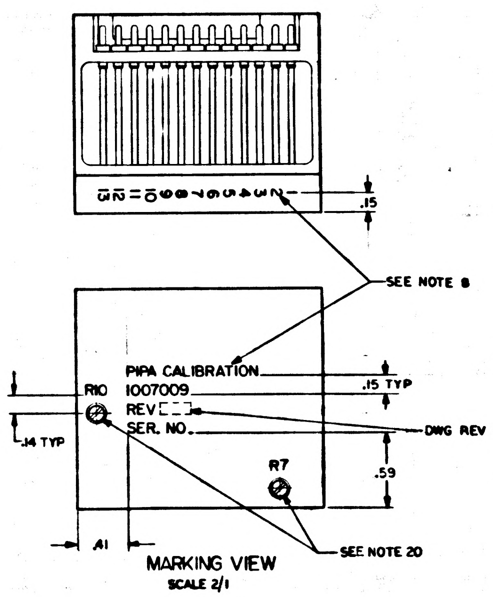
SECTION A-A
2 V HOLES

1007009 A

SYM	DESCRIPTION	DATE	APPROVAL
REVISIONS TDRR 00411			
A	REVISED PER TDRR 01011	4-65 63	D.T. WR

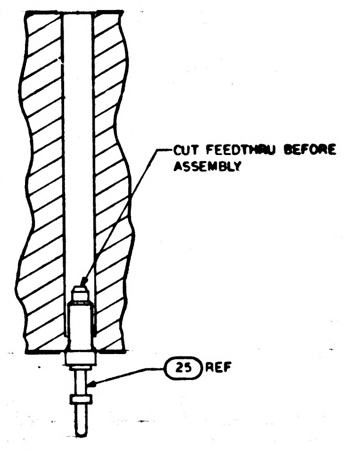


.785 REF
1
23 SEE NOTE 6
3
SEE NOTE 7
SEE NOTE 17 FT7
21
22
C3
C2
C4
C1
R3
R1
R2
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13 OR R14
FT1
FT2
FT3
FT4
FT5
FT6
FT7
FT8
FT9
FT10
CW
CCW
W
A
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
SEE NOTE 16



.15
SEE NOTE 8
PIPA CALIBRATION
1007009
REV
SER. NO.
R10
R7
.15 TYP
.14 TYP
.59
.41
DWG REV LTR
SEE NOTE 20

MARKING VIEW
SCALE 2/1



CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A
TYPICAL INSTALLATION FOR FT6 AND FT10

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010009	SCHEMATIC	REF
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006787-2	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-292.4K .25W ±1%	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007101	
1007102	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIPA CALIBRATION ASSEMBLY

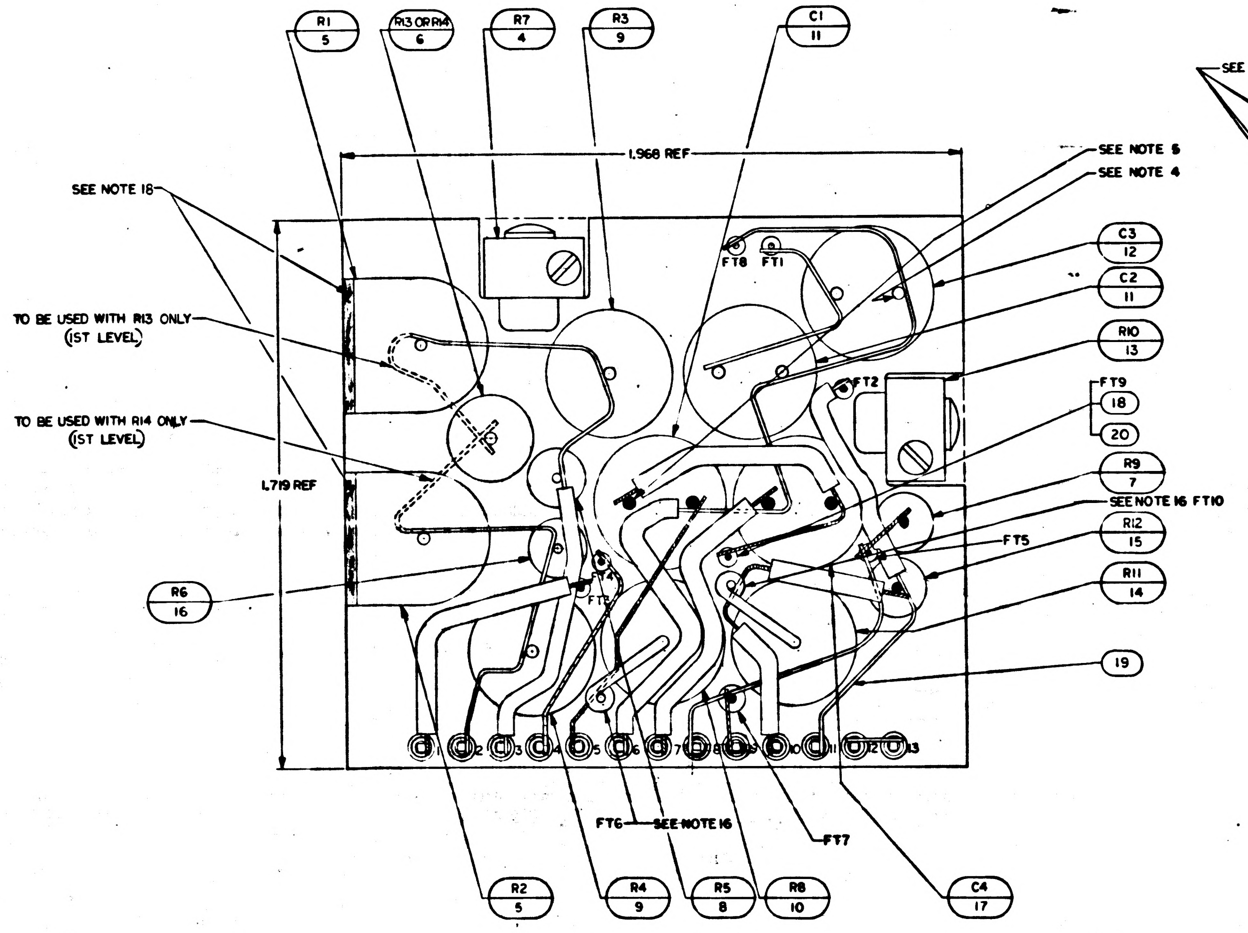
CODE IDENT NO. SIZE J NASA DRAWING NO. 1007009
SCALE 5/1 WT SHEET 1 OF 1

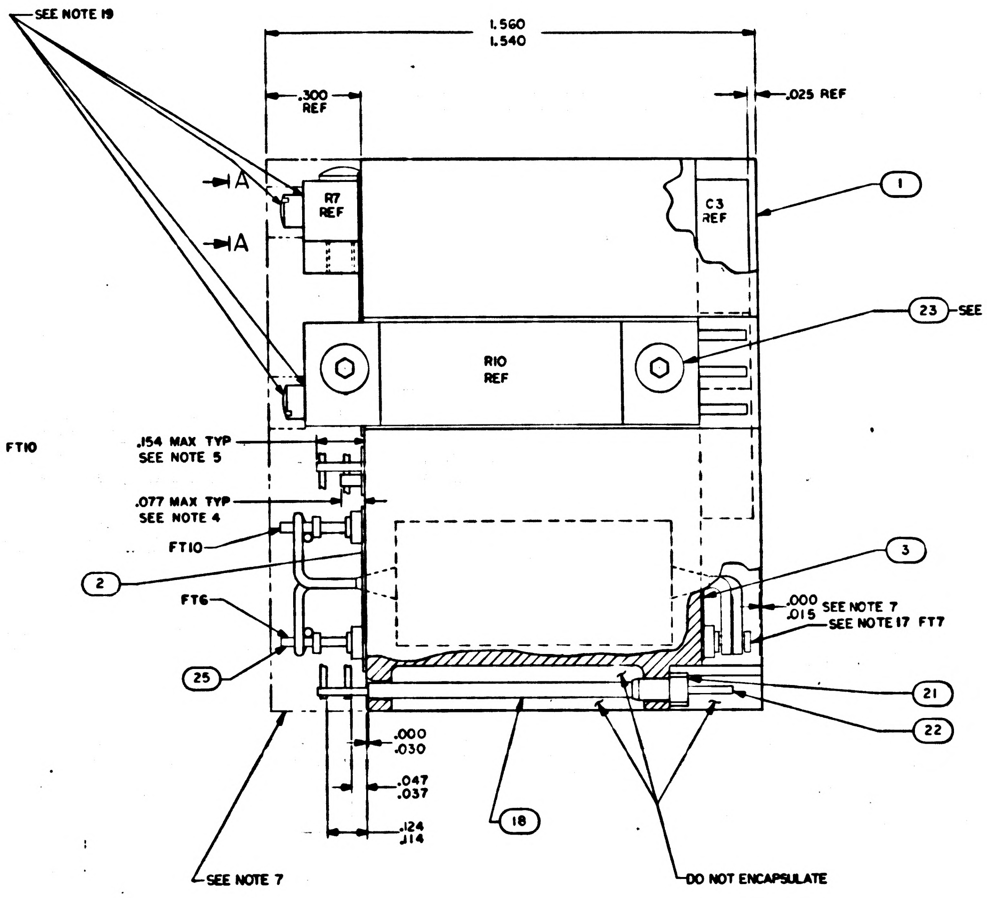
1007009 A

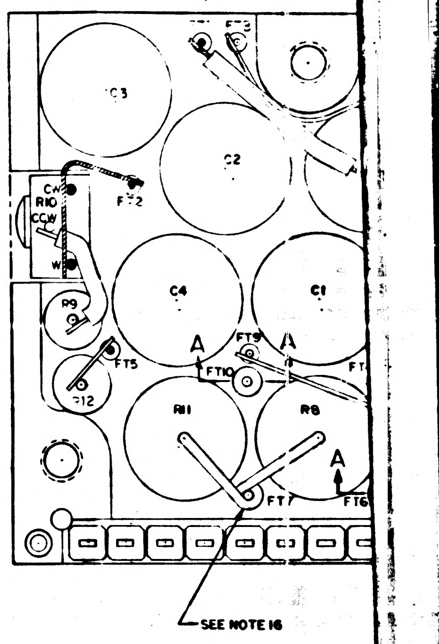
INCHES 0 1 2
PHOTOGRAPHIC SCALE ONLY

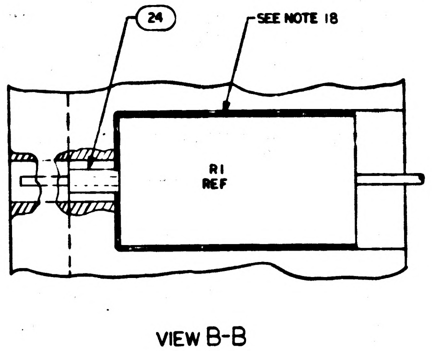
1007009

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

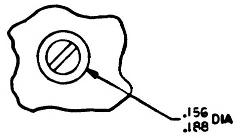

R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
1.968 REF
SEE NOTE 18
SEE NOTE 6
SEE NOTE 4
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.719 REF
FT8 FT1 FT2
C3 12
C2 11
R10 13
FT9 18 20
R9 7
SEE NOTE 16 FT10
FT5
R12 15
R11 14
R6 16
FT3
19
1 2 3 4 5 6 7 8 9 10 11 12 13
FT6
SEE NOTE 16
FT7
R2 5
R4 9
R5 8
R8 10
C4 17


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
R10 REF
23 SEE NOTE 6
.154 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
21
22
.000 .030
.047 .037
.124 .114
18
SEE NOTE 7
DO NOT ENCAPSULATE

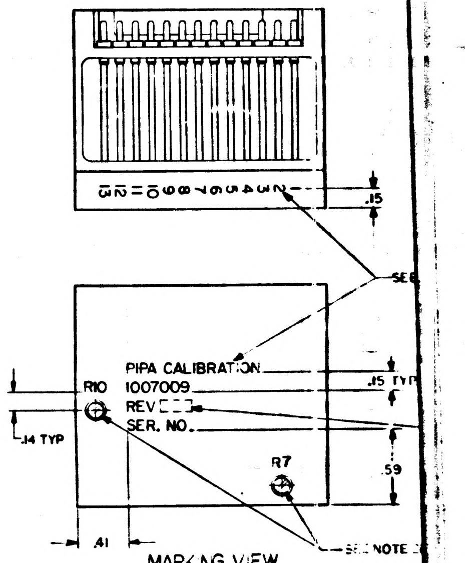

FT3
C3
C2
R10 CCW CW
FT2
W
R9
C4
C1
A
FT9
A
FT5
FT10
R12
R11
R8
A
FT7
FT6
SEE NOTE 16


24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES


13 12 11 10 9 8 7 6 5 4 3 2
.15
SEE
PIPA CALIBRATION
R10
1007009
REV
SER. NO.
.15 TYP
.14 TYP
R7
.59
.41
SEE NOTE

MARKING VIEW
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINK CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO FIND NO. 23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
8. MARK .060/.100 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 6 THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MSFC-PROC-158A
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO. 5 PER ND1002041
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER ND

CHART A

PART NO.	VALUE Ω
1010251-1	31.9K
1010251-2	36.0K
1010251-3	41.2K
1010251-4	48.2K
1010251-5	58.01K
1010251-6	72.6K
1010251-7	97.1K
1010251-8	146.0K
1010251-9	292.4K

CHART B

PART NO.	VALUE UF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

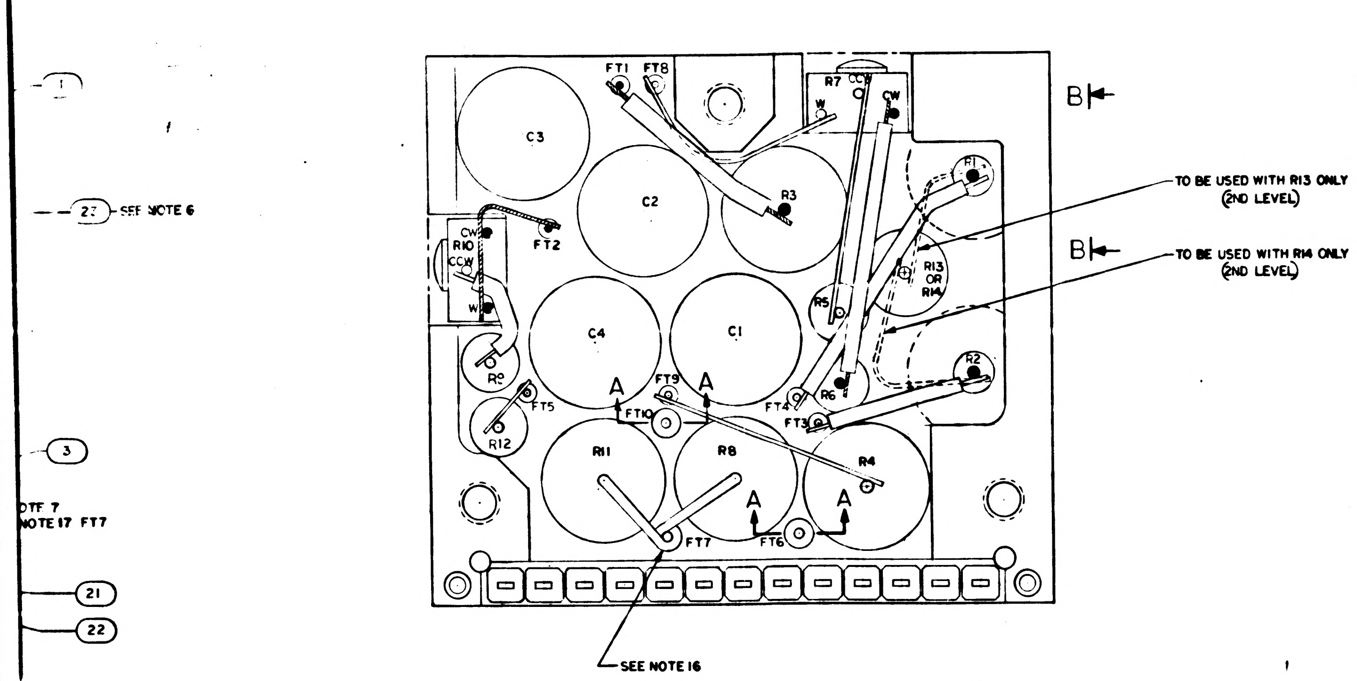
PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

B 1007009

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00411		
A	REVISED PER TDRR 01011	4-25-63	D.T. WK
B	REVISED PER TDRR 01179	5-8-63	D.T WK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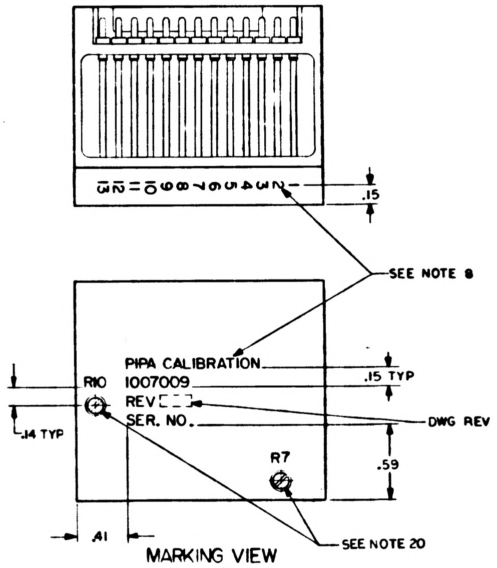
22 - SEE NOTE 6
3
NOTE 7 FT7
NOTE 17 FT7
21
22
FT1
FT8
R7
CCW
CW
W
C3
C2
R3
R1
CW
R10
CCW
W
FT2
R13 OR R14
R5
C4
C1
R9
FT5
FT9
FT10
A
A
R6
FT4
FT3
R2
R12
R11
R8
R4
A
A
FT7
FT6
B
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
SEE NOTE 16


13 12 11 10 9 8 7 6 5 4 3 2 1
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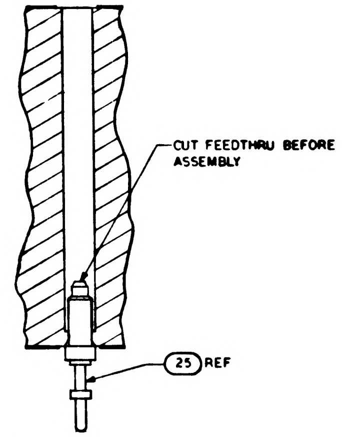
SEE NOTE 8
PIPA CALIBRATION
1007009
REV
SER. NO.
R10
R7
.15 TYP
.14 TYP
DWG REV LTR
.59
.41
SEE NOTE 20

MARKING VIEW
SCALE 2/1


CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A
TYPICAL INSTALLATION FOR FT6 AND FT10

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
010377-76	82.5K	1010377-94	105.0 K
010377-77	83.75K	1010377-95	106.25K
0377-78	85.0K	1010377-96	107.5 K
0377-79	86.25K	1010377-97	108.75K
0377-80	87.5 K	1010377-98	110.0 K
10377-81	88.75K	1010377-99	111.25K
0377-82	90.0K	1010377-100	112.5 K
0377-83	91.25K	1010377-101	113.75K
0377-84	92.5K	1010377-102	115.0K
0377-85	93.75K	1010377-103	116.25
010377-86	95.0K	1010377-104	117.5K
010377-87	96.25K		
010377-88	97.5 K		
010377-89	98.75K		
010377-90	100.0K		
0377-91	101.25K		
0377-92	102.5K		
010377-93	103.75K		

☒	1010009	SCHEMATIC	REF
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006787-2	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-292.4K .25W ±1%	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1007101	
1007102	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN Tom Gillespie DATE 10 JAN 63
CHECKED 14 Feb 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIPA CALIBRATION
ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007009
SCALE 5/1 | WT | SHEET 1 OF 1

1007009 B

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007009

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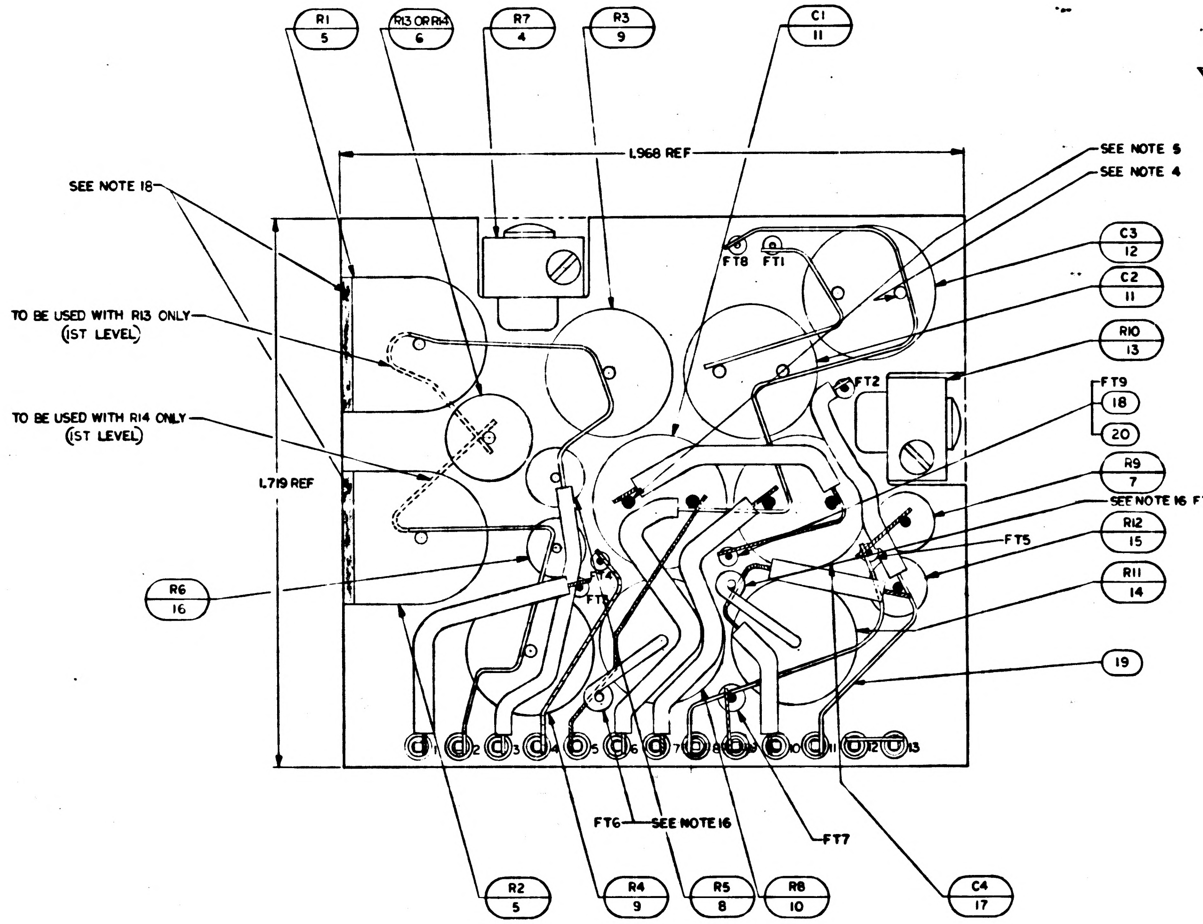
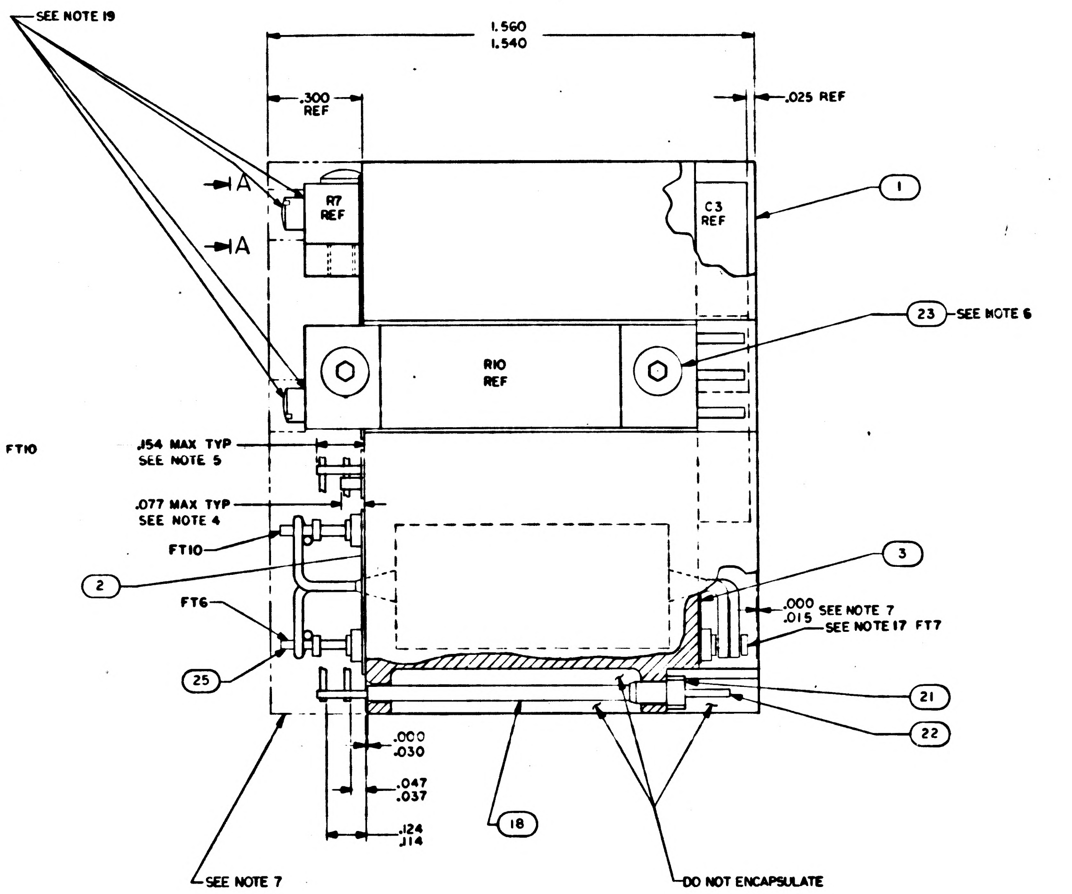
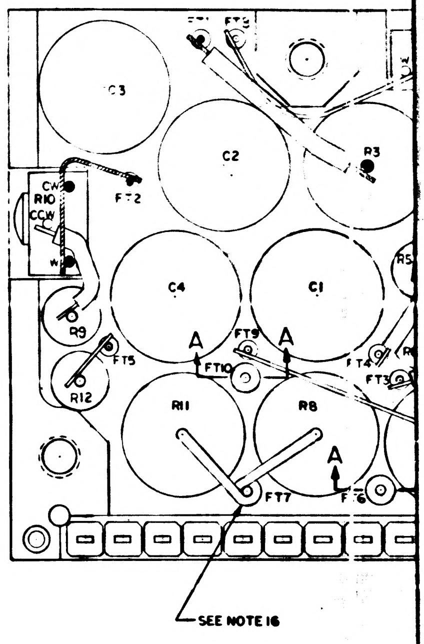
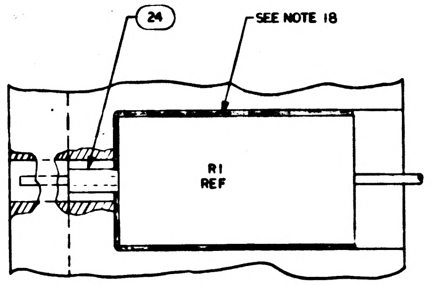
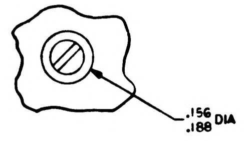

R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
1.968 REF
SEE NOTE 18
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
FT9 18 20
R9 7
SEE NOTE 16 FT10
R12 15
R11 14
19
FT8
FT1
FT2
FT4
FT3
FT5
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.719 REF
R6 16
1 2 3 4 5 6 7 8 9 10 11 12 13
FT6
SEE NOTE 16
FT7
R2 5
R4 9
R5 8
R8 10
C4 17


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
R10 REF
23
SEE NOTE 6
.154 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
21
22
.000 .030
.047 .037
.124 .114
18
SEE NOTE 7
DO NOT ENCAPSULATE

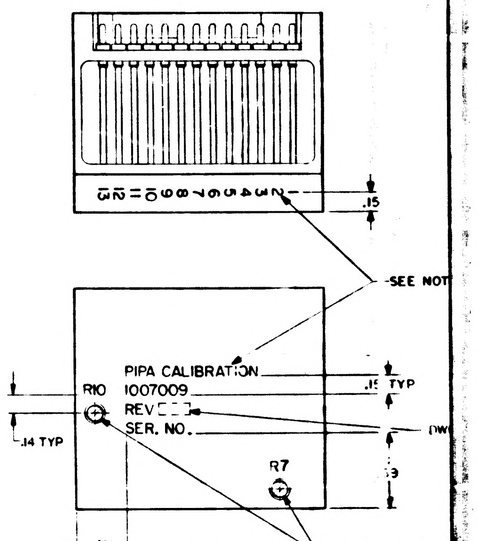

C3
C2
R3
CW
R10
CCW
FT2
C4
C1
R9
FT5
A
FT9
A
FT10
R12
R11
R8
A
FT7
FT6
FT3
FT4
SEE NOTE 16


24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES


13 12 11 10 9 8 7 6 5 4 3 2
.15
SEE NOT
PIPA CALIBRATION
R10
1007009
REV
SER. NO.
.15 TYP
.14 TYP
DW
R7
.39
.41
SEE NOTE 20

MARKING VIEW
SCALE 2:1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINK CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO FIND NO. 23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
8. MARK .060/.100 HIGH WHITE PER ND1002019
9. STAKE FIND NO.6 THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO.5 PER ND1002041
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-13883B

CHART A

PART NO.	VALUE Ω
1010251-1	31.9K
1010251-2	36.0K
1010251-3	41.2K
1010251-4	48.2K
1010251-5	58.01K
1010251-6	72.6K
1010251-7	97.1K
1010251-8	146.0K
1010251-9	292.4K

CHART B

PART NO.	VALUE UF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

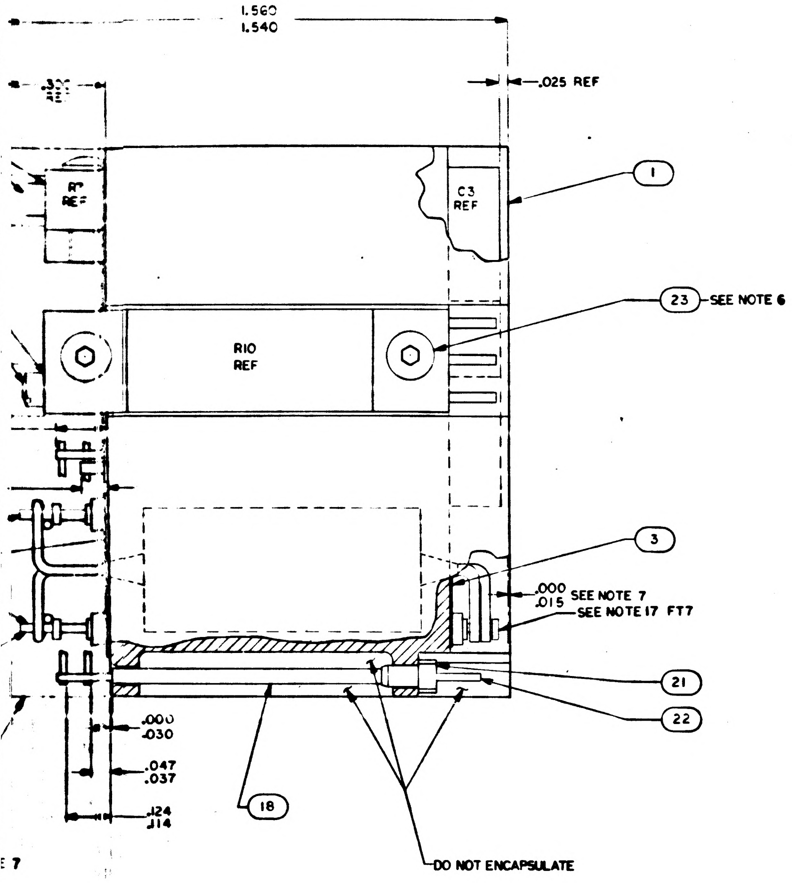
CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

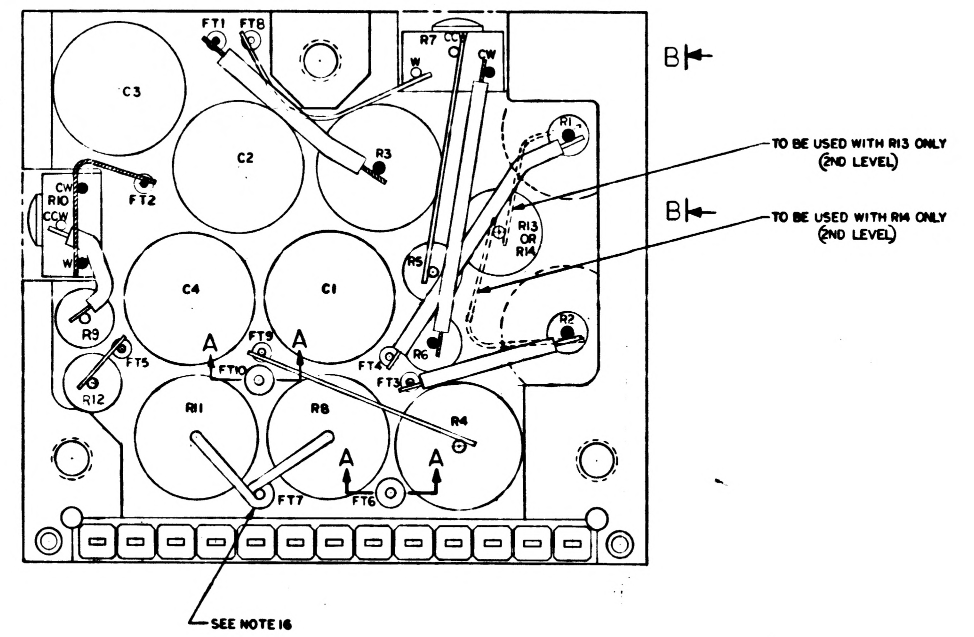
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007009 C

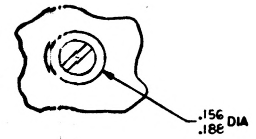
SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00411		
A	REVISED PER TDRR 01011	4-25-63	D.T. WK
B	REVISED PER TDRR 01179	5-8-63	D.T. WK
C	REVISED PER TDRR 01402	5-29-63	RVV WK



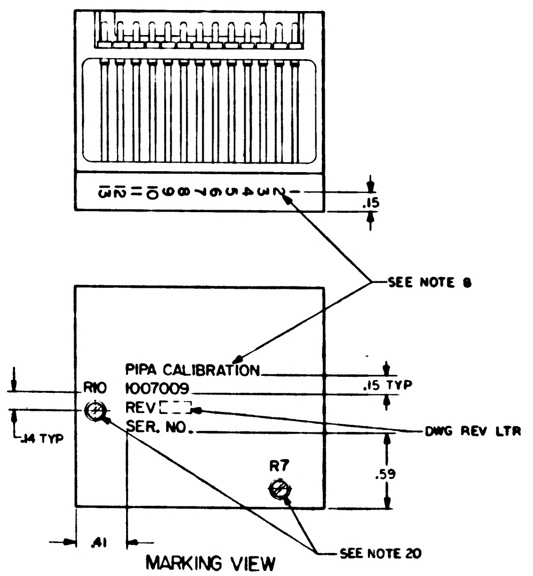
1.560
1.540
.025 REF
.300 REF
R7 REF
C3 REF
1
23 - SEE NOTE 6
R10 REF
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
21
22
.000 .030
.047 .037
.124 .114
18
DO NOT ENCAPSULATE



FT1
FT8
R7
CCW
CW
W
C3
C2
R3
R1
CW
R10
CCW
W
FT2
R13 OR R14
R5
C4
C1
R2
R9
A
FT9
A
R6
FT5
FT10
FT4
FT3
R12
R11
R8
R4
A
A
FT7
FT6
B
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
SEE NOTE 16

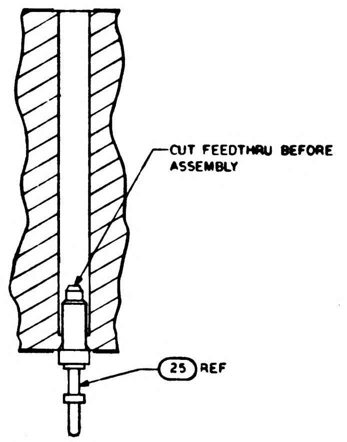


VIEW A-A
2 PLACES



12 11 10 9 8 7 6 5 4 3 2 1
.15
SEE NOTE 8
PIPA CALIBRATION
1007009
REV
SER. NO.
R10
.15 TYP
DWG REV LTR
.14 TYP
.59
R7
.41
SEE NOTE 20

MARKING VIEW
SCALE 2/1



CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A
TYPICAL INSTALLATION FOR FT6 AND FT10

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010009	SCHEMATIC	REF
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006787-2	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 319K-746K .25W ±1%	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007101	
1007102	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIPA CALIBRATION ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007009
SCALE 5/1
WT
SHEET 1 OF 1

1007009 C

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007009

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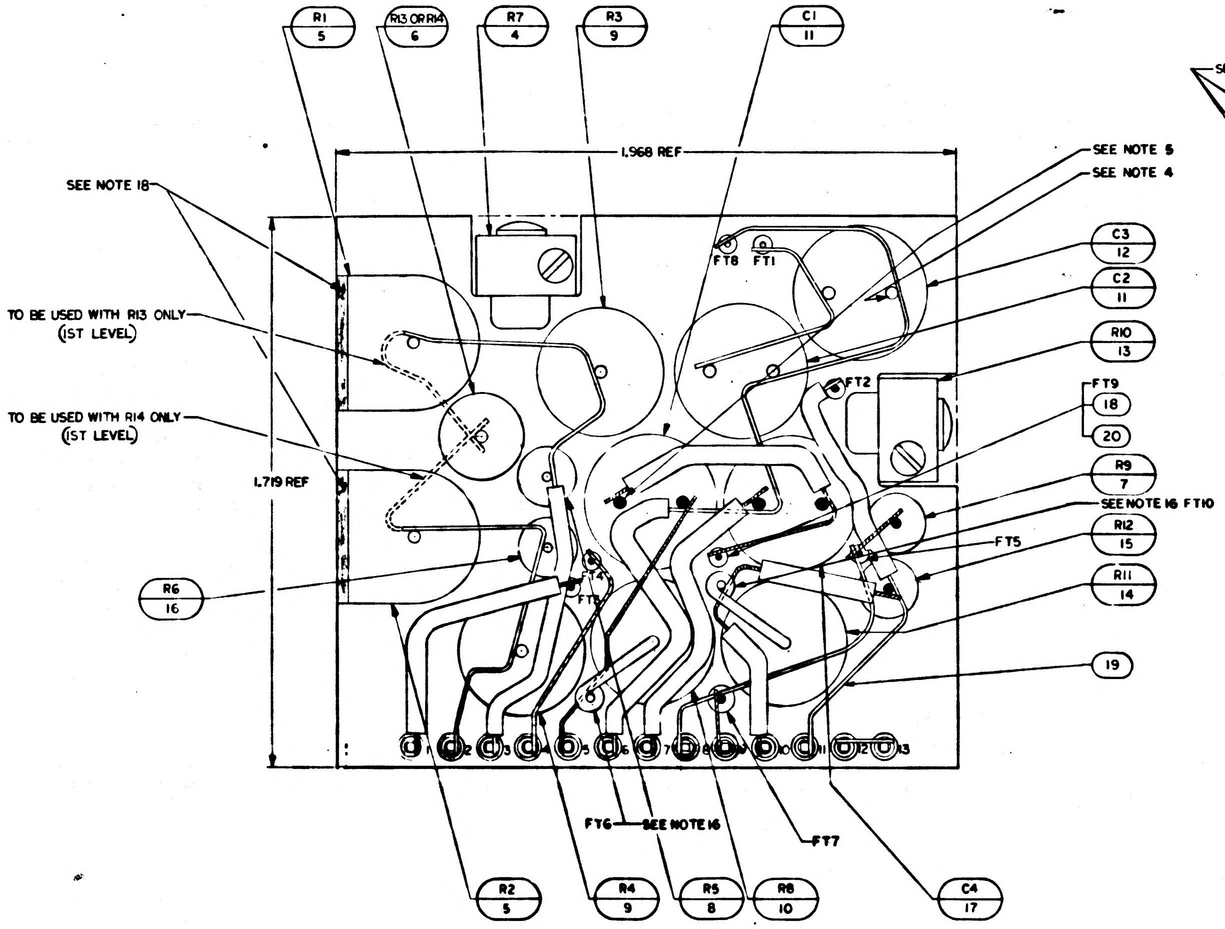
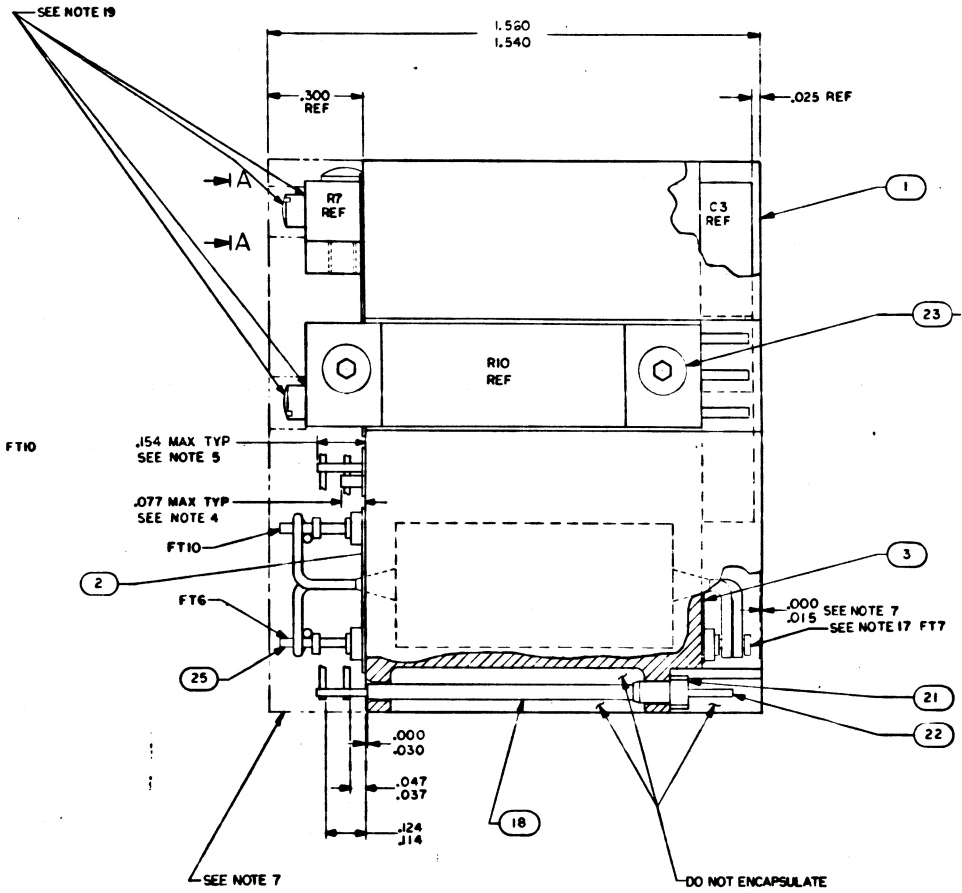
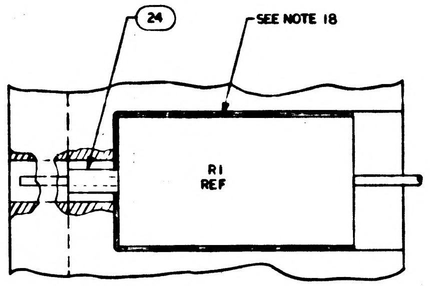
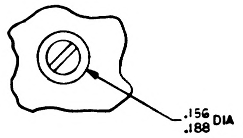

R1
5
R13 OR R14
6
R7
4
R3
9
C1
11
1.968 REF
SEE NOTE 18
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.719 REF
SEE NOTE 5
SEE NOTE 4
C3
12
C2
11
R10
13
FT9
18
20
R9
7
SEE NOTE 16 FT10
R12
15
FT5
R11
14
19
R6
16
FT8
FT1
FT2
FT4
FT3
FT6
SEE NOTE 16
FT7
R2
5
R4
9
R5
8
R8
10
C4
17


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
R10 REF
23
SEE NOTE 6
.154 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
FT6
25
3
.000
.015
SEE NOTE 7
SEE NOTE 17 FT7
21
22
.000
.030
.047
.037
.124
.114
18
SEE NOTE 7
DO NOT ENCAPSULATE


24
SEE NOTE 18
R1
REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES

C3
C1
R10
CCW
W
FT2
R9
FT5
R12
R10
PIPA CA
10070
REV
SER. NO
.14 TYP
.41
MAR

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINK CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO FIND NO. 23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
8. MARK .060/.100 HIGH WHITE PER ND1002019
9. STAKE FIND NO.6 THRU FIND NO.12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO.5 PER ND1002041
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-13883B

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

INCHES
0 2
PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL	
	REVISIONS TDRR 00411			
A	REVISED PER TDRR 01011	4-25-63	D.T.	WK
B	REVISED PER TDRR 01179	5-8-63	D.T.	WK
C	REVISED PER TDRR 01402	5-21-63	RVV	WK
D	REVISED PER TDRR 01717	6-26-63	JJA	WK

1007009 D

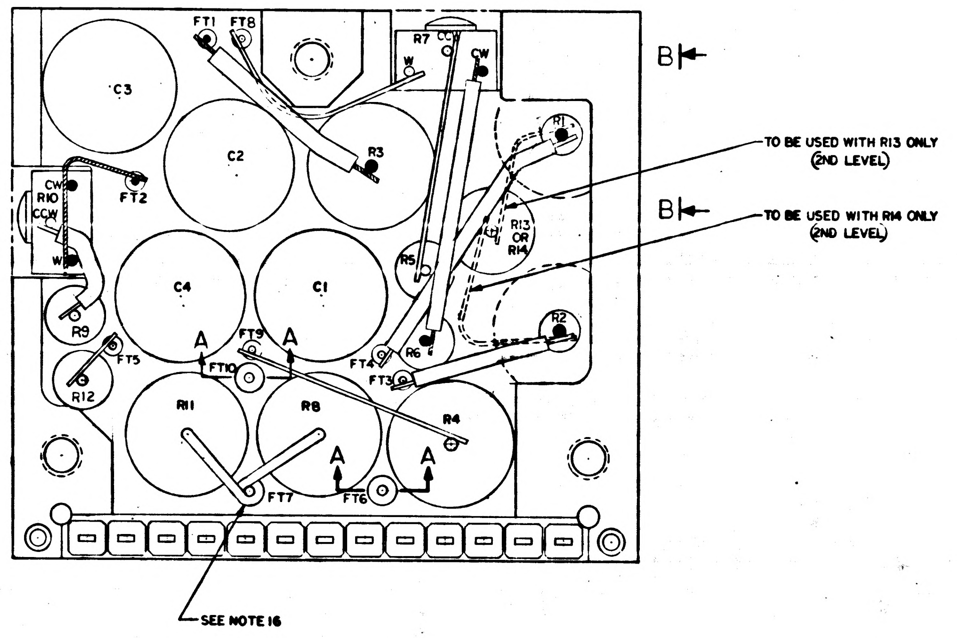
23 SEE NOTE 6

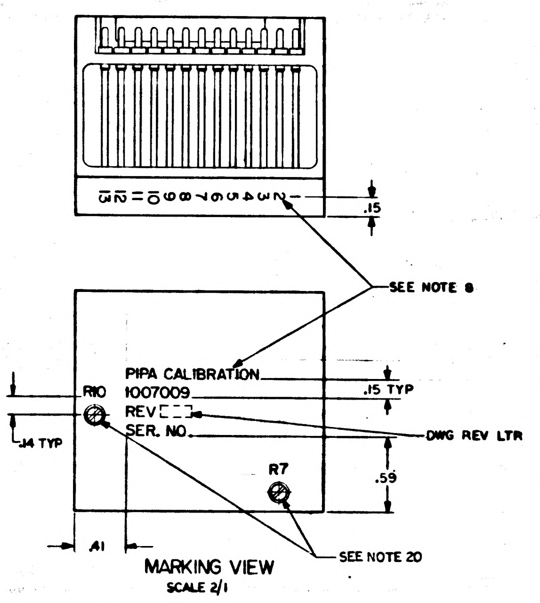
3

OTE 7
NOTE 17 FT7

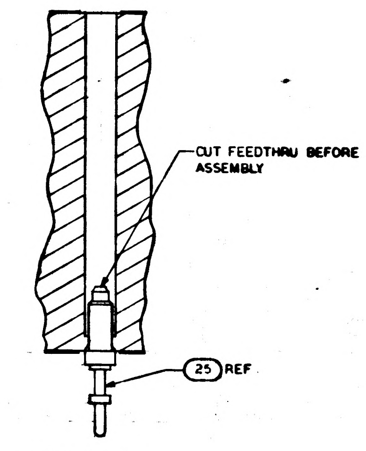
21

22 SEE NOTE 21


FT1
FT8
R7
CCW
W
CW
C3
C2
R3
R1
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
B
TO BE USED WITH R14 ONLY (2ND LEVEL)
CW
R10
CCW
W
FT2
C4
C1
R5
R13 OR R14
R2
R9
FT5
A
FT9
A
FT10
FT4
R6
FT3
R12
R11
R8
R4
A
A
FT7
FT6
SEE NOTE 16


.15
SEE NOTE 8
PIPA CALIBRATION
1007009
REV
SER. NO.
R10
.15 TYP
.14 TYP
DWG REV LTR
R7
.59
.41
SEE NOTE 20

MARKING VIEW
SCALE 2/1


CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A
TYPICAL INSTALLATION FOR FT6 AND FT10

CHART E

ART NO.	VALUE Ω	PART NO.	VALUE Ω
0377-76	82.5K	1010377-94	105.0 K
0377-77	83.75K	1010377-95	106.25K
0377-78	85.0K	1010377-96	107.5K
0377-79	86.25K	1010377-97	108.75K
0377-80	87.5K	1010377-98	110.0 K
0377-81	88.75K	1010377-99	111.25K
0377-82	90.0K	1010377-100	112.5K
0377-83	91.25K	1010377-101	113.75K
0377-84	92.5K	1010377-102	115.0K
0377-85	93.75K	1010377-103	116.25
0377-86	95.0K	1010377-104	117.5K
377-87	96.25K		
377-88	97.5K		
377-89	98.75K		
377-90	100.0K		
377-91	101.25K		
377-92	102.5K		
377-93	103.75K		

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010009	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	26
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006757-8	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-56.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-74.6K .25W ±1%	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN [illegible] DATE [illegible] 63
CHECKED [illegible] 14 FEB 63
APPROVAL [illegible] 18 FEB 63
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIPA CALIBRATION ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007009
SCALE 5/1 | WT | SHEET 1 OF 1

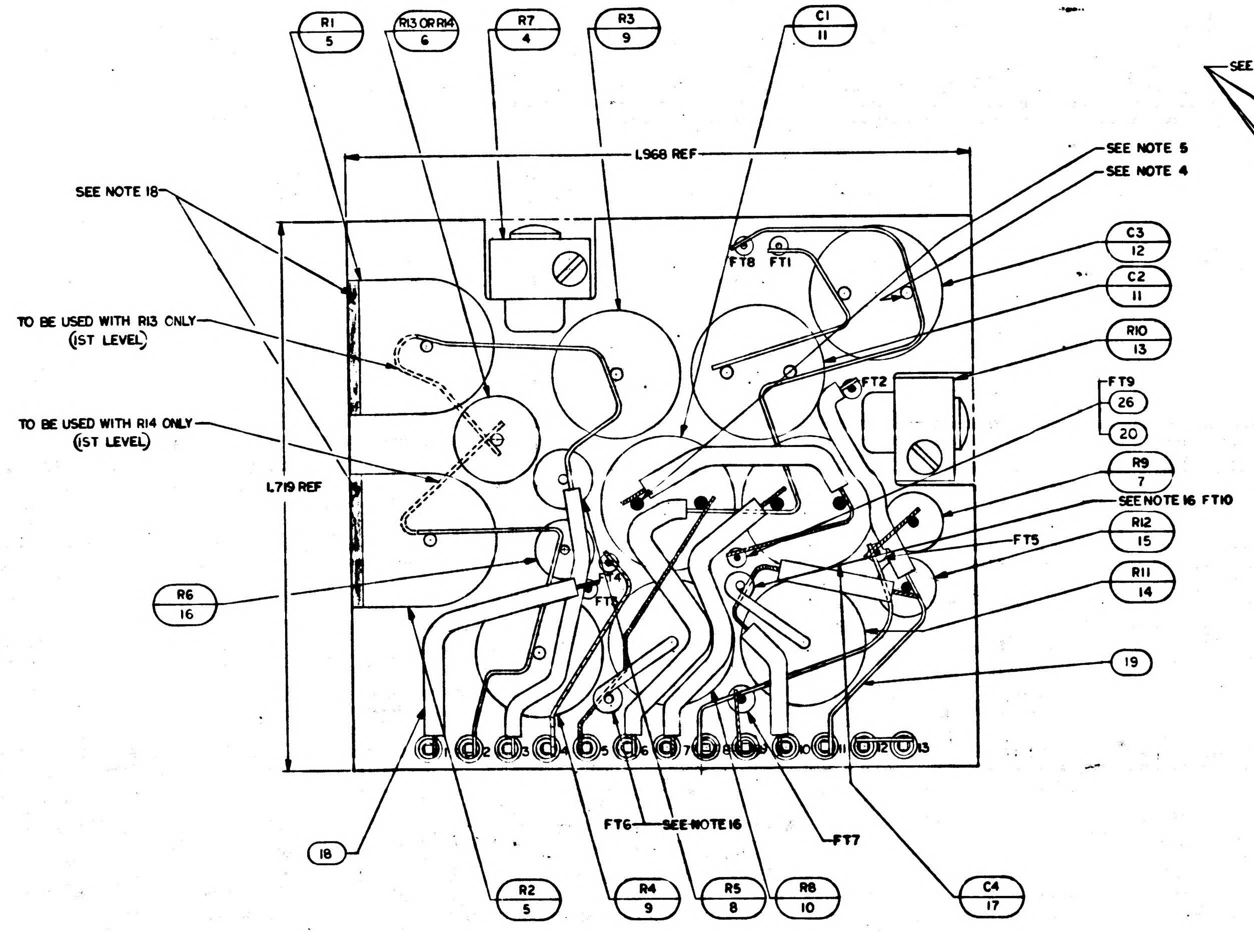
1007009 D

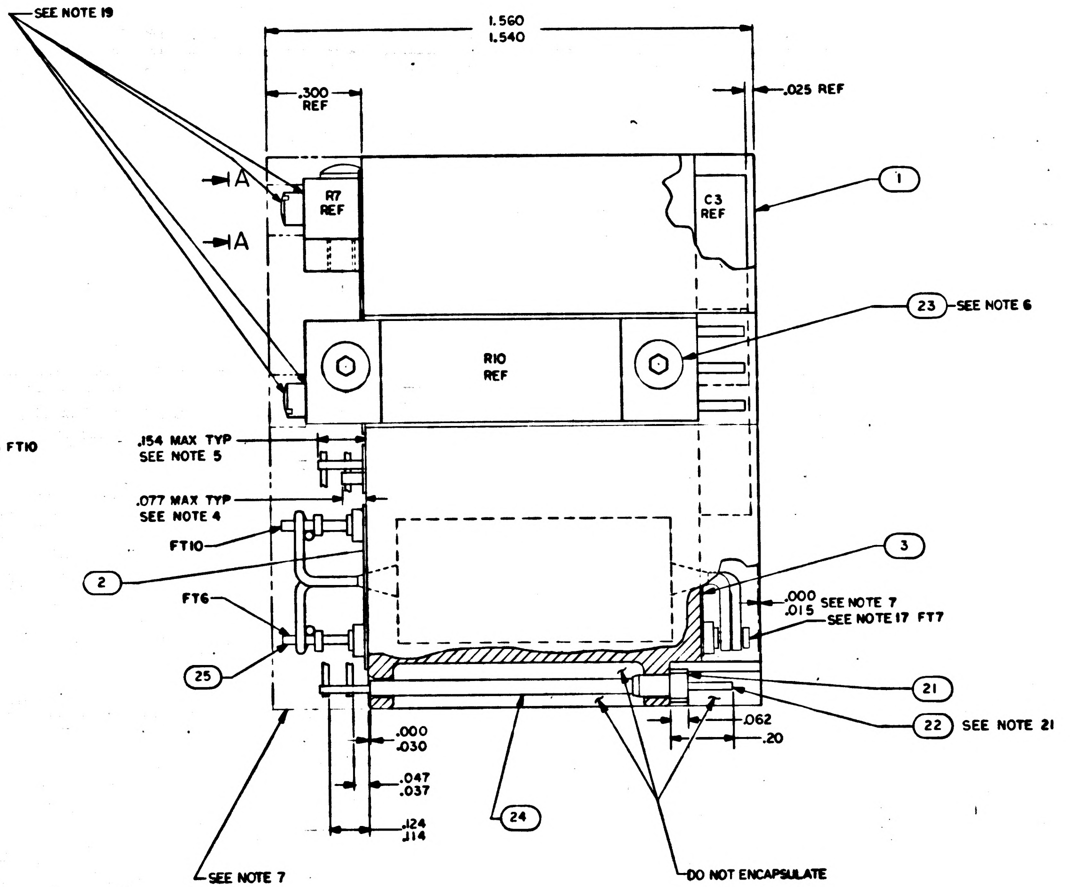
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

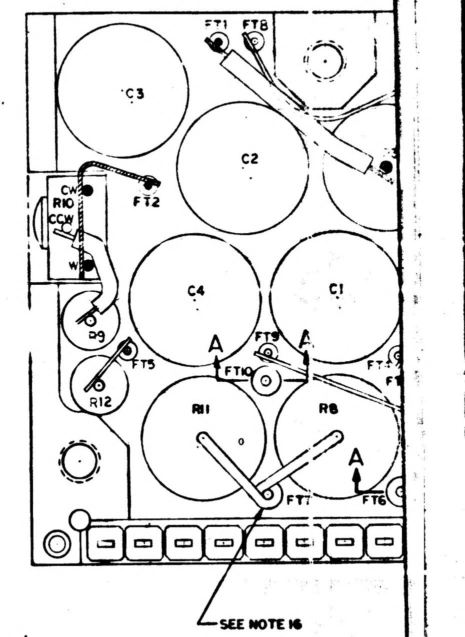
E2

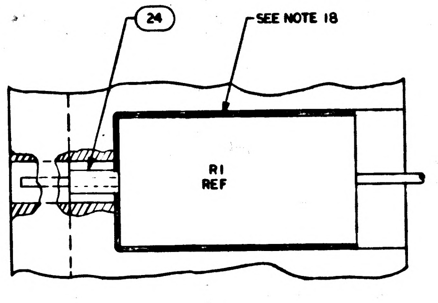
1007009

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

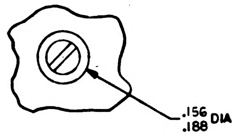

R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
1.968 REF
SEE NOTE 18
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
FT9 26
20
R9 7
SEE NOTE 16 FT10
R12 15
R11 14
19
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.719 REF
R6 16
FT8
FT1
FT2
FT5
FT3
18
FT6
SEE NOTE 16
FT7
R2 5
R4 9
R5 8
R8 10
C4 17


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
23 SEE NOTE 6
R10 REF
.154 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
21
22 SEE NOTE 21
.062
.20
.000 .030
.047 .037
.124 .114
24
SEE NOTE 7
DO NOT ENCAPSULATE

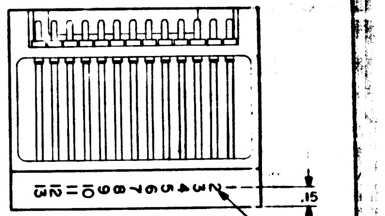

FT1
FT8
C3
C2
CW
R10
CCW
W
FT2
C4
C1
D9
A
FT9
A
FT10
FT5
R12
R11
R8
A
FT7
FT6
SEE NOTE 16


24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES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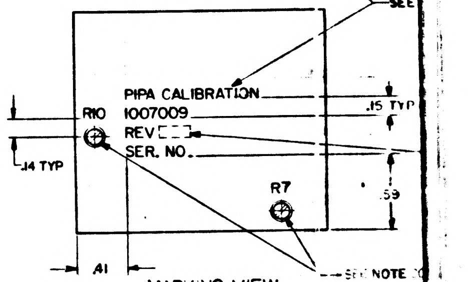
.15
SEE


PIPA CALIBRATION
1007009
REV
SER. NO.
R10
R7
.15 TYP
.14 TYP
.59
.41
SEE NOTE

MARKING VIEW
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINK CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO FIND NO. 23
7. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
8. MARK .060/.100 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 6 THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO. 5 PER ND 1002117
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-13883B
21. MUST MEET REQUIRMENTS OF ND 1002136

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106 K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187 K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

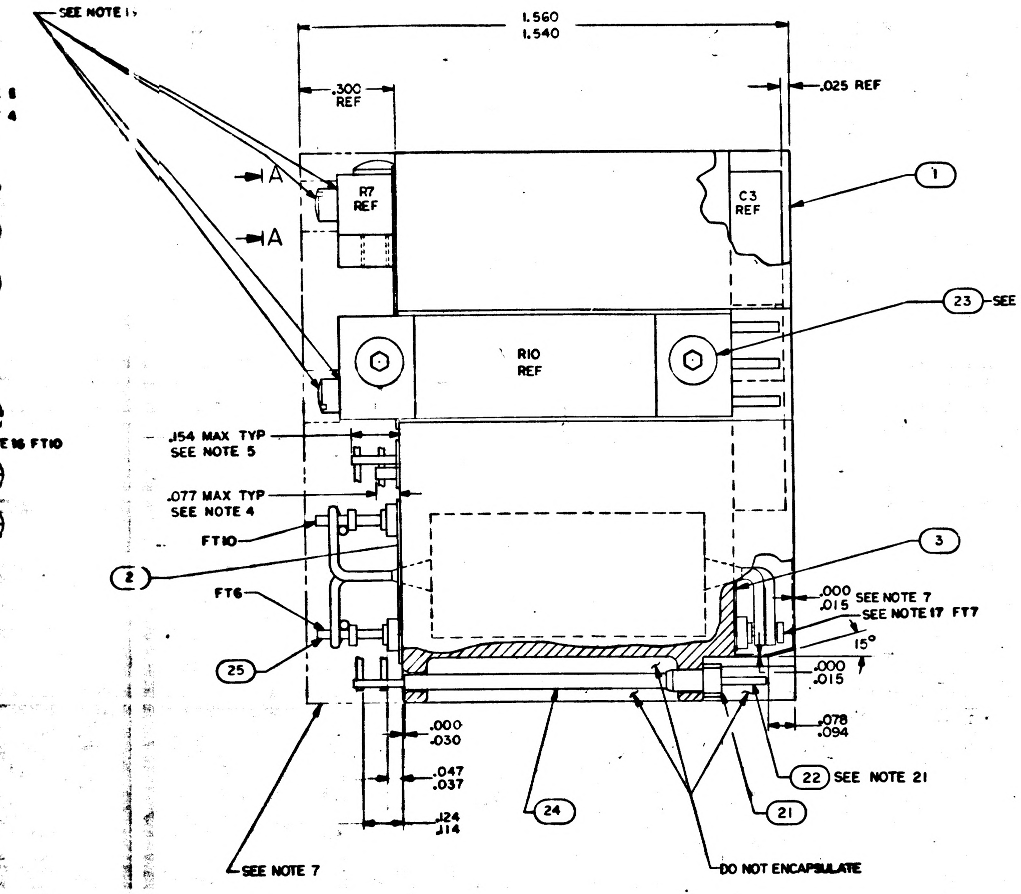
PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

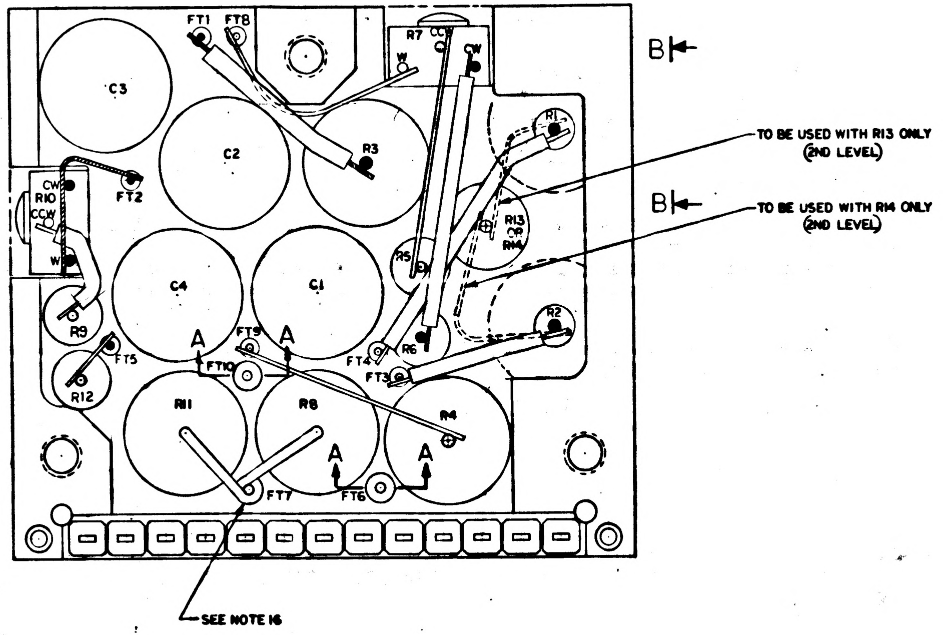
INCHES
0 2
PHOTOGRAPHIC SCALE ONLY

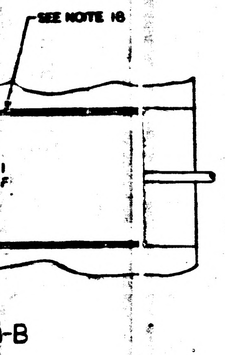
F1 1007009

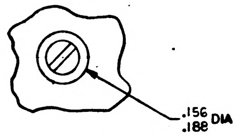
1007009 E

REVISIONS TDRR 00411			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01011	4-25-63	D.T. WR
B	REVISED PER TDRR 01179	5-8-63	D.T WR
C	REVISED PER TDRR 01402	5-29-63	EWV WR
D	REVISED PER TDRR 01717	6-28-63	JJA WR
E	REVISED PER TDRR 05457	12-27-63	EJH WR

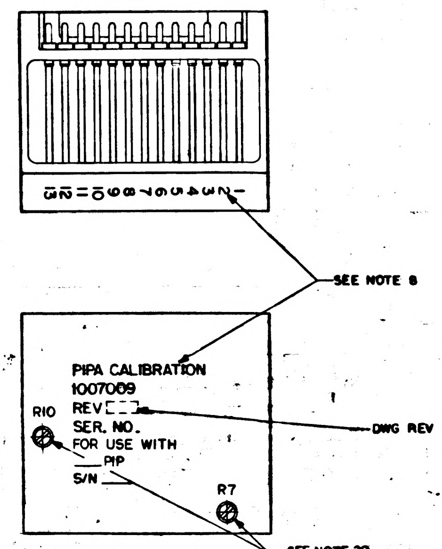

SEE NOTE 1
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
23 SEE NOTE 6
R10 REF
.154 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
.000 .030
.047 .037
.124 .114
24
22 SEE NOTE 21
21
SEE NOTE 7
DO NOT ENCAPSULATE


FT1
FT8
R7
CCW
CW
W
C3
C2
R3
R1
CW
R10
CCW
W
FT2
B
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
R13 OR R14
R5
C4
C1
R9
R2
A
A
FT9
FT10
FT4
FT3
R6
FT5
R12
R11
R8
R4
A
A
FT7
FT6
SEE NOTE 16

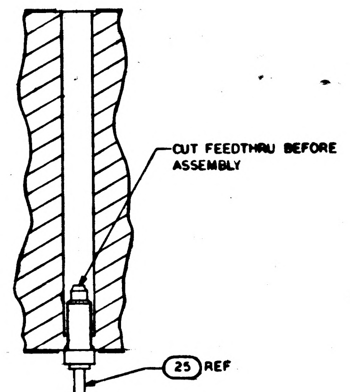

SEE NOTE 18
-B



VIEW A-A
2 PLACES


1 2 3 4 5 6 7 8 9 10 11 12 13
SEE NOTE 8
PIPA CALIBRATION
1007009
REV
SER. NO.
FOR USE WITH
PIP
S/N
R10
R7
DWG REV LTR
SEE NOTE 20

MARKING VIEW
SCALE 2/1


CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A
TYPICAL INSTALLATION
FOR FT6 AND FT10

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010009	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	26
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006757-8	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-746K .25W ±1%	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN Tony Hillburger DATE 10 JAN 63
CHECKED 14 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

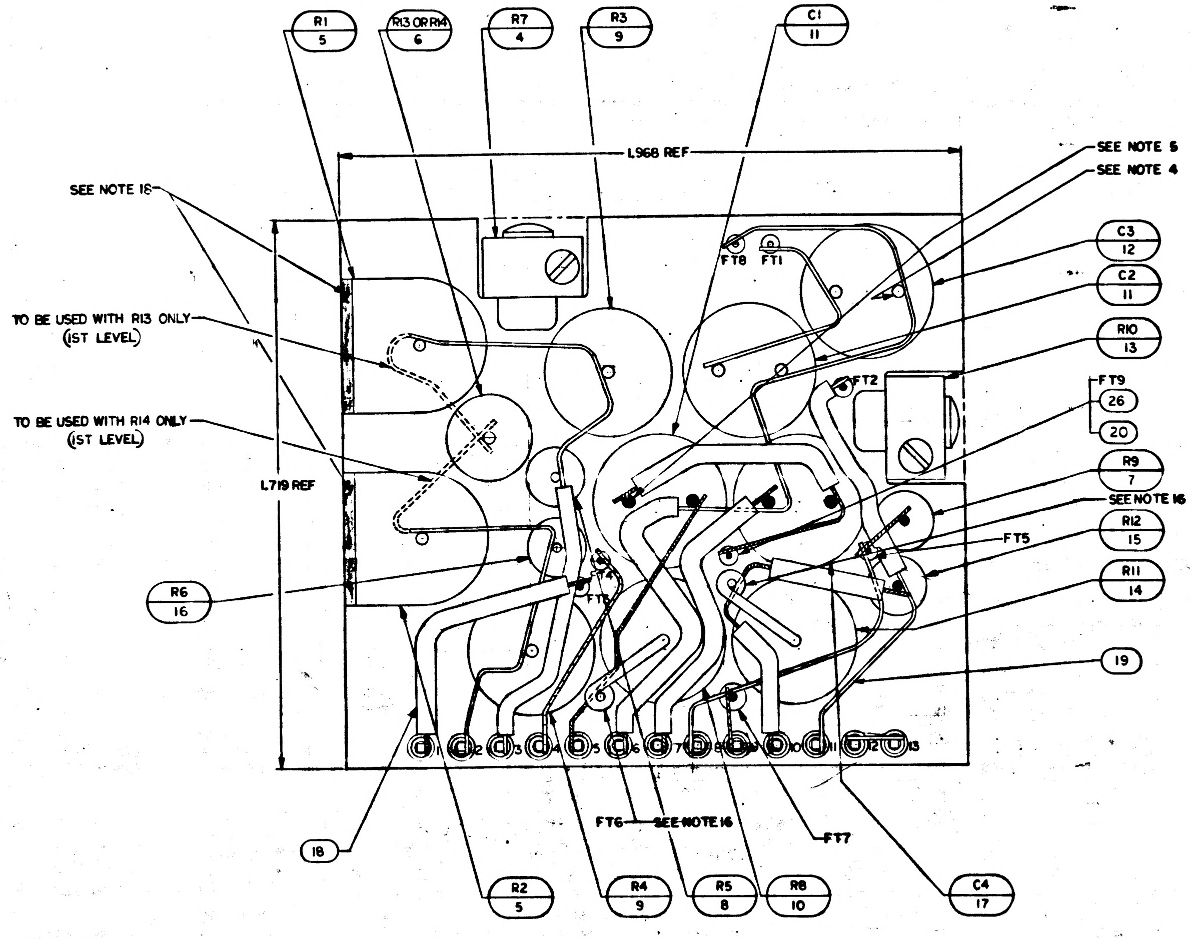
PIPA CALIBRATION
ASSEMBLY

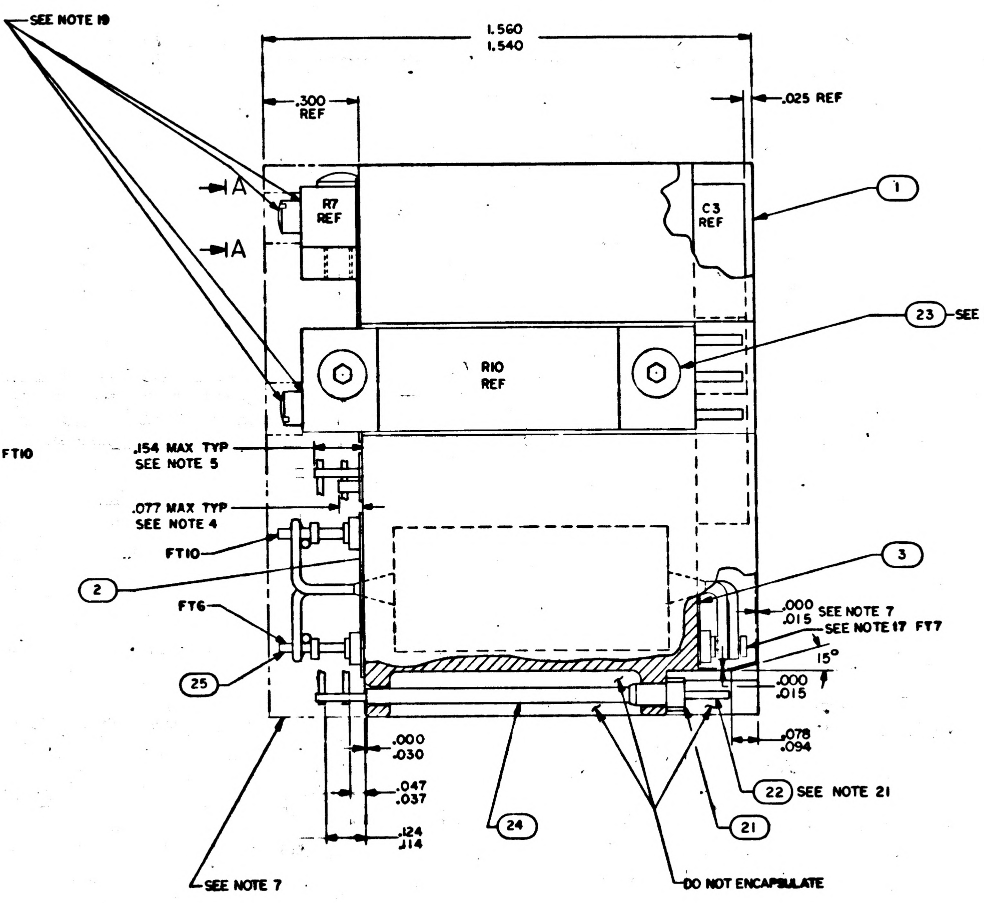
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007009
SCALE 5/1
WT
SHEET 1 OF 1

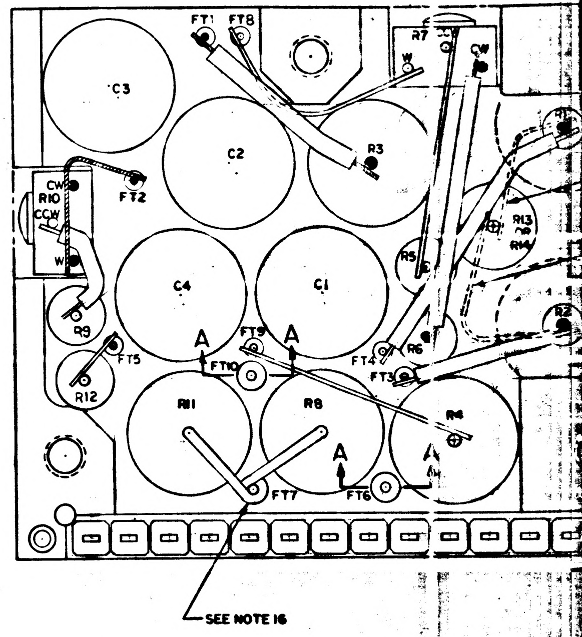
E 1007009

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — [illegible]


R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
SEE NOTE 16
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.968 REF
1.719 REF
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
FT9 26 20
R9 7
SEE NOTE 16 FT10
R12 15
FT5
R11 14
19
FT8 FT1 FT2 FT4
R6 16
18
R2 5
FT6
SEE NOTE 16
R4 9
R5 8
R8 10
FT7
C4 17


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
R10 REF
23 SEE NOTE 6
.154 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
.000 .030
.047 .037
.124 .114
24
22 SEE NOTE 21
21
SEE NOTE 7
DO NOT ENCAPSULATE


FT1 FT8
R7
CW
C3
C2
R3
CW R10 CCW
FT2
R13 R14
R5
C4
C1
R9
A
A
FT9
FT10
FT5
FT4
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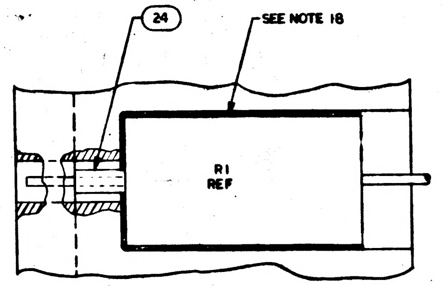
R6
R12
R11
R8
R4
A
FT7
FT6
SEE NOTE 16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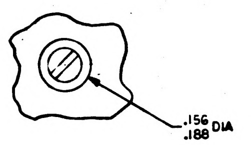
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808(ASG) TO FIND NO.23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. . CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO. [illegible] THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO.5 PER ND1002117
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-13883B
21. MUST MEET REQUIRMENTS OF ND 1002136

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

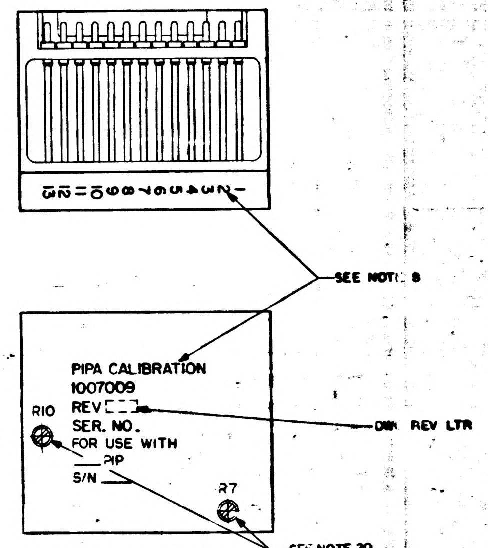
PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		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SEE NOTE 8
PIPA CALIBRATION
1007009
REV
DWG REV LTR
R10
SER. NO.
FOR USE WITH
PIP
S/N
R7
SEE NOTE 20

MARKING VIEW
SCALE 2/1

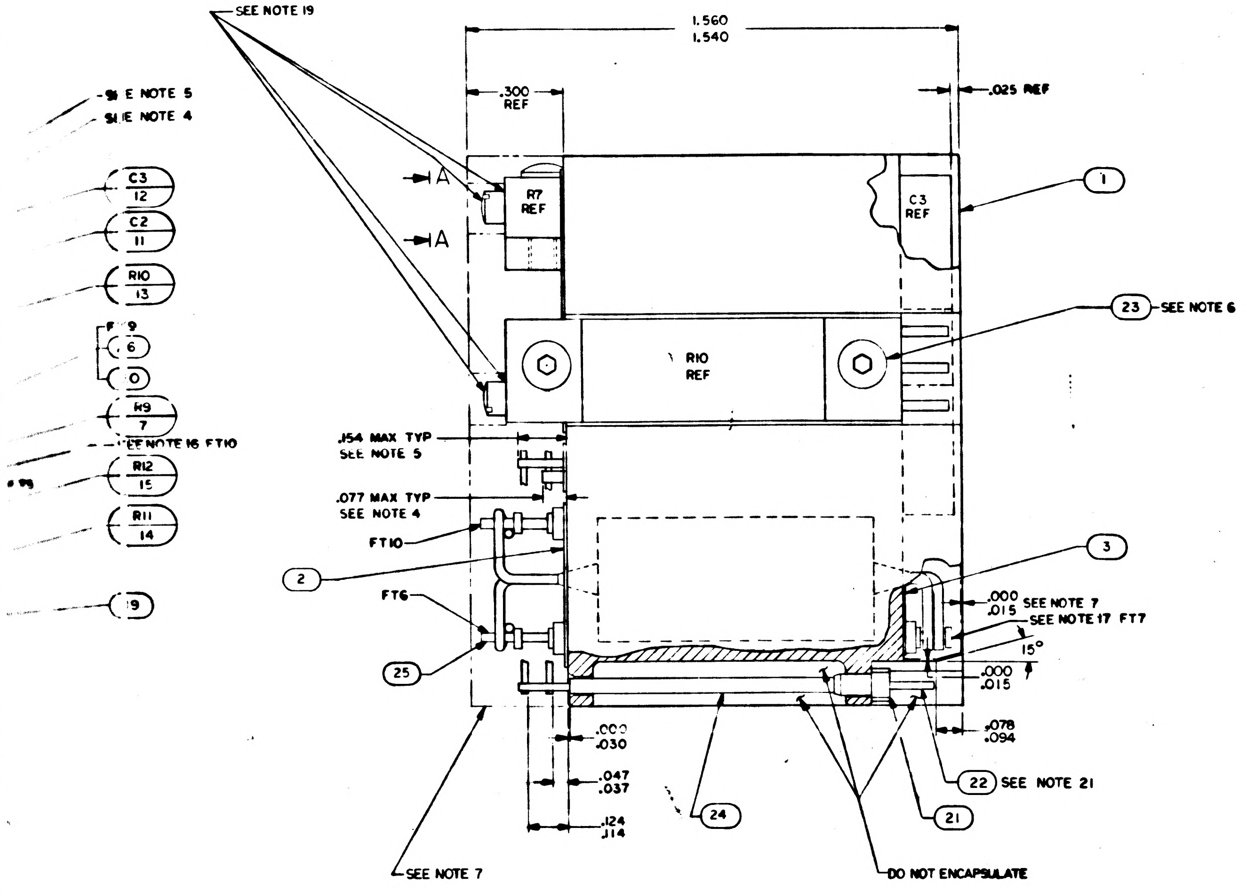
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

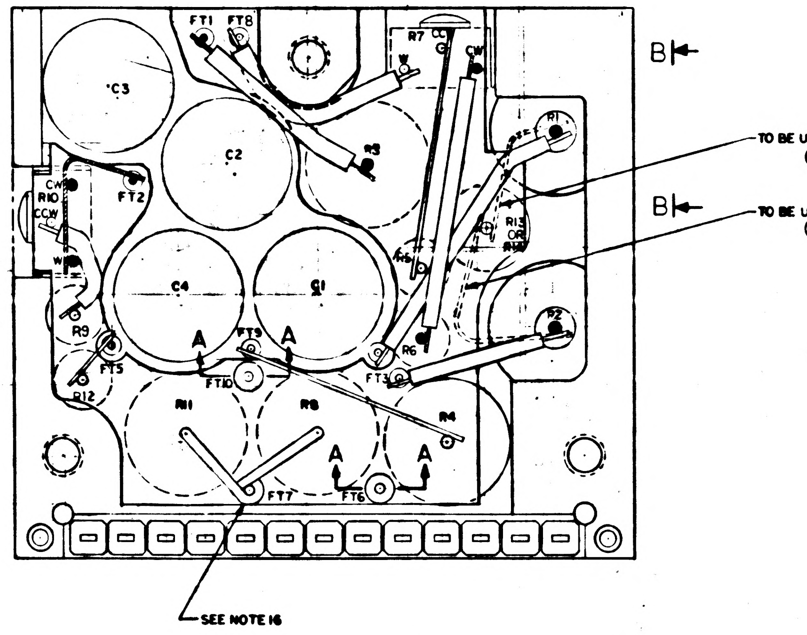
F 1

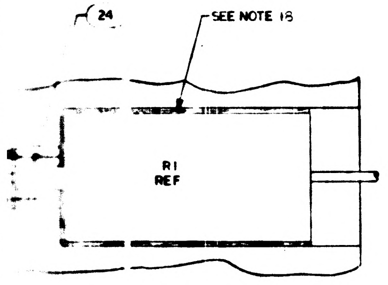
1007009

REVISIONS TDRR 00411

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01011	63	P.T. WK
B	REVISED PER TDRR 01179	5-8-63	P.T. WK
C	REVISED PER TDRR 01402	5-29-63	RVV WK
D	REVISED PER TDRR 01717	63	JJM WK
E	REVISED PER TDRR 05457	12-27-63	WK
F	REVISED PER TDRR 07125	31 MAR 64	JHR
G	REVISED PER TDRR 07286	2 APR 64	


SEE NOTE 19
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
9
6
0
R9 7
SEE NOTE 16 FT10
R12 15
R11 14
9
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
23 SEE NOTE 6
R10 REF
.154 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
22 SEE NOTE 21
21
24
.000 .030
.047 .037
.124 .114
SEE NOTE 7
DO NOT ENCAPSULATE


FT1
FT8
R7
CW
C3
C2
R5
R1
CW
R10
CCW
FT2
W
C4
C1
R13 OR R14
B
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
R9
R12
FT5
A
FT9
A
FT10
FT3
R6
R2
R11
R8
R4
A
A
FT6
FT7
SEE NOTE 16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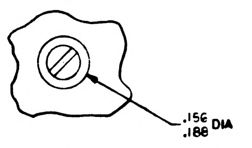
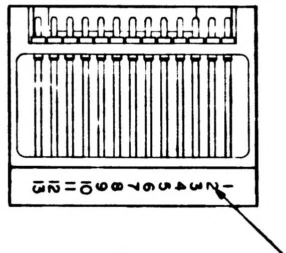
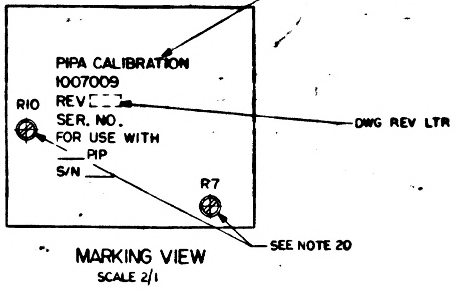
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



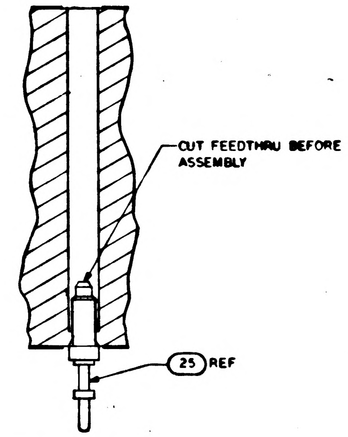
VIEW A-A
2 PLACES




R10
R7
DWG REV LTR
SEE NOTE 20

PIPA CALIBRATION
1007009
REV
SER. NO.
FOR USE WITH
PIP
S/N

MARKING VIEW
SCALE 2/1


CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A
TYPICAL INSTALLATION FOR FT6 AND FT10

PART NO	VALUE
[illegible]	31.9K
[illegible]	33.4K
[illegible]	35.0K
[illegible]	36.8K
[illegible]	38.8K
[illegible]	41.0K
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	52.9K
[illegible]	57.0K
[illegible]	61.8K
[illegible]	67.4K
[illegible]	74.2K
[illegible]	82.6K
[illegible]	92.9K
[illegible]	106K
[illegible]	124K
[illegible]	149K
[illegible]	187K
[illegible]	249K
[illegible]	373K
[illegible]	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0K
1010377-81	88.75K	1010377-99	111.25K
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1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

	1010009	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	26
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006757-8	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-746K .25W ± %	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

2

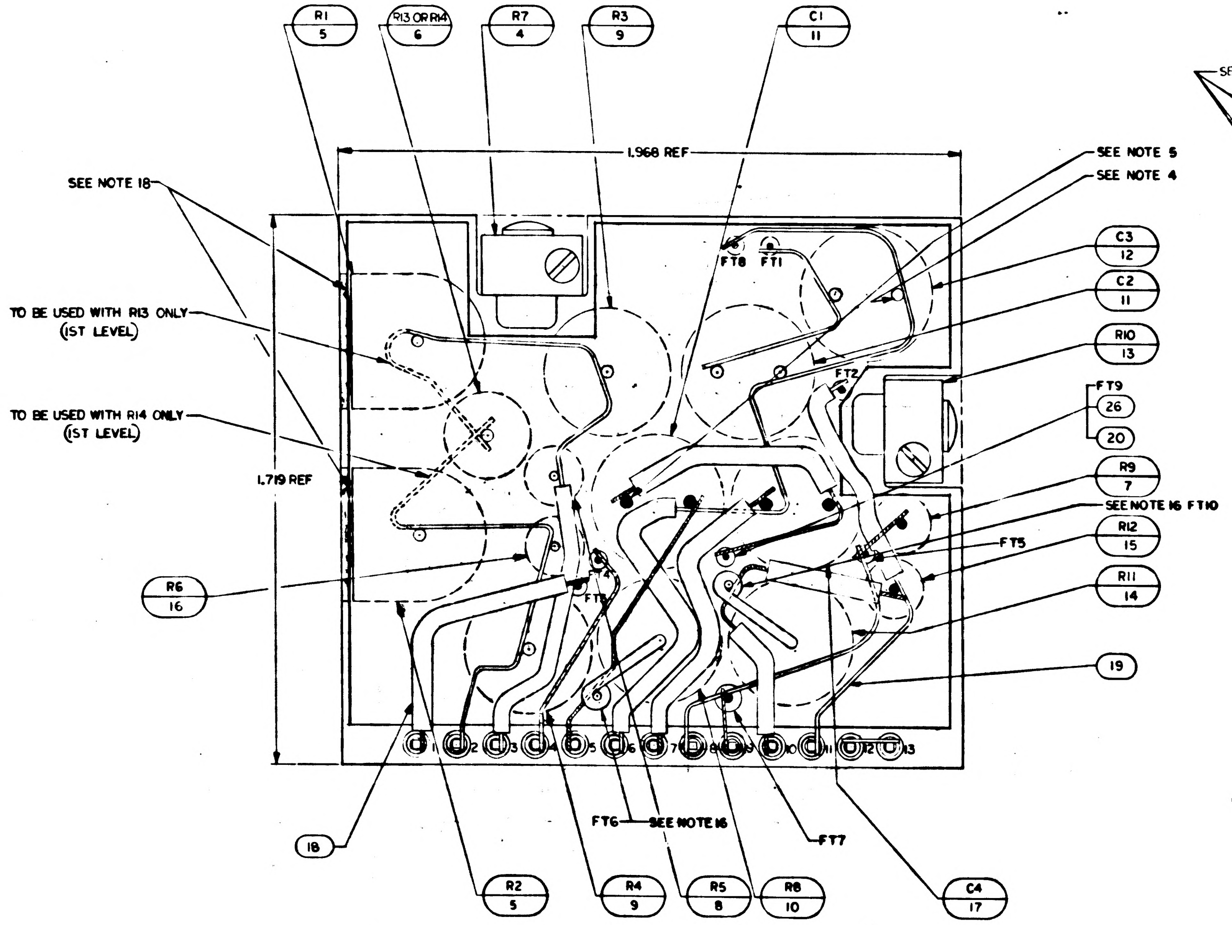
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//—
DECIMALS XX ± .02 XXX ± .005
ANGLES ± —//—
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

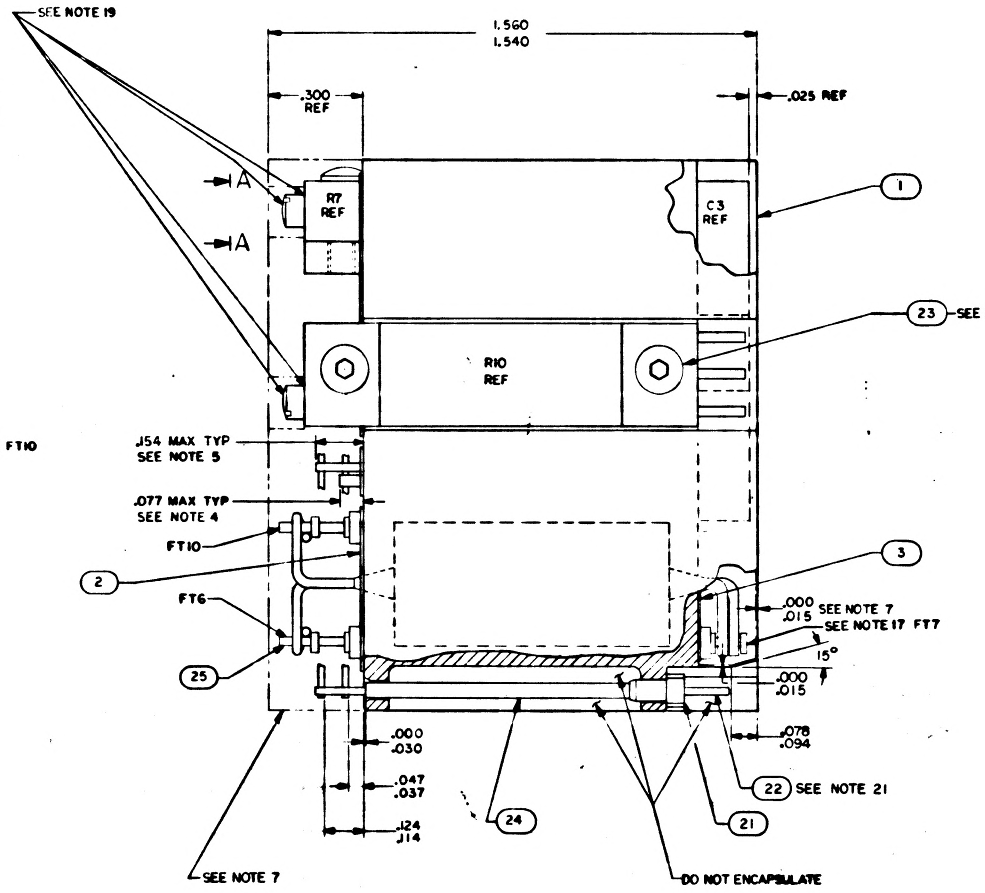
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-
DRAWN DATE 63
CHECKED 63
APPROVAL 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

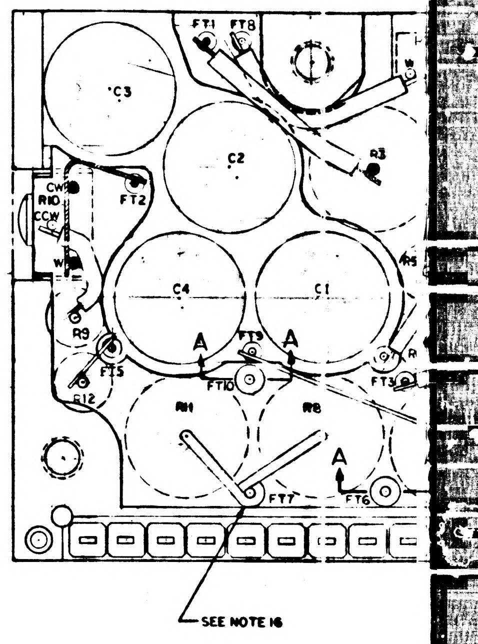
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

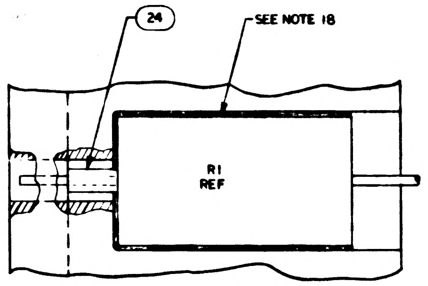
PIPA CALIBRATION ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007009
SCALE 5/1
WT
SHEET 1 OF 1

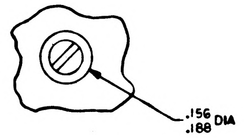

R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
1.968 REF
SEE NOTE 18
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.719 REF
R6 16
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
FT9 26 20
R9 7
SEE NOTE 16 FT10
FT5
R12 15
R11 14
19
FT8 FT1
FT2
18
FT6
SEE NOTE 16
FT7
R2 5
R4 9
R5 8
R8 10
C4 17


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
R10 REF
23 SEE NOTE 6
.154 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
.000 .030
.047 .037
.124 .114
24
22 SEE NOTE 21
21
SEE NOTE 7
DO NOT ENCAPSULATE

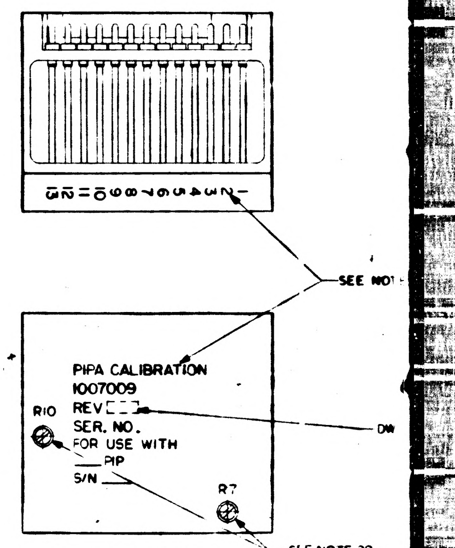

FT1 FT8
C3
C2
R3
CW
R10
CCW
W
FT2
C4
C1
R9
A
FT3
A
FT5
FT10
FT3
E12
R11
R8
A
FT7
FT6
SEE NOTE 16


24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES


1 2 3 4 5 6 7 8 9 10 11 12 13
SEE NOTE
PIPA CALIBRATION
1007009
REV
SER. NO.
FOR USE WITH
PIP
S/N
R10
R7
DW
SEE NOTE 20

MARKING VIEW
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808(ASG) TO FIND NO.23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2 UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.6 THRU FIND NO.12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO.5 PER ND1002117
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-13883B
21. MUST MEET REQUIREMENTS OF ND 1002136

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

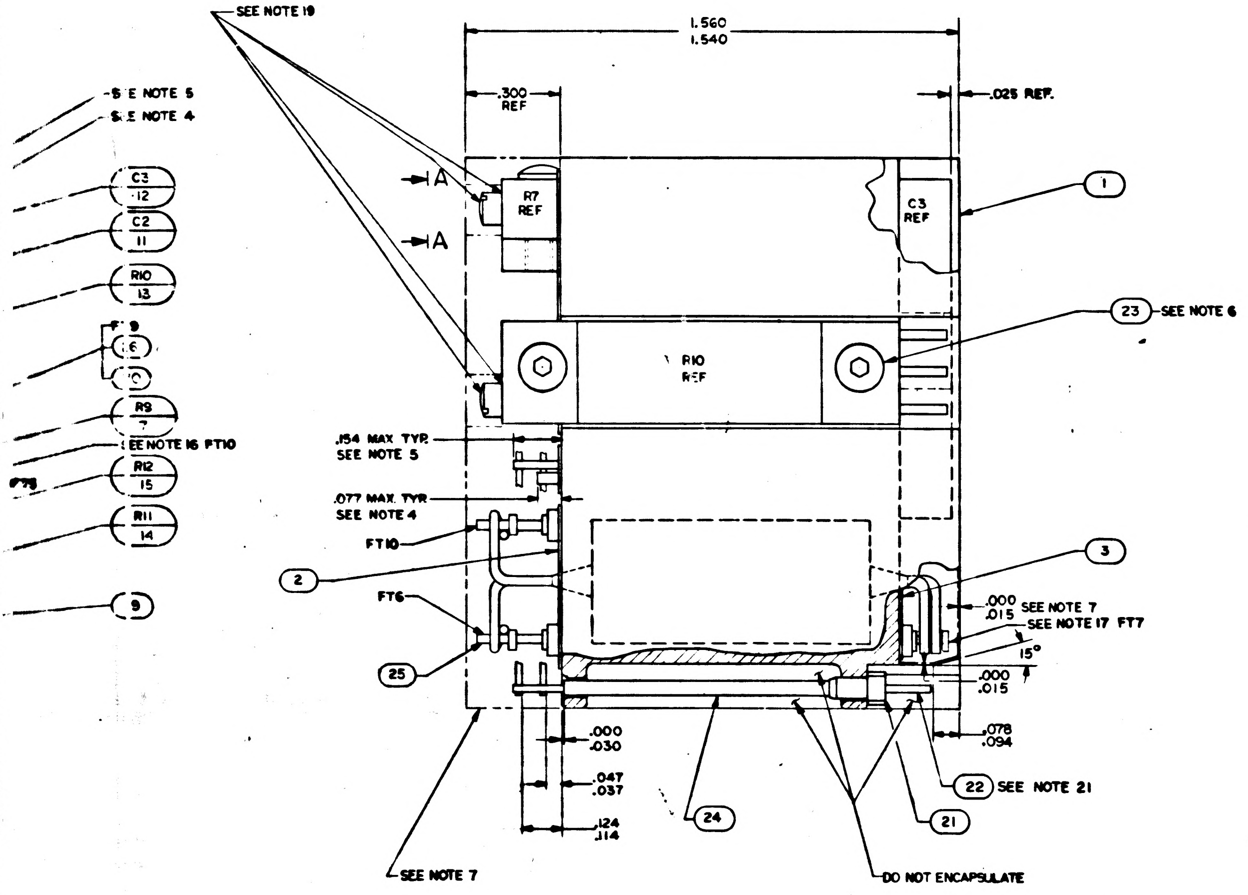
CHART E

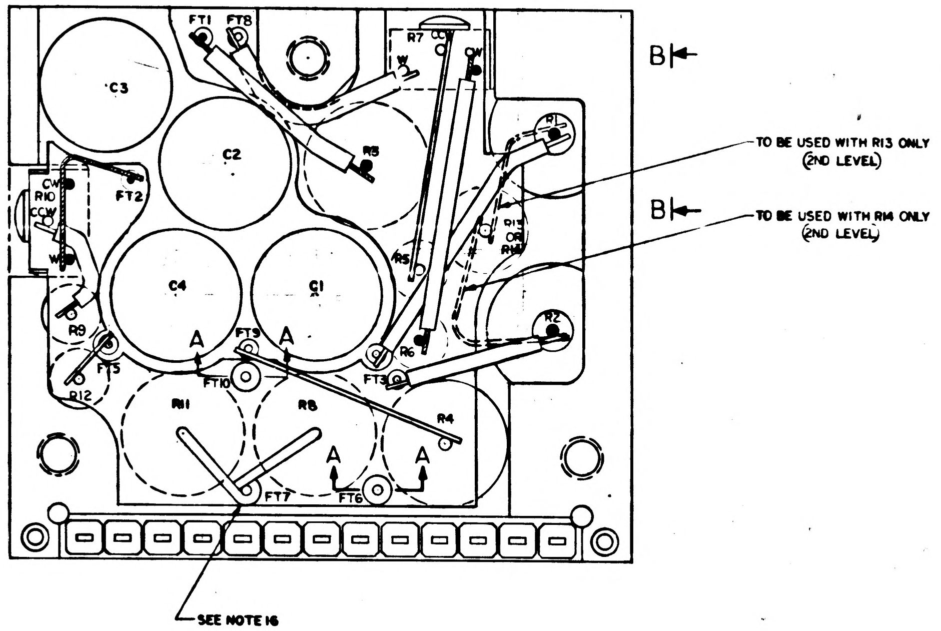
PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

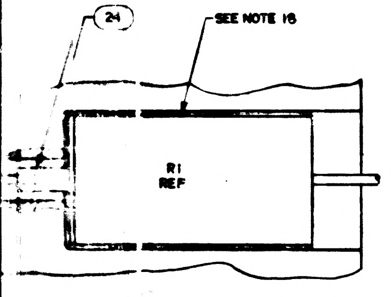
1007009

REVISIONS TDRR 00411

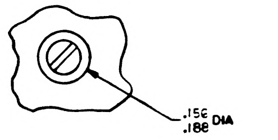
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01011	4-25-63	DT WR
B	REVISED PER TDRR 01179	5-8-63	DT WR
C	REVISED PER TDRR 01402	-21-63	CVV WR
D	REVISED PER TDRR 01717	-23-63	JJM WR
E	REVISED PER TDRR 05457	12-27-63	WR
F	REVISED PER TDRR 07125	31 MAR 64	JHR
G	REVISED PER TDRR 07286	2 APR 64	JWP. J.E.G.
H	REVISED PER TDRR 07931	4 MAY 64	JJJ


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF.
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
FT9 16 10
R9 7
SEE NOTE 16 FT10
R12 15
R11 14
9
A
A
R7 REF
C3 REF
1
23 SEE NOTE 6
R10 REF
.154 MAX TYP. SEE NOTE 5
.077 MAX TYP. SEE NOTE 4
FT10
2
3
FT6
25
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
.000 .030
.047 .037
.124 .114
22 SEE NOTE 21
21
24
SEE NOTE 7
DO NOT ENCAPSULATE

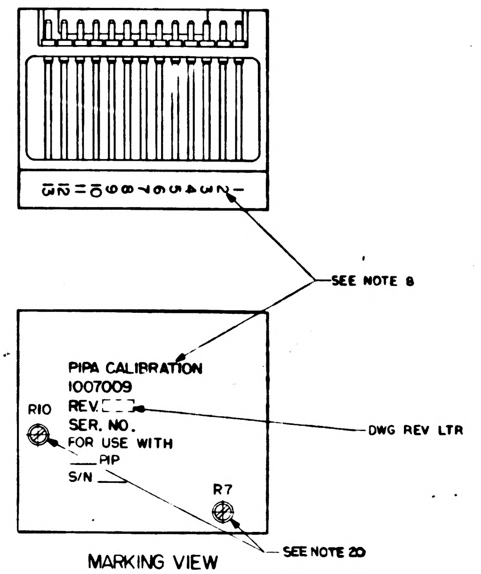

FT1
FT8
R7
C3
C2
R5
R1
B
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
R10
CW
CCW
FT2
C4
C1
R9
FT5
FT9
A
A
R6
R12
R11
R8
FT3
R4
R2
FT7
FT6
A
A
SEE NOTE 16


24
SEE NOTE 18
R1 REF

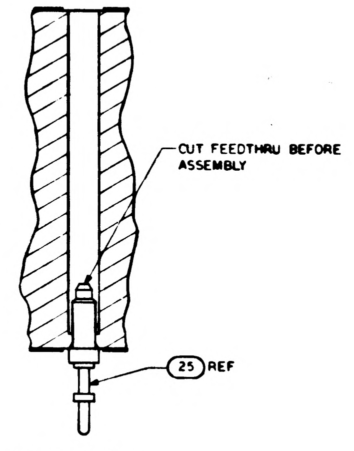
VIEW B-B
2 PLACES



VIEW A-A
2 PLACES


SEE NOTE 8
PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
PIP
S/N
R10
R7
DWG REV LTR
SEE NOTE 20

MARKING VIEW
SCALE 2/1


CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A
TYPICAL INSTALLATION FOR FT6 AND FT10

PART NO	VALUE
1010251 - 1	31.9K
1010251 - 10	33.4K
1010251 - 11	35.0K
1010251 - 12	36.8K
1010251 - 13	38.8K
1010251 - 14	41.0K
1010251 - 15	43.4K
1010251 - 16	46.2K
1010251 - 17	49.3K
1010251 - 18	52.9K
1010251 - 19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE UF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
⊠	1010009	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	26
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006757-8	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556 - 55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K - 746K .25W ±1%	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008016-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1001598	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. Contract NAS 9-497

DRAWN Tom Gilligan DATE 10 JAN 63
CHECKED 14 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

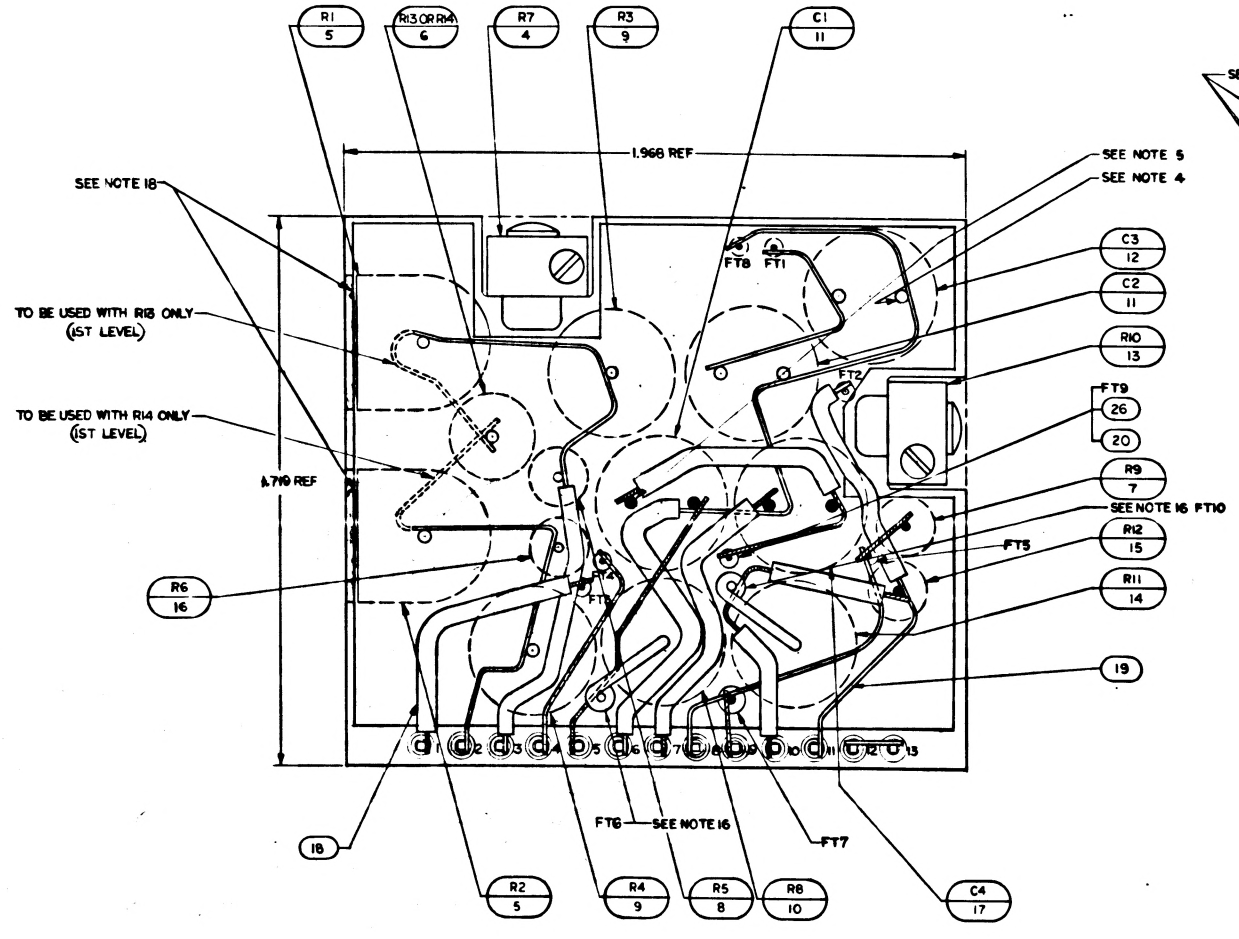
PIPA CALIBRATION
ASSEMBLY

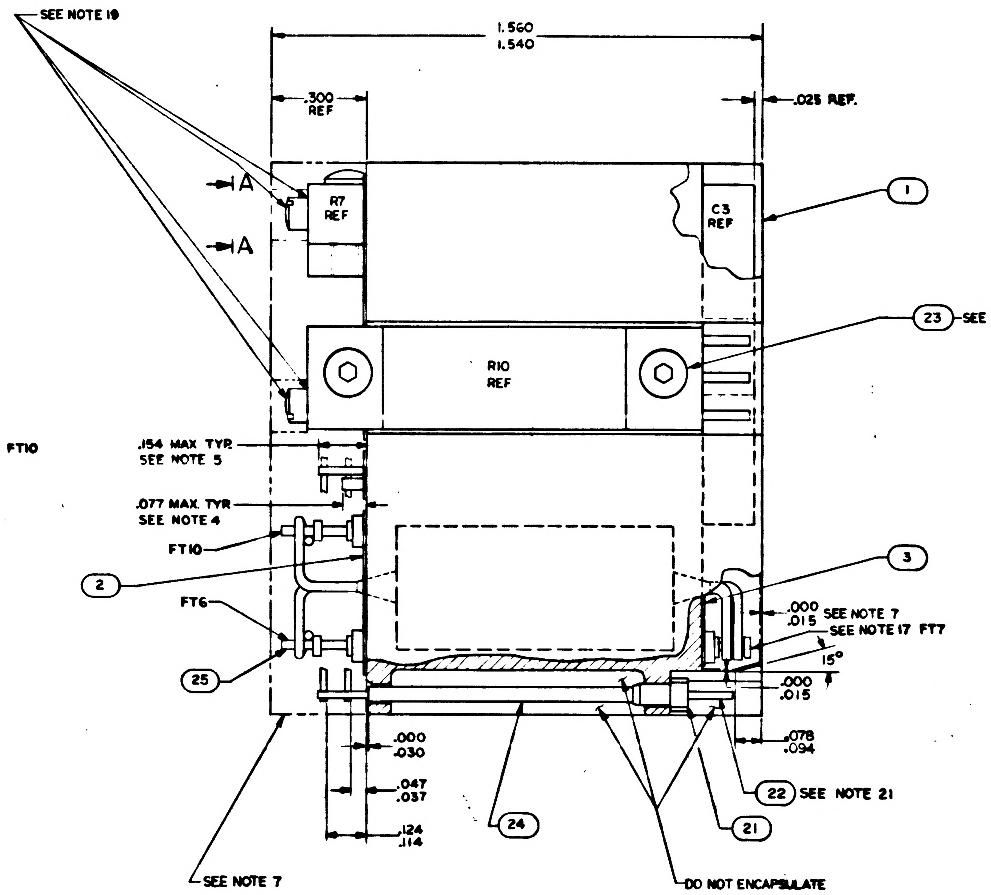
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007009
SCALE 5/1
WT
SHEET 1 OF 1

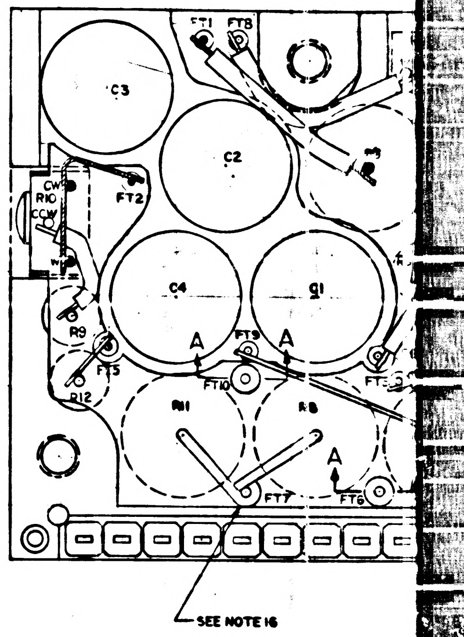
H 1007009

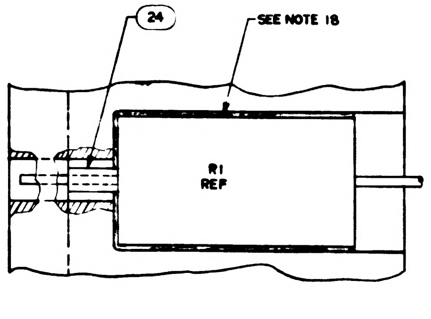
2710007009

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

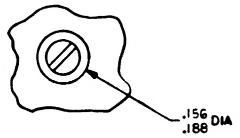

R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
SEE NOTE 18
1.968 REF
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
FT9 26 20
R9 7
SEE NOTE 16 FT10
R12 15
R11 14
19
FT5
FT8 FT1
FT2
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.719 REF
R6 16
18
R2 5
R4 9
R5 8
R8 10
C4 17
FT6 SEE NOTE 16
FT7
1 2 3 4 5 6 7 8 9 10 11 12 13


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF.
A
A
R7 REF
C3 REF
1
R10 REF
23 SEE NOTE 6
.154 MAX TYP. SEE NOTE 5
.077 MAX TYP. SEE NOTE 4
FT10
2
3
FT6
25
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
.000 .030
.047 .037
.124 .114
24
22 SEE NOTE 21
21
SEE NOTE 7
DO NOT ENCAPSULATE

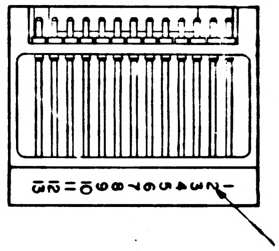

FT1 FT8
C3
C2
CW
R10
CCW
FT2
C4
C1
R9
FT9
A
FT10
FT5
R12
R11
R8
A
FT7
FT6
SEE NOTE 16

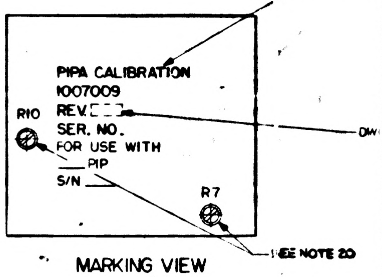

24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES


13 12 11 10 9 8 7 6 5 4 3 2 1
SEE NO


PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
PIP
S/N
R10
R7
DW
SEE NOTE 20

MARKING VIEW
SCALE 2/1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO FIND NO. 23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO. 2 UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO. 6 THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO. 5 PER ND1002117
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-13883B
21. MUST MEET REQUIRMENTS OF ND 1002136

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

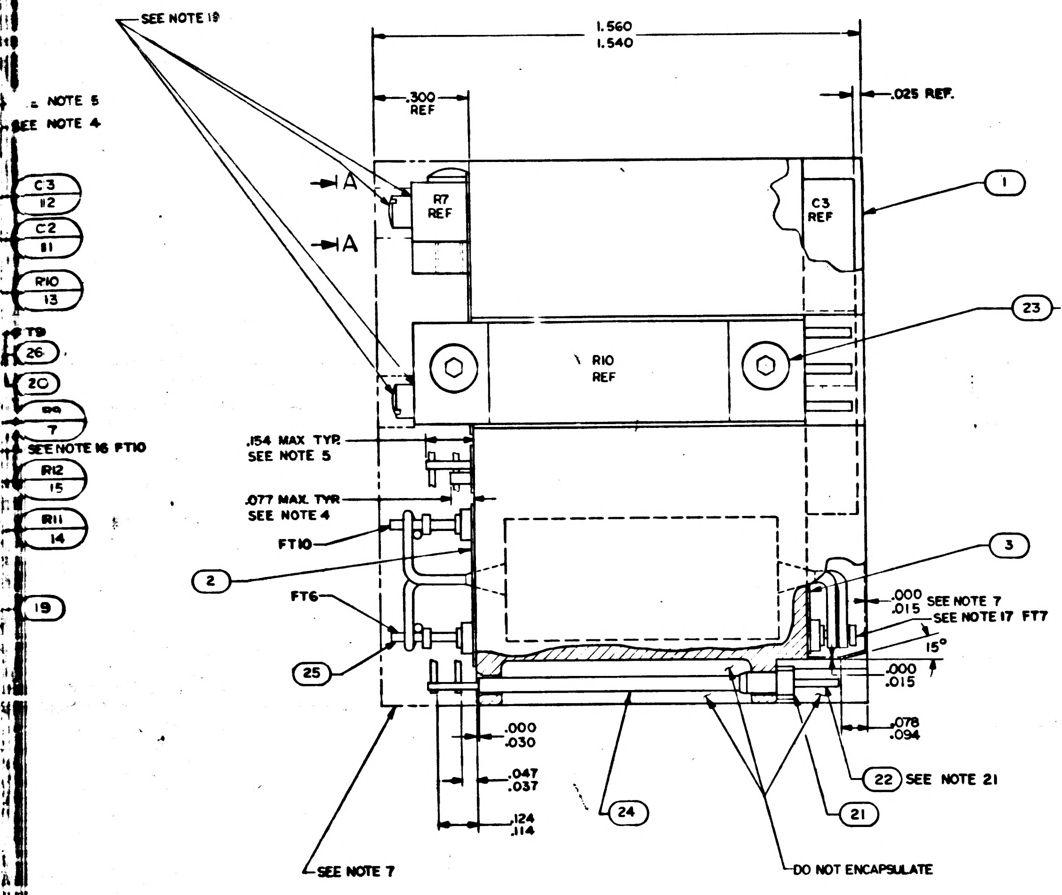
PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

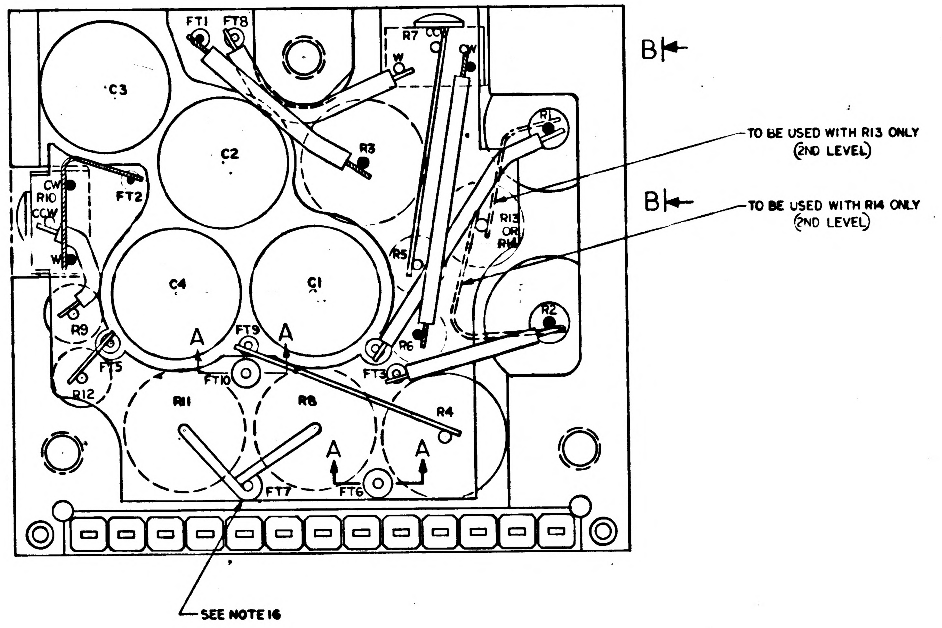
1/1007009

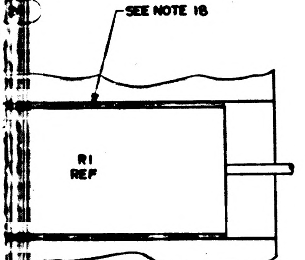
1007009 J

REVISIONS TDRR 00411

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01011	4-25-63	D.T. WR
B	REVISED PER TDRR 01179	5-8-63	D.T. WR
C	REVISED PER TDRR 01402	5-29-63	RVV WR
D	REVISED PER TDRR 01717	6-28-63	JJM WR
E	REVISED PER TDRR 05457	12-27-63	WR
F	REVISED PER TDRR 07125	31 MAR 64	JHR
G	REVISED PER TDRR 07286	2 APR 64	JWP J.E.G.
H	REVISED PER TDRR 07931	4 MAY 64	JJJ
J	REVISED PER TDRR 14091	18 NOV 64	JWP

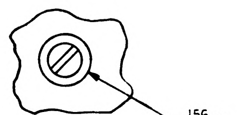

SEE NOTE 19
1.560
1.540
.300
REF
.025 REF.
NOTE 5
SEE NOTE 4
C3
12
C2
11
R10
13
T9
26
20
R9
7
SEE NOTE 16 FT10
R12
15
R11
14
19
A
A
R7
REF
C3
REF
1
23
SEE NOTE 6
R10
REF
.154 MAX TYP.
SEE NOTE 5
.077 MAX. TYP.
SEE NOTE 4
FT10
2
FT6
25
3
.000
.015
SEE NOTE 7
SEE NOTE 17 FT7
15°
.000
.015
.078
.094
.000
.030
.047
.037
.124
.114
24
22
SEE NOTE 21
21
SEE NOTE 7
DO NOT ENCAPSULATE


FT1
FT8
R7
CCW
CW
B
B
C3
C2
R3
R1
TO BE USED WITH R13 ONLY
(2ND LEVEL)
TO BE USED WITH R14 ONLY
(2ND LEVEL)
CW
R10
CCW
FT2
W
R13
OR
R14
R5
C4
C1
R2
R9
A
FT9
A
R6
FT5
FT10
FT3
R12
R11
R8
R4
A
A
FT7
FT6
SEE NOTE 16


SEE NOTE 16
R1
REF

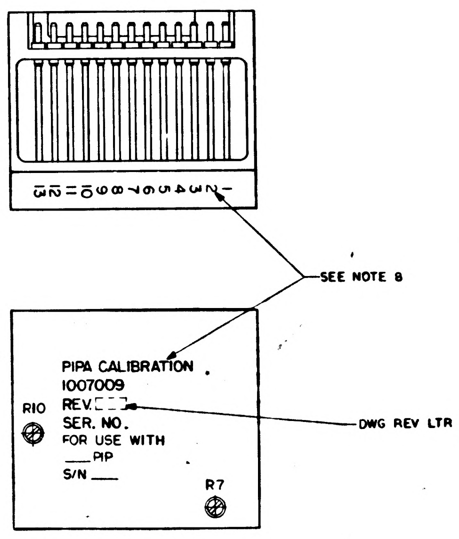
VIEW B-B

PLACES



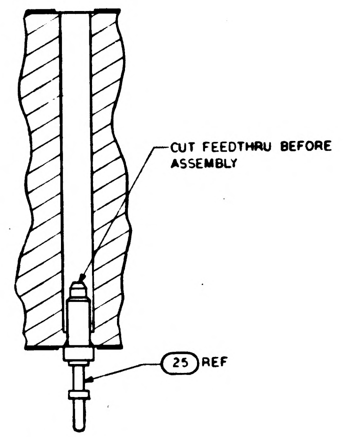
VIEW A-A

2 PLACES


1 2 3 4 5 6 7 8 9 10 11 12 13
SEE NOTE 8
PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
___ PIP
S/N ___
R10
R7
DWG REV LTR

MARKING VIEW

SCALE 2/1


CUT FEEDTHRU BEFORE
ASSEMBLY
25
REF

SECTION A-A

TYPICAL INSTALLATION FOR FT6 AND FT10

NO	VALUE
1	31.9K
10	33.4K
1	35.0K
2	36.8K
13	38.8K
4	41.0K
15	43.4K
6	46.2K
7	49.3K
8	52.7K
9	57.0K
20	61.8K
2	67.4K
22	74.2K
23	82.5K
24	92.9K
25	106K
26	124K
27	149K
28	187K
29	249K
30	373K
31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25 .
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1010009	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	26
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006757-8	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-746K .25W ±1%	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

1001598	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

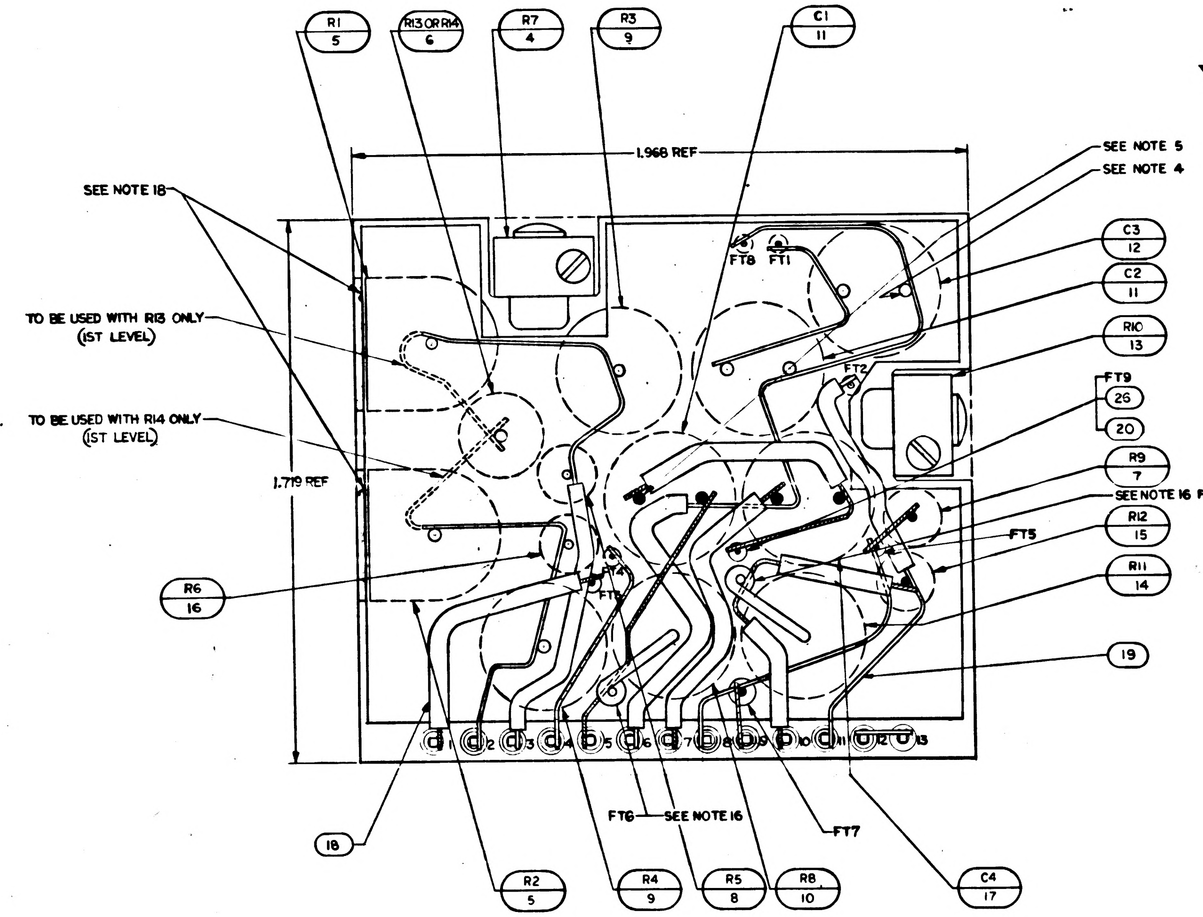
MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497

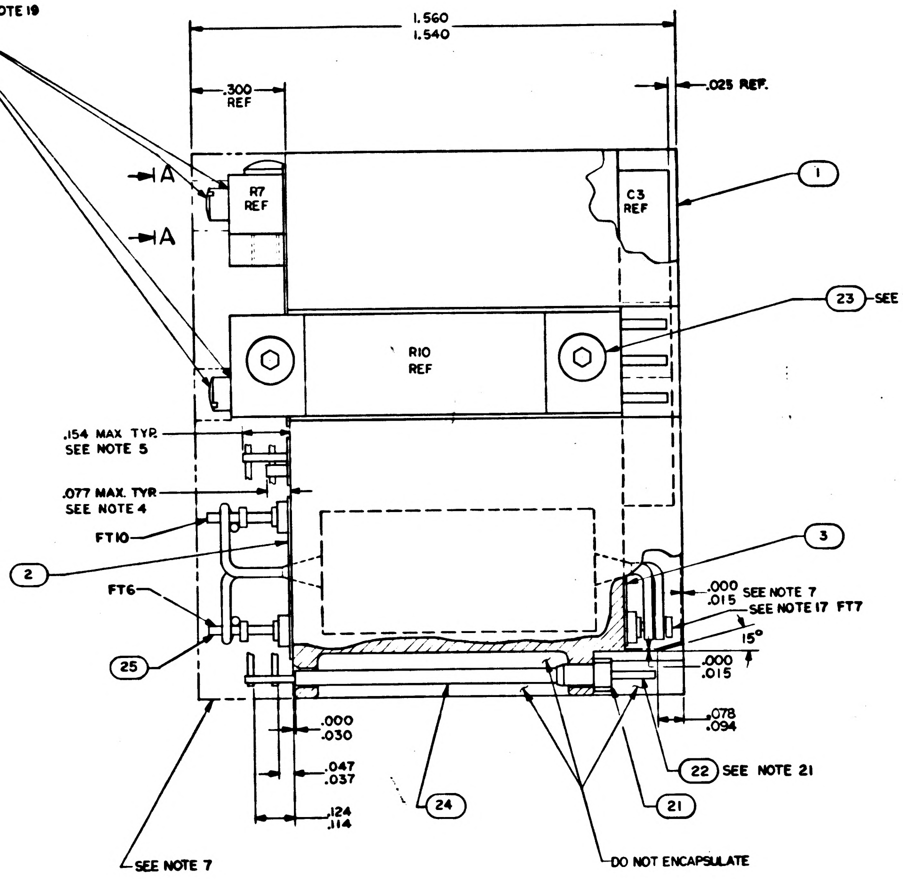
DRAWN Tom Hillegas DATE 10 JAN 63
CHECKED 14 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

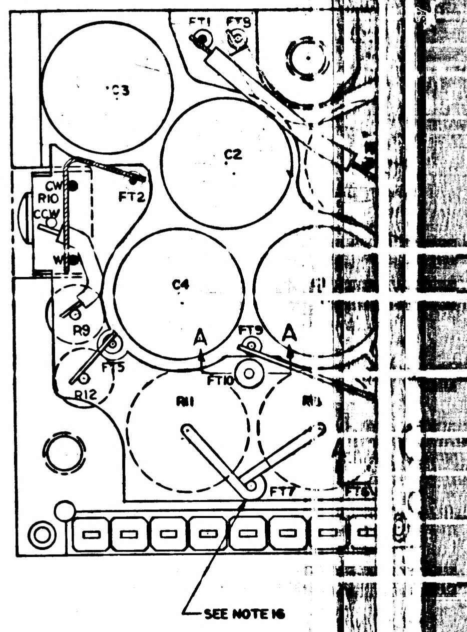
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

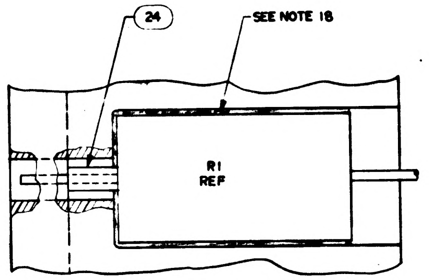
PIPA CALIBRATION
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007009
SCALE 5/1
WT
SHEET 1 OF 1

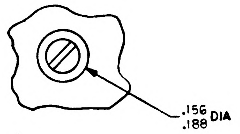

R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
1.968 REF
SEE NOTE 5
SEE NOTE 4
SEE NOTE 18
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.719 REF
C3 12
C2 11
R10 13
FT9 26 20
R9 7
SEE NOTE 16 FT10
R12 15
R11 14
FT5
19
FT8 FT1
FT2
FT3
R6 16
18
R2 5
R4 9
R5 8
R8 10
C4 17
FT6 SEE NOTE 16
FT7
1 2 3 4 5 6 7 8 9 10 11 12 13


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
23 SEE NOTE 6
R10 REF
.154 MAX TYP. SEE NOTE 5
.077 MAX TYP. SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
22 SEE NOTE 21
21
.000 .030
.047 .037
.124 .114
24
SEE NOTE 7
DO NOT ENCAPSULATE

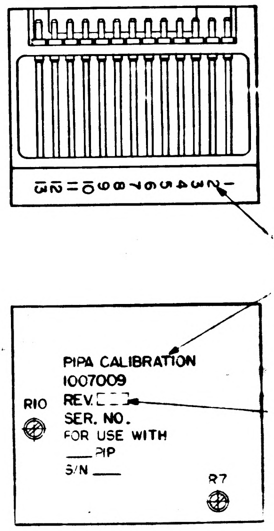

FT1 FT8
C3
C2
CW R10 CCW
FT2
W
C4
R9
FT5
R12
A
A
FT9
FT10
R11
R13
FT7
FT6
SEE NOTE 16


24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES


13 12 11 10 9 8 7 6 5 4 3 2 1
PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
___ PIP
S/N ___
R10
R7

MARKING VIEW
SCALE 2/1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808(ASG) TO FIND NO. 23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO. 2. UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO. 6 THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TC BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO. 5 PER ND1002117
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. ~~AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-46050~~
21. MUST MEET REQUIRMENTS OF ND 1002136
22. PROCURE PER PS1007009

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

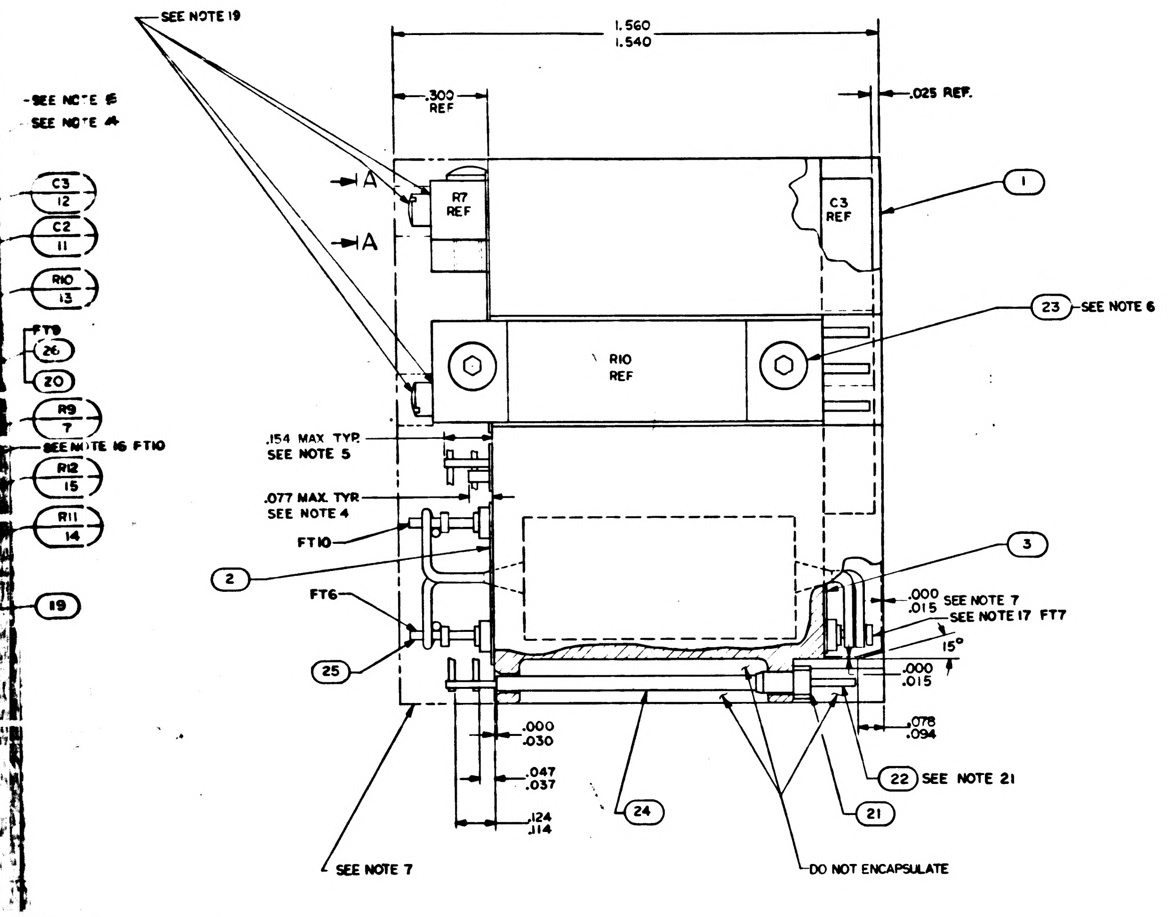
CHART E

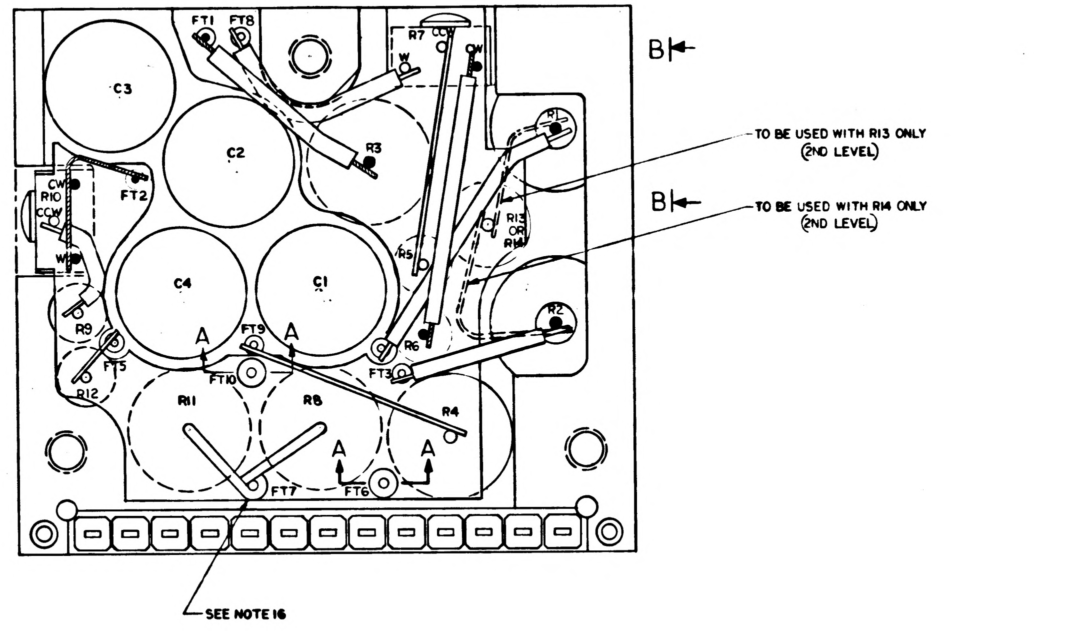
PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

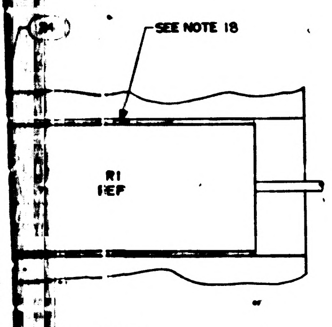
1/1007009

1007009 K

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00411		
A	REVISED PER TDRR 01011	4-25-63	D.T. WK
B	REVISED PER TDRR 01179	5-8-63	D.T. WK
C	REVISED PER TDRR 01402	5-29-63	RVV WK
D	REVISED PER TDRR 01717	6-26-63	JJM WK
E	REVISED PER TDRR 05457	12-27-63	WK
F	REVISED PER TDRR 07125	31 MAR 64	JHR
G	REVISED PER TDRR 07286	2 APR 64	JWP J.E.G
H	REVISED PER TDRR 07931	4 MAY 64	JJJ
J	REVISED PER TDRR 14091	18 NOV 64	JWP EF
K	REVISED PER TDRR 17308	2 MAR 65	EF

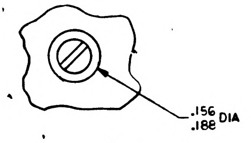

SEE NOTE 19
SEE NOTE 15
SEE NOTE 14
C3 12
C2 11
R10 13
FT9
26
20
R9 7
SEE NOTE 16 FT10
R12 15
R11 14
19
1.560
1.540
.300 REF
.025 REF.
A
A
R7 REF
C3 REF
1
23 SEE NOTE 6
R10 REF
.154 MAX TYP. SEE NOTE 5
.077 MAX. TYP. SEE NOTE 4
FT10
2
3
FT6
25
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.000 .030
.047 .037
.124 .114
.078 .094
22 SEE NOTE 21
24
21
SEE NOTE 7
DO NOT ENCAPSULATE


FT1
FT8
C3
C2
R7
CCW
CW
W
R3
R1
B
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
CW
R10
CCW
W
FT2
R13 OR R14
R5
C4
C1
R9
A
FT9
A
R6
R2
FT5
FT10
FT3
R12
R11
R8
R4
A
A
FT7
FT6
SEE NOTE 16


24
SEE NOTE 18
R1 REF

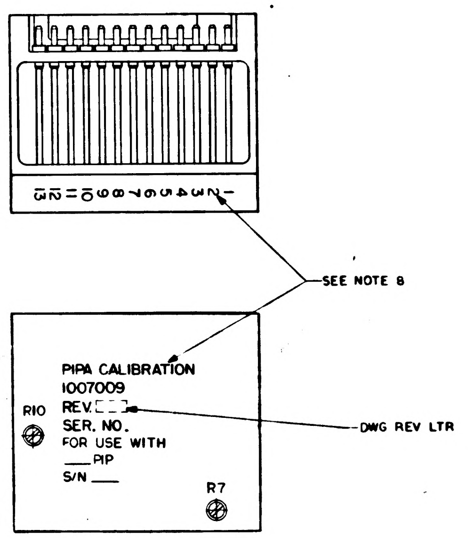
VIEW B-B

3 PLACES



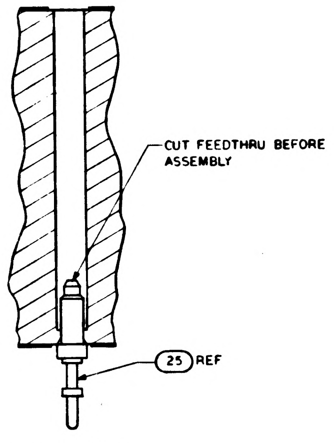
VIEW A-A

2 PLACES


1 2 3 4 5 6 7 8 9 10 11 12 13
SEE NOTE 8
PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
____PIP
S/N ____
R10
R7
DWG REV LTR

MARKING VIEW

SCALE 2/1


CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A

TYPICAL INSTALLATION FOR FT6 AND FT10

T NO	VALUE
[illegible]	31.9K
[illegible]	33.4K
[illegible]	35.0K
[illegible]	36.8K
[illegible]	38.8K
[illegible]	41.0K
[illegible]	43.4K
[illegible]	46.2K
[illegible]	49.3K
[illegible]	52.9K
[illegible]	57.0K
[illegible]	61.8K
[illegible]	67.4K
[illegible]	74.2K
[illegible]	82.5K
[illegible]	92.9K
[illegible]	106K
[illegible]	124K
[illegible]	149K
[illegible]	187K
[illegible]	249K
[illegible]	373K
[illegible]	746K

CHART B

PART NO.	VALUE UF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
	1010009	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	26
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006757-8	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-746K .25W ±1%	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

1001598		
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG. NO. Contract NAS 9-497
DRAWN Tom Hill DATE 10 JAN 63
CHECKED 14 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL 3-6-63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

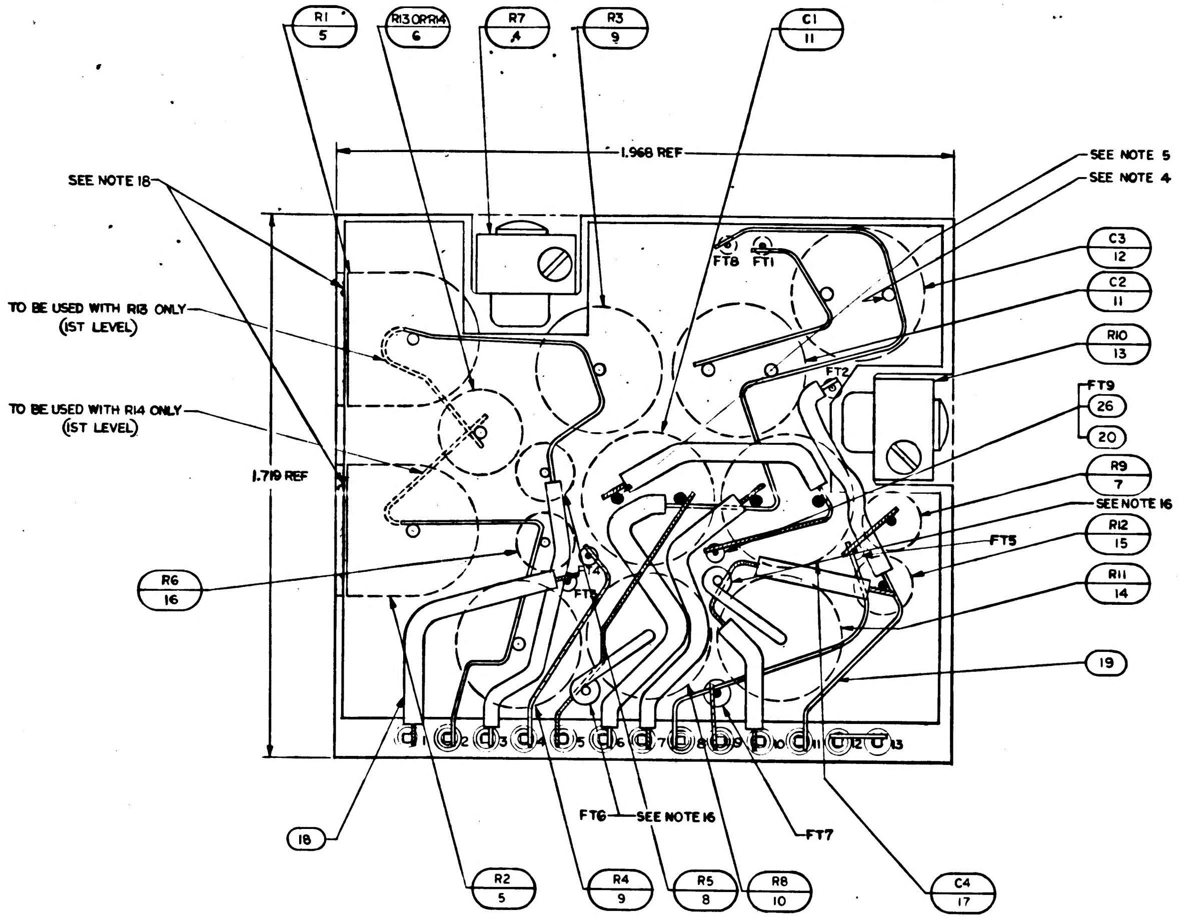
PIPA CALIBRATION
ASSEMBLY

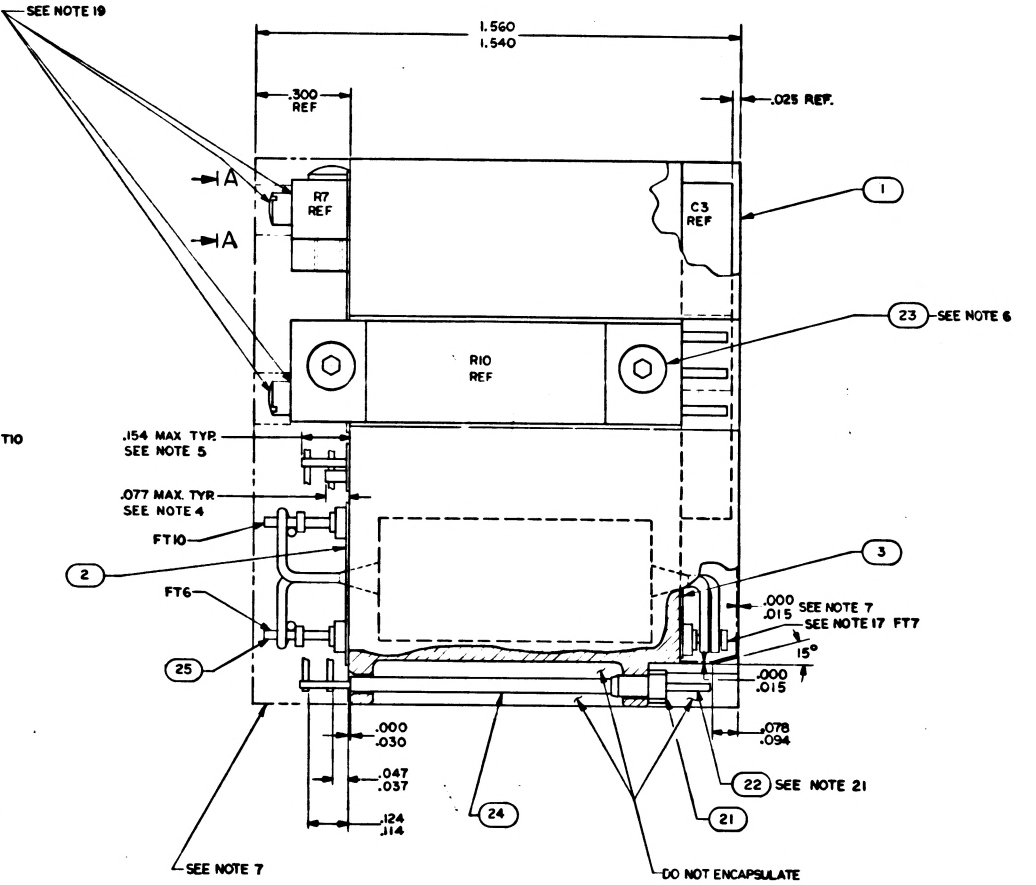
CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007009
SCALE 5/1 | WT | SHEET 1 OF 1

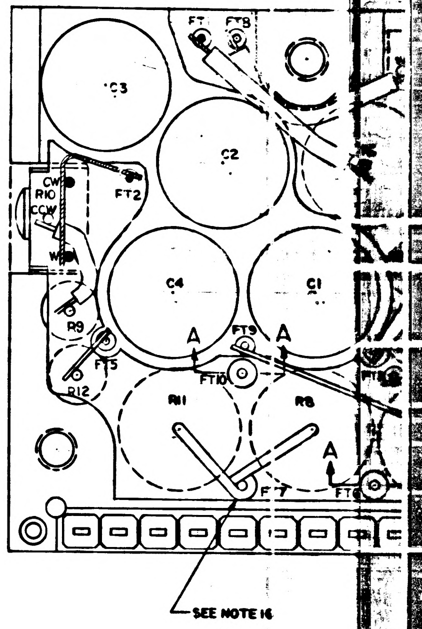
K 1007009

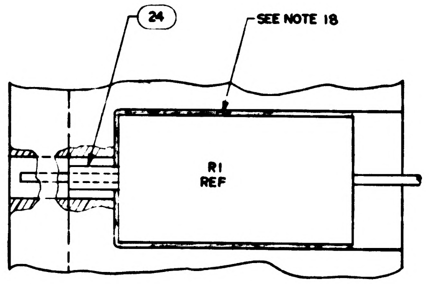
2/1007009

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

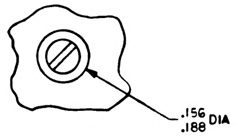

R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
SEE NOTE 18
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.968 REF
1.719 REF
FT8 FT1
FT2
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
FT9 26 20
R9 7
SEE NOTE 16 FT10
R12 15
FT5
R11 14
19
R6 16
18
FT6
SEE NOTE 16
FT7
R2 5
R4 9
R5 8
R8 10
C4 17
1 2 3 4 5 6 7 8 9 10 11 12 13


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
1
R10 REF
23 SEE NOTE 6
.154 MAX TYP. SEE NOTE 5
.077 MAX. TYP. SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
22 SEE NOTE 21
21
.000 .030
.047 .037
.124 .114
24
SEE NOTE 7
DO NOT ENCAPSULATE


FT FT8
C3
C2
CW
R10
CCW
FT2
C4
C1
R9
FT5
FT9
A
A
FT10
R12
R11
R8
A
SEE NOTE 16


24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808(ASG) TO FIND NO.23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.6 THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO.5 PER ND1002117
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. ~~AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-[illegible]~~
21. MUST MEET REQUIRMENTS OF ND 1002136
22. PROCURE PER PS1007009
23. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	87K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

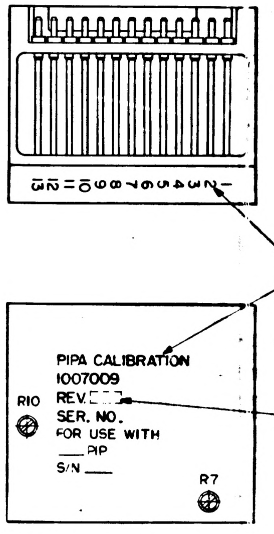
PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

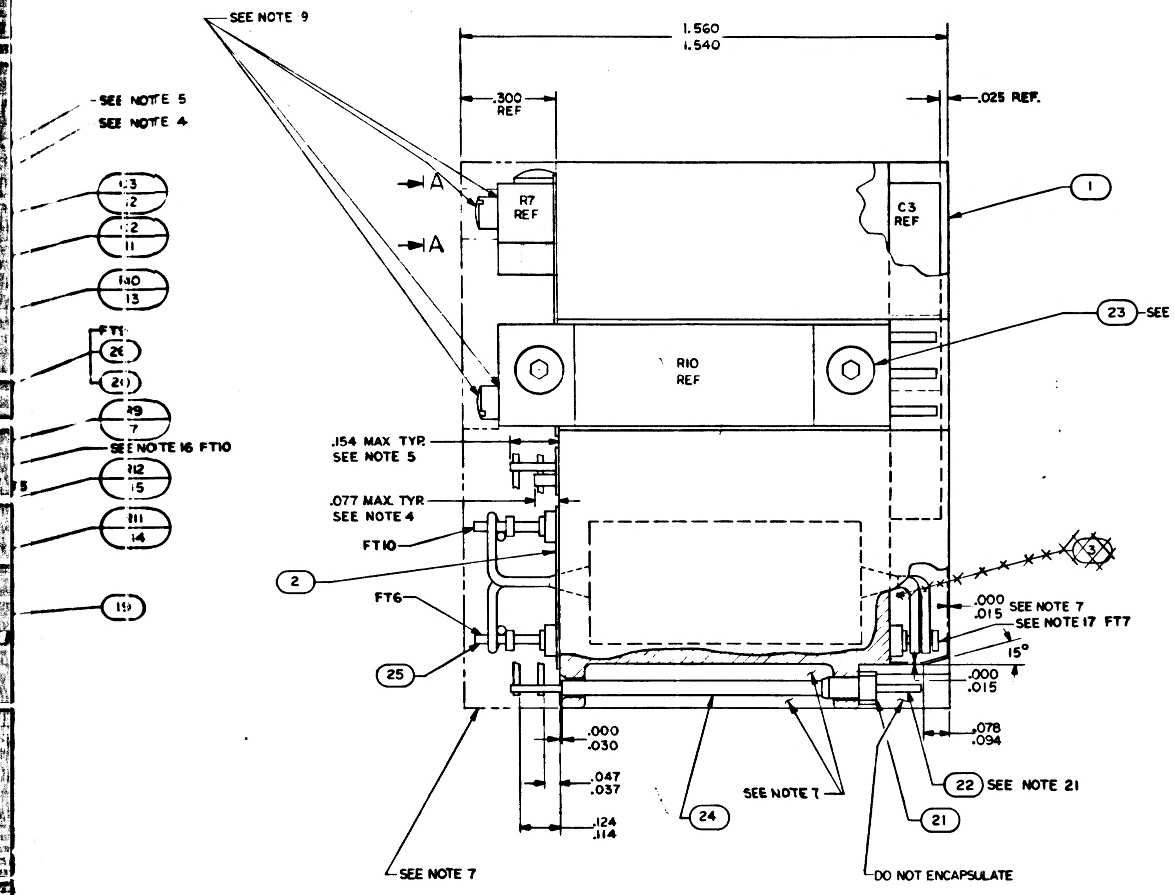
PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

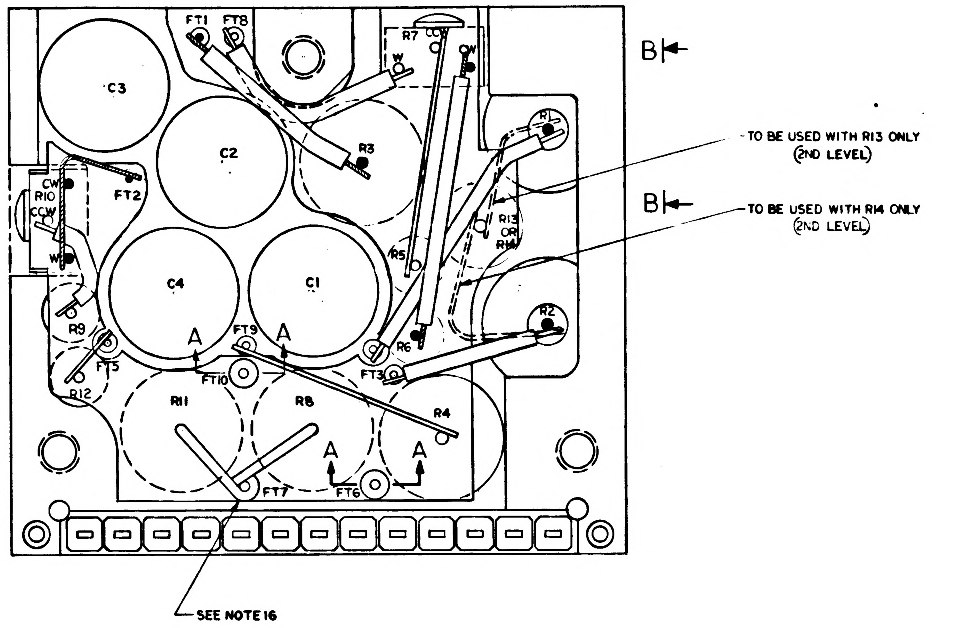

1 2 3 4 5 6 7 8 9 10 11 12 13
S
PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
___ PIP
S/N ___
R10
R7

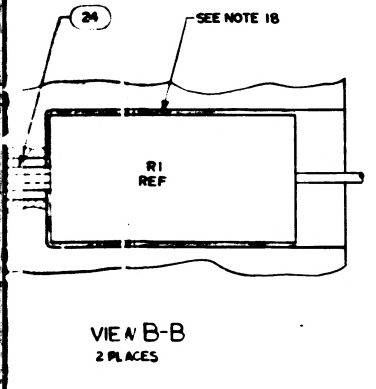
MARKING VIEW
SCALE 2/1

1007009 L

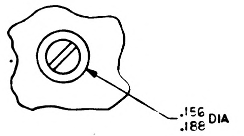
SYM	DESCRIPTION	DATE	APPROVAL
REVISIONS TDRR 00411			
A	REVISED PER TDRR 01011	4-25-63	D.T. WK
B	REVISED PER TDRR 01179	5-8-63	D.T. WK
C	REVISED PER TDRR 01402	-29-63	RVU WK
D	REVISED PER TDRR 01717	[illegible]	JJM WK
E	REVISED PER TDRR 05457	12-27-63	WK
F	REVISED PER TDRR 07125	31 MAR 64	JHR
G	REVISED PER TDRR 07286	2 APR 64	JWP. J.E.G.
H	REVISED PER TDRR 07931	4 MAY 64	JJJ
J	REVISED PER TDRR 14091	18 NOV 64	JWP EF
K	REVISED PER TDRR 7308	2 MAR 65	EF
L	REVISED PER TDRR 9502	8 JUN 65	EF


SEE NOTE 9
SEE NOTE 5
SEE NOTE 4
1.560
1.540
.300 REF
.025 REF.
A
A
R7 REF
C3 REF
1
C3
12
C2
11
R10
13
FT1
26
20
R9
7
SEE NOTE 16 FT10
R12
15
R11
14
19
23
SEE NOTE 6
R10 REF
.154 MAX TYP.
SEE NOTE 5
.077 MAX. TYP.
SEE NOTE 4
FT10
2
FT6
25
3
.000
.015
SEE NOTE 7
SEE NOTE 17 FT7
15°
.000
.015
.000
.030
.047
.037
.124
.114
.078
.094
24
SEE NOTE 7
22
SEE NOTE 21
21
SEE NOTE 7
DO NOT ENCAPSULATE

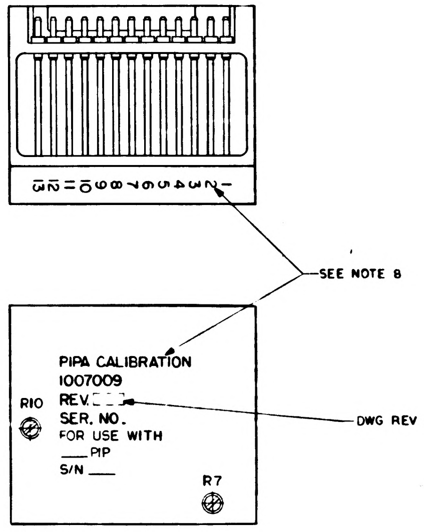

FT1
FT8
R7
CCW
CW
W
C3
C2
R3
R1
CW
R10
CCW
W
FT2
C4
C1
R5
R13
OR
R14
R2
R9
FT5
R12
A
FT9
A
FT10
R6
FT3
R11
R8
R4
A
A
FT7
FT6
B
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
SEE NOTE 16


24
SEE NOTE 18
R1
REF

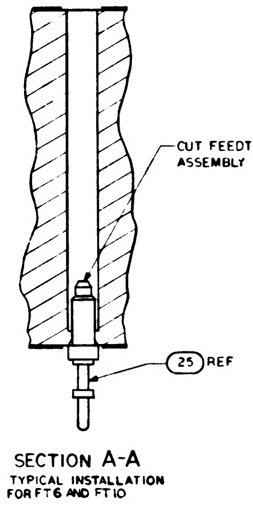
VIEW B-B
2 PLACES



VIEW A-A
2 PLACES


13 12 11 10 9 8 7 6 5 4 3 2 1
SEE NOTE 8
PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
____PIP
S/N ____
R10
R7
DWG REV LTR

MARKING VIEW
SCALE 2/1


CUT FEEDTHRU BEFORE ASSEMBLY
25
REF

SECTION A-A
TYPICAL INSTALLATION
FOR FT6 AND FT10

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.9K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE UF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
	1010009	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	26
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006757-8	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR .0100UF-.0228UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250-1	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-746K .25W ±1%	6
2	1010262-2	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
~~+~~	~~1008016-2~~	~~INSULATOR, BOTTOM~~	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

1001598	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ±.02 XXX ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497

DRAWN Tom Gillespie DATE 10 -63
CHECKED 14 Feb 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIPA CALIBRATION ASSEMBLY

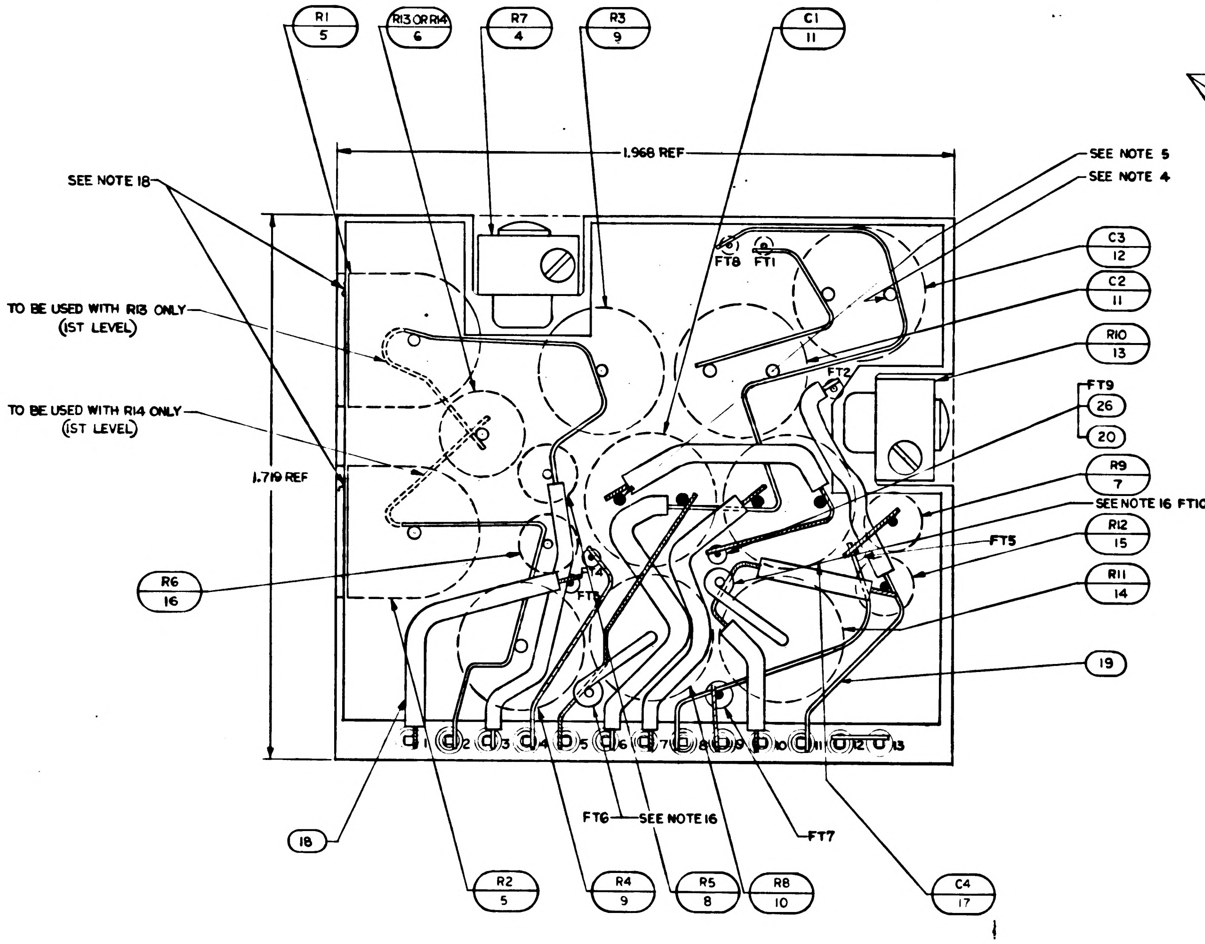
CODE IDENT NO	SIZE	NASA DRAWING NO.
80230	J	1007009

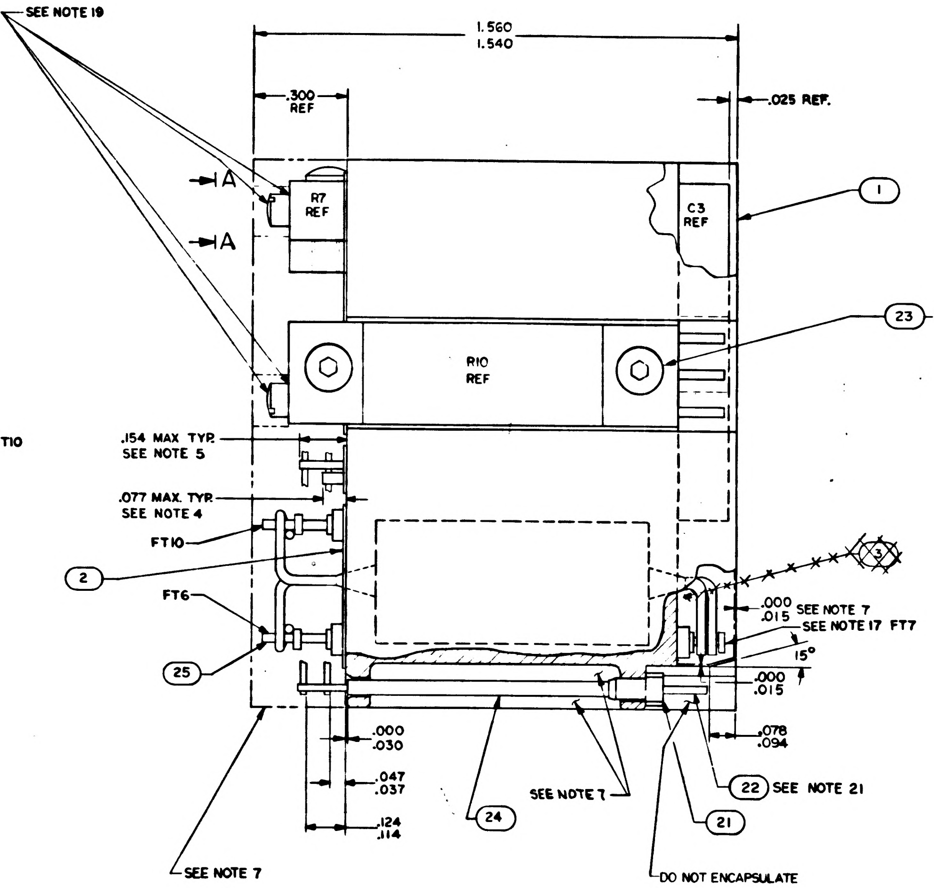
SCALE 5/1 WT SHEET 1 OF 1

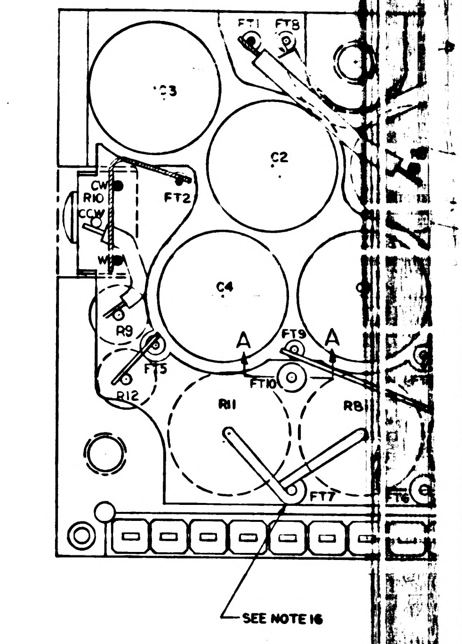
1007009 L

2/1007009

NOTICE — When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

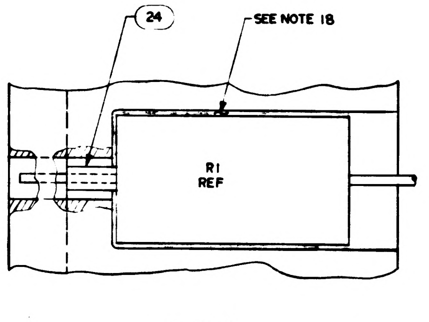

R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
1.968 REF
SEE NOTE 18
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
FT9 26 20
R9 7
SEE NOTE 16 FT10
R12 15
FT5
R11 14
19
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
FT8
FT1
FT2
1.719 REF
R6 16
1 2 3 4 5 6 7 8 9 10 11 12 13
18
FT6
SEE NOTE 16
FT7
R2 5
R4 9
R5 8
R8 10
C4 17


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF.
A
A
R7 REF
C3 REF
1
R10 REF
23 SEE NOTE 6
.154 MAX TYP. SEE NOTE 5
.077 MAX. TYP. SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
.000 .030
.047 .037
.124 .114
24
SEE NOTE 7
22 SEE NOTE 21
21
SEE NOTE 7
DO NOT ENCAPSULATE

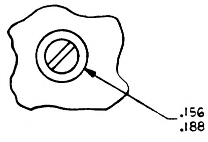

FT1
FT8
C3
C2
CW
R10
CCW
FT2
C4
R9
FT5
A
A
FT9
R12
FT10
R11
R8
FT7
SEE NOTE 16

NOTES:

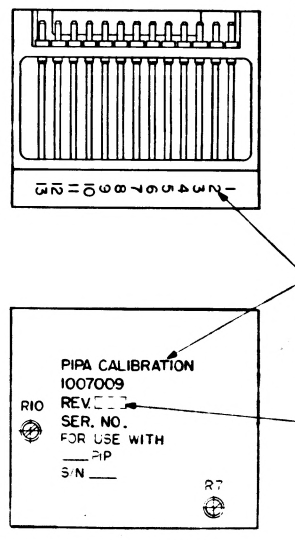
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808(ASG) TO FIND NO.23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.6 THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009 METHOD H.
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO.5 PER ND1002117
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. ~~AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-[illegible]~~
21. MUST MEET REQUIRMENTS OF ND 1002136
22. PROCURE PER PS1007009
23. ~~BOND A .25 MIN WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND 1002187 TYPE I.~~
24. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.
25. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.


24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES


13 12 11 10 9 8 7 6 5 4 3 2 1
PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
____ PIP
S/N ____
R10
R7

MARKING VIEW
SCALE 2/1

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

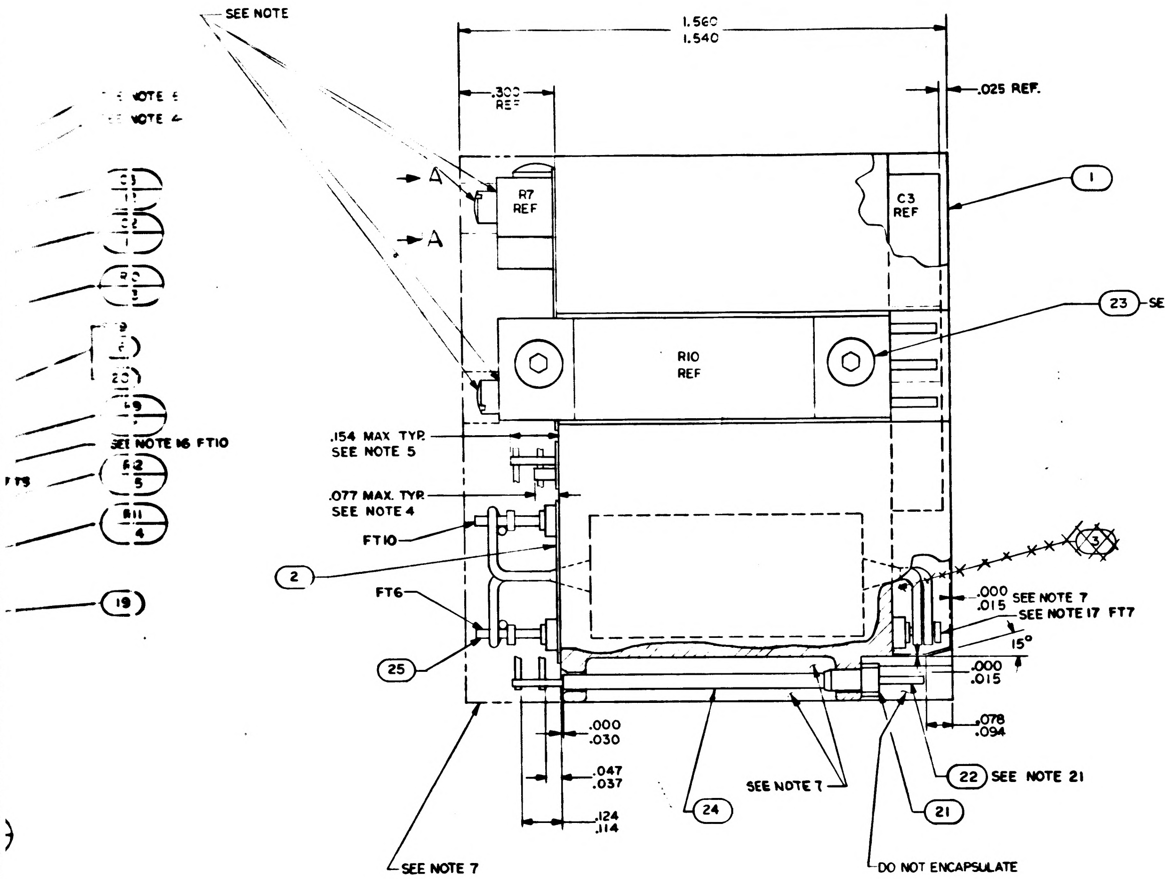
CHART D

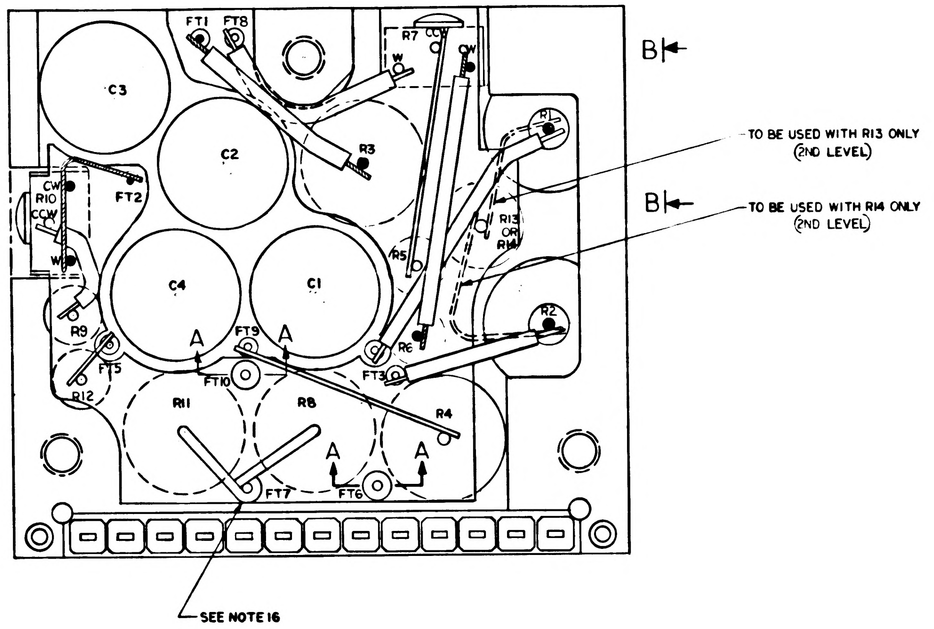
PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

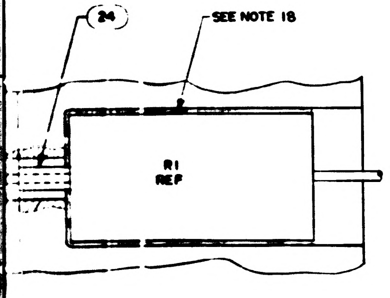
CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377 99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

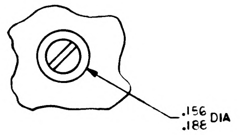
SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00411		
A	REVISED PER TDRR 01011	4-25-63	
B	REVISED PER TDRR 01179	5-8-63	
C	REVISED PER TDRR 01402		
D	REVISED PER TDRR 01717		
E	REVISED PER TDRR 05457	12-27-63	
F	REVISED PER TDRR 07125	31 MAR 64	
G	REVISED PER TDRR 07286	2 APR 64	
H	REVISED PER TDRR 07931	4 MAY 64	
J	REVISED PER TDRR 4091	18 NOV 64	
K	REVISED PER TDRR [illegible]308	2 MAR 65	
L	REVISED PER TDRR [illegible]	8 JUN 65	
M	REVISED PER TDRR [illegible] 25	2 AUG 65	


SEE NOTE
SEE NOTE 5
SEE NOTE 4
1.560
1.540
.300 REF
.025 REF.
A
A
R7 REF
C3 REF
1
R10 REF
23 SEE NOTE 6
SEE NOTE 16 FT10
FT9
.154 MAX TYP.
SEE NOTE 5
.077 MAX. TYP.
SEE NOTE 4
FT10
2
FT6
25
19
3
.000
.015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000
.015
.078
.094
.000
.030
.047
.037
.124
.114
SEE NOTE 7
24
21
22 SEE NOTE 21
SEE NOTE 7
DO NOT ENCAPSULATE

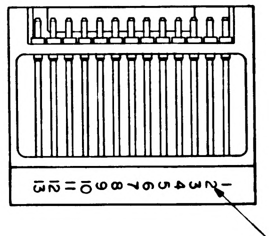

FT1
FT8
R7
CCW
CW
W
C3
C2
R3
R1
B
B
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
CW
R10
CCW
FT2
W
R13 OR R14
R5
C4
C1
R2
R9
FT5
FT9
A
A
FT10
R6
FT3
R11
R8
R4
R12
A
A
FT7
FT6
SEE NOTE 16

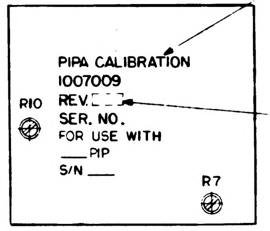

24
SEE NOTE 18
R1
REF

VIEW B-B
2 PLACES

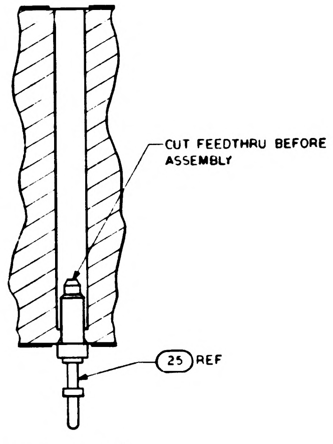


VIEW A-A
2 PLACES


1 2 3 4 5 6 7 8 9 10 11 12 13
SEE NOTE 8


PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
___ PIP
S/N ___
R10
R7
DWG REV LTR

MARKING VIEW
SCALE 2/1


CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A
TYPICAL INSTALLATION FOR FT6 AND FT10

PART NO	VALUE
1010251-1	31.9K
[illegible]	33.4K
1010251-[illegible]	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
[illegible]	46.2K
[illegible]-17	49.3K
[illegible]	52.[illegible]K
[illegible]	57.0K
1010251-2[illegible]	61.8K
[illegible]	67.4K
[illegible]	74.2K
[illegible]	82.6K
[illegible]	92.9K
[illegible]	106K
[illegible]	124K
[illegible]	149K
[illegible]	187K
[illegible]	249K
[illegible]	373K
[illegible]	746K

CHART B

PART NO.	VALUE UF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

PART NO.	VALUE Ω
1010834-1	61.556
1010834-2	60.934
1010834-3	60.326
1010834-4	59.729
1010834-5	59.144
1010834-6	58.570
1010834-7	58.008
1010834-8	57.456
1010834-9	56.914
1010834-10	56.383
1010834-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
	1010009	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	26
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006757-8	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-[illegible]UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-[illegible]5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-[illegible]50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-[illegible] 1W ±0.1%	14
1	1010373-8	RESISTOR, VARIABLE [illegible] 1W ±5%	13
1	SEE NOTE 11	CAPACITOR, .0100UF-[illegible]UF 200V ±0.5%	12
2	1010289-18	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010834-12	RESISTOR, WW 10 1W ±0.1%	10
2	1010250-1	RESISTOR, WW 680 [illegible]W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-[illegible]5K 0.1W ±1%	8
1	1010283-18	RESISTOR, WW 9.3K [illegible] ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-746[illegible] ±1%	6
2	1010262-2	RESISTOR, WW 630 [illegible]W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
~~1~~	~~1008016-2~~	~~INSULATOR, BOTTOM~~	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

1001598	
NEXT ASSY	USED ON
APPLICATION	

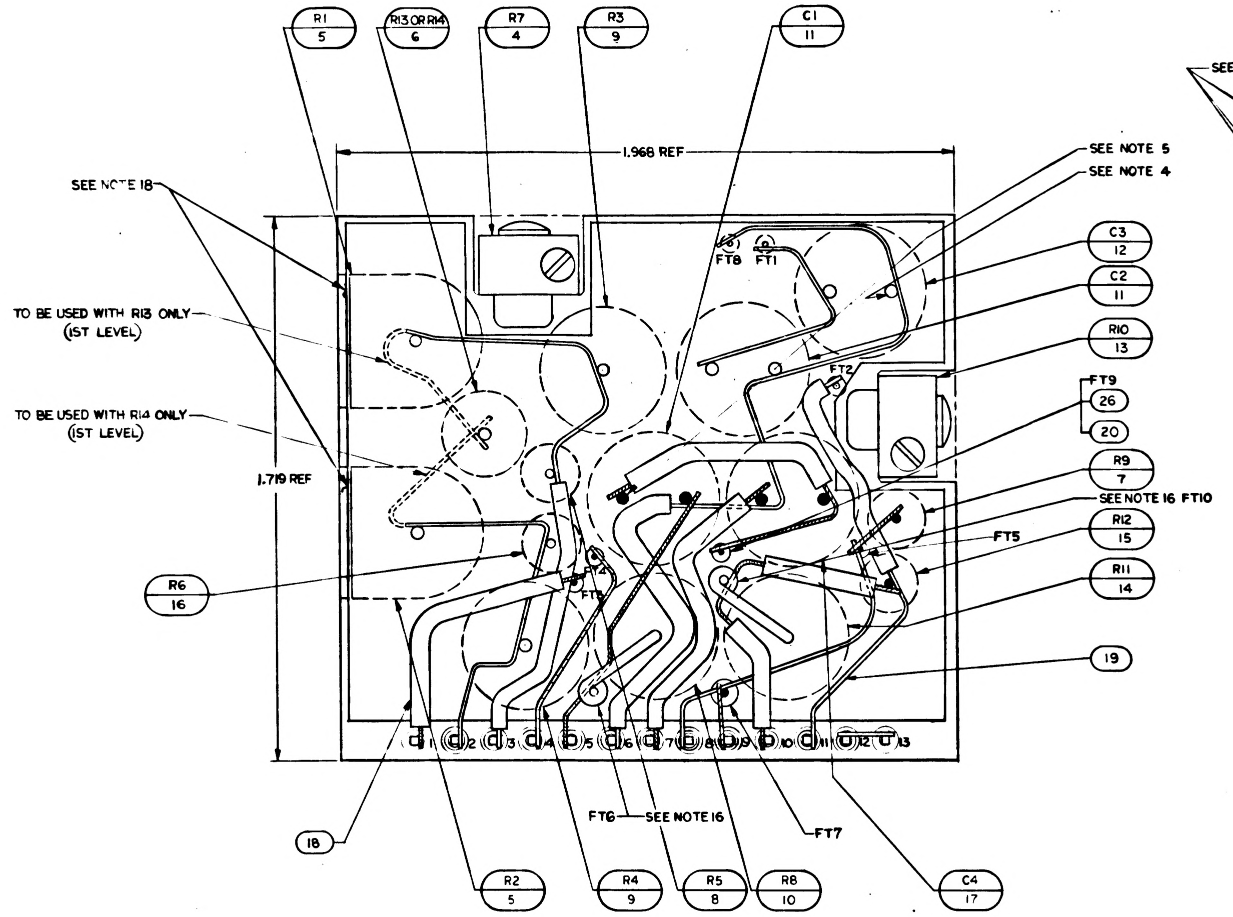
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN [illegible] DATE [illegible] 63
CHECKED [illegible] 14 FEB 63
APPROVAL A.R. [illegible] 18 FEB 63
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIPA CALIBRATION ASSEMBLY

CODE IDENT NO 80230
SIZE J
NASA DRAWING NO. 1007009
SCALE 5/1
WT
SHEET 1 OF 1


R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
1.968 REF
SEE NOTE 18
SEE NOTE 5
SEE NOTE 4
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.719 REF
FT8
FT1
FT2
C3 12
C2 11
R10 13
FT9 26 20
R9 7
SEE NOTE 16 FT10
R12 15
FT5
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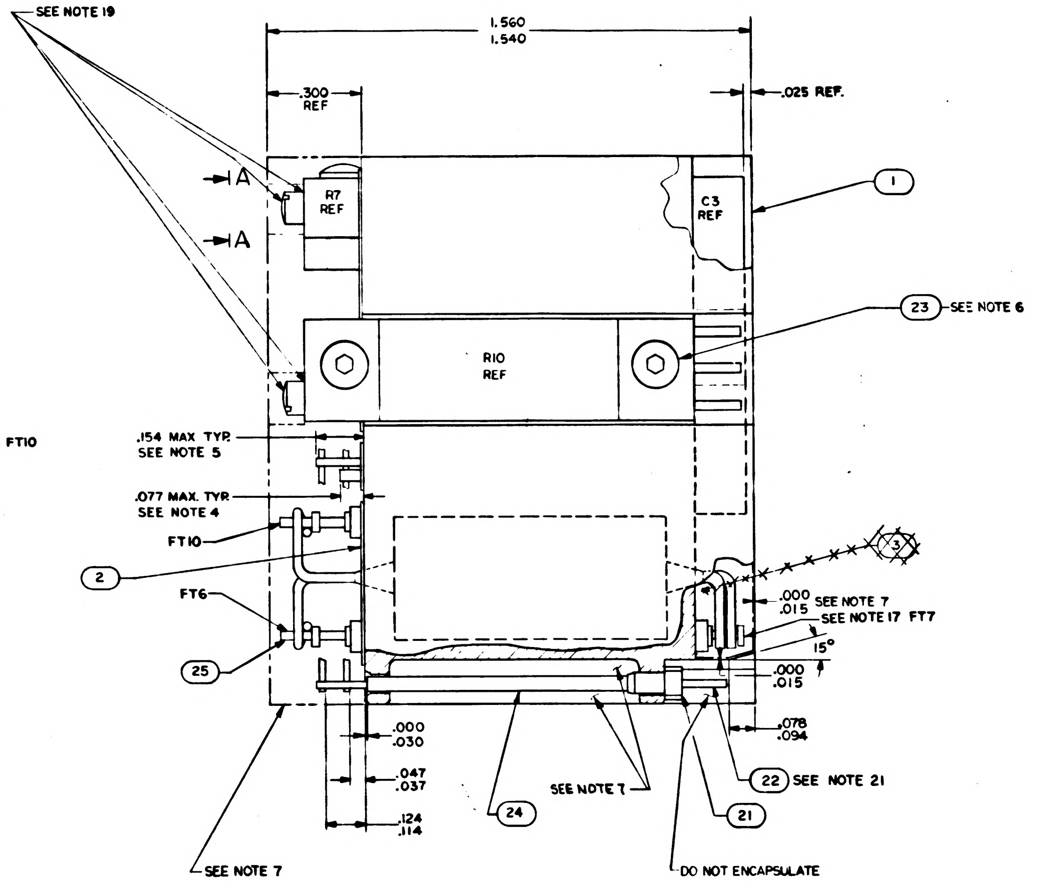
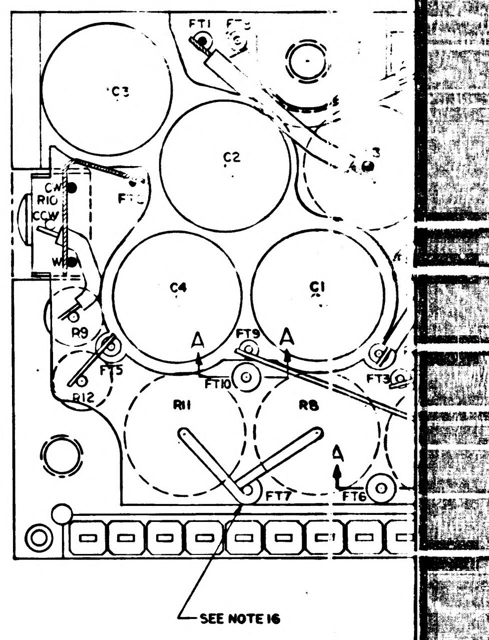
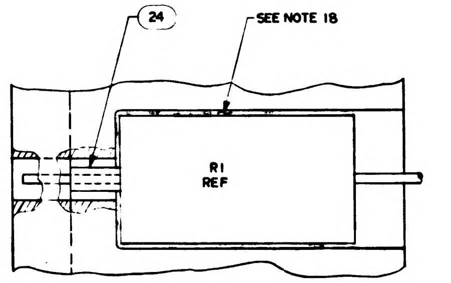
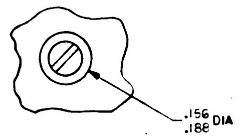
R6 16
19
18
FT6
SEE NOTE 16
FT7
R2 5
R4 9
R5 8
R8 10
C4 17


SEE NOTE 19
1.560
1.540
.300 REF
.025 REF.
A
A
R7 REF
C3 REF
1
23
SEE NOTE 6
R10 REF
.154 MAX TYP. SEE NOTE 5
.077 MAX TYP. SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
15°
.000 .015
.078 .094
.000 .030
.047 .037
.124 .114
24
SEE NOTE 7
22 SEE NOTE 21
21
SEE NOTE 7
DO NOT ENCAPSULATE


FT1
C3
C2
C4
C1
R10
CCW
R9
FT5
R12
A
FT9
A
FT10
FT3
R11
R8
A
FT7
FT6
SEE NOTE 16


24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808(ASG) TO FIND NO.23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.6 THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009 METHOD H.
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MIL-S-6872
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO.5 PER ND1002117
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
~~20. AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER MIL-A-13883B~~
21. MUST MEET REQUIRMENTS OF ND 1002136
22. PROCURE PER PS1007009
23. ~~BOND A .25 MIN WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~
24. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.
25. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.

PART NO	VALUE
1010251 - 1	31.9K
1010251-10	33.4K
1010251-11	35.0K
1010251-12	36.8K
1010251-13	38.8K
1010251-14	41.0K
1010251-15	43.4K
1010251-16	46.2K
1010251-17	49.3K
1010251-18	52.9K
1010251-19	57.0K
1010251 - 20	61.8K
1010251 - 21	67.4K
1010251 - 22	74.2K
1010251 - 23	82.6K
1010251 - 24	92.9K
1010251 - 25	106K
1010251 - 26	124K
1010251 - 27	149K
1010251 - 28	187K
1010251 - 29	249K
1010251 - 30	373K
1010251 - 31	746K

CHART B

PART NO.	VALUE uF
1010289-1	.0100
1010289-2	.0108
1010289-3	.0116
1010289-4	.0124
1010289-5	.0132
1010289-6	.0140
1010289-7	.0148
1010289-8	.0156
1010289-9	.0164
1010289-10	.0172
1010289-11	.0180
1010289-12	.0188
1010289-13	.0196
1010289-14	.0204
1010289-15	.0212
1010289-16	.0220
1010289-17	.0228

CHART C

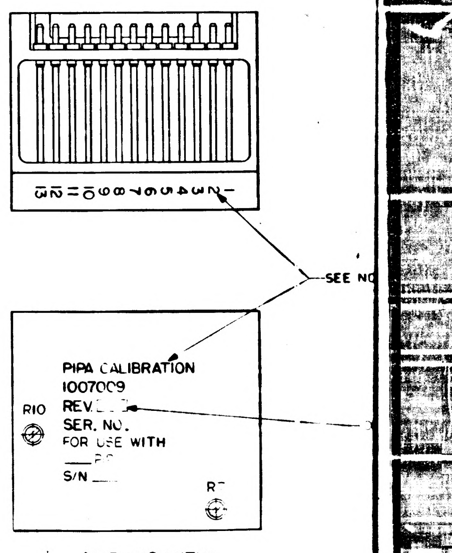
PART NO.	VALUE Ω
1010834-1	61.556
1010834-2	60.934
1010834-3	60.326
1010834-4	59.729
1010834-5	59.144
1010834-6	58.570
1010834-7	58.008
1010834-8	57.456
1010834-9	56.914
1010834-10	56.383
1010834-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

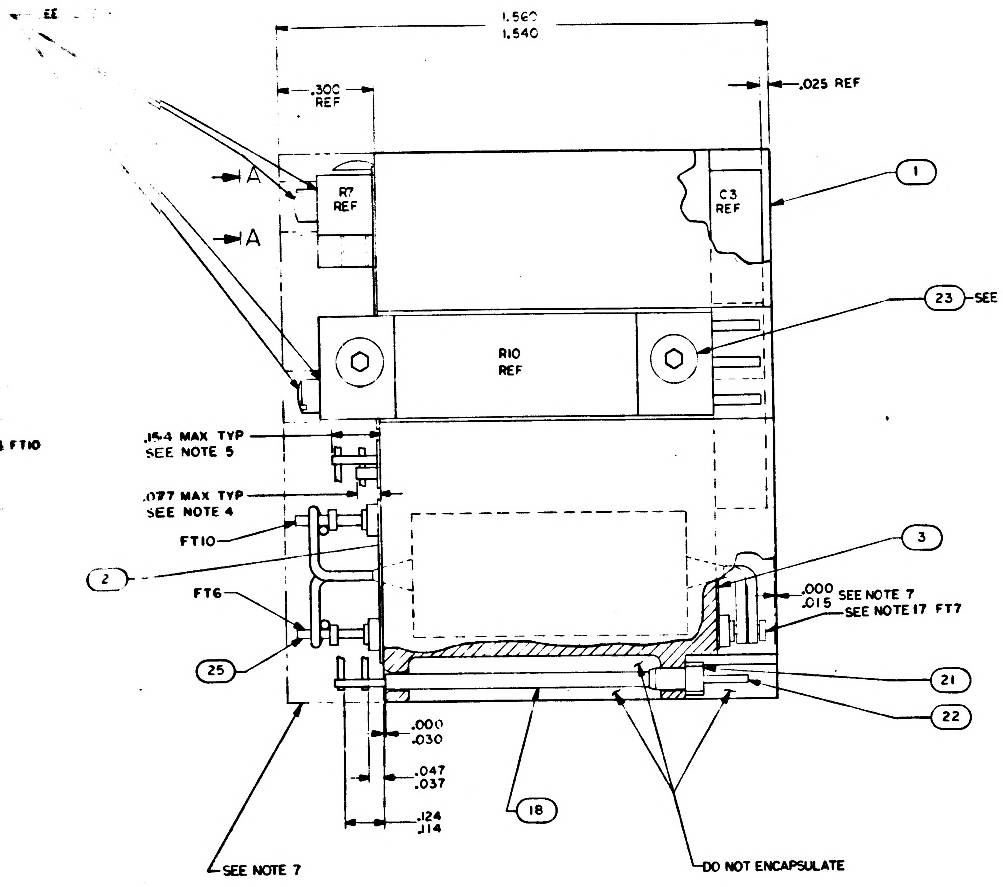

1 2 3 4 5 6 7 8 9 10 11 12 13
SEE NO
PIPA CALIBRATION
1007009
REV.
SER. NO.
FOR USE WITH
S/N
R10
R7

MARKING VIEW
SCALE 2/1

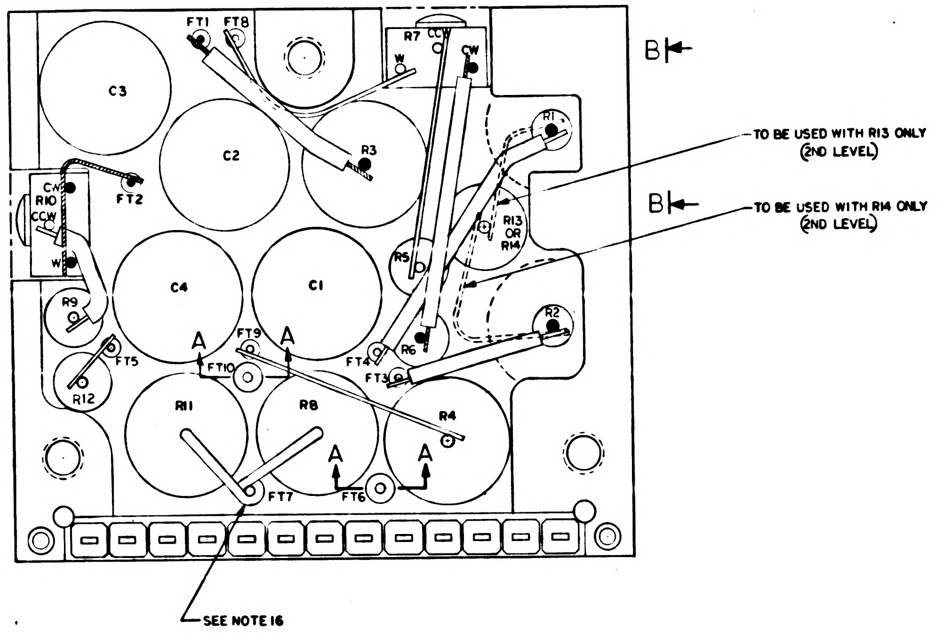
1007009

SYM	DESCRIPTION	DATE	APPROVAL

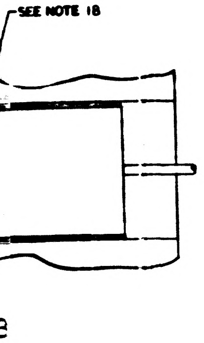
REVISIONS TDRR 00411

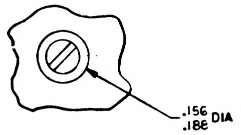


1.560
1.540
.300 REF
.025 REF
A
A
R7 REF
C3 REF
R10 REF
1
23 SEE NOTE 6
.144 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
FT6
25
21
22
.000 .030
.047 .037
.124 .114
18
SEE NOTE 7
DO NOT ENCAPSULATE

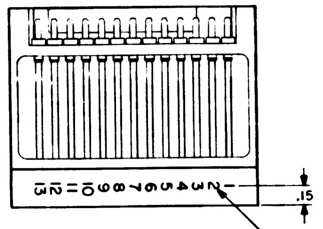


FT1
FT8
R7
CCW
CW
W
C3
R3
B
B
R1
TO BE USED WITH R13 ONLY (2ND LEVEL)
TO BE USED WITH R14 ONLY (2ND LEVEL)
C2
CW
R10
CCW
W
FT2
R13 OR R14
R5
C4
C1
R9
A
FT9
A
R6
FT4
FT3
R2
FT5
FT10
R12
R11
R8
R4
A
A
FT7
FT6
SEE NOTE 16





VIEW A-A
2 PLACES



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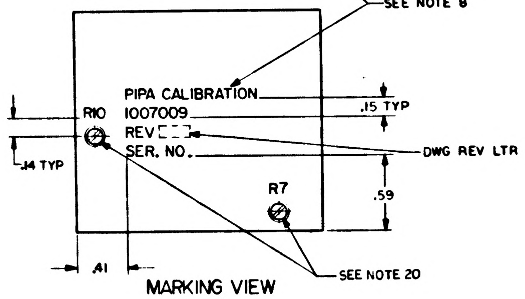
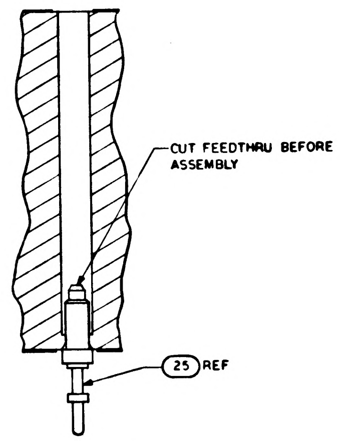
.15
SEE NOTE 8



PIPA CALIBRATION
1007009
REV
SER. NO.
R10
R7
.15 TYP
DWG REV LTR
.14 TYP
.59
.41
SEE NOTE 20

MARKING VIEW
SCALE 2/1



CUT FEEDTHRU BEFORE ASSEMBLY
25 REF

SECTION A-A
TYPICAL INSTALLATION FOR FT6 AND FT10

CHART B

PART NO.	VALUE uF
1010289-	.0100
1010289-	.0108
1010289-	.0116
1010289-	.0124
1010289-	.0132
1010289-	.0140
1010289-	.0148
1010289-	.0156
1010289-	.0164
1010289-	.0172
1010289-	.0180
1010289-	.0188
1010289-	.0196
1010289-	.0204
1010289-	.0212
1010289-	.0220
1010289-	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	4.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010009	SCHEMATIC	REF
3	1006784-6	TERMINAL, FEEDTHRU	25
AR	1006776-20	INSULATION SLEEVING	24
4	1000093-3	SCREW, BUTTON HD	23
13	1006782-4	CONTACT, WRAPOST MALE MIN	22
13	1006775	INSULATOR, WRAPOST MALE MIN	21
AR	1006787-2	WIRE, ELEC .020 DIA	20
AR	1006757-1	WIRE, ELEC .010 X .020	19
AR	1006776-21	INSULATION SLEEVING	18
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±5%	17
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	16
1	SEE NOTE 13	RESISTOR, WW 6.59K-72.50K 0.1W ±0.1%	15
1	SEE NOTE 12	RESISTOR, WW 61.556-55.861 1W ±.01%	14
1	1010373-8	RESISTOR, VARIABLE 2K 1W ±5%	13
1	SEE NOTE 11	CAPACITOR, .0100UF-.0228UF 200V ±0.5%	12
2	1010289-	CAPACITOR, .0330UF 200V ±0.5%	11
1	1010253-12	RESISTOR, WW 10 1W ±.01%	10
2	1010250	RESISTOR, WW 680 0.7W ±1%	9
1	SEE NOTE 14	RESISTOR, WW 82.5K-117.5K 0.1W ±1%	8
1	1010283-12	RESISTOR, WW 9.3K 0.1W ±1%	7
1	SEE NOTE 10	RESISTOR, 31.9K-292.4K .25W ±1%	6
2	1010262	RESISTOR, WW 630 10W ±1%	5
1	1010373-9	RESISTOR, VARIABLE 5K 1W ±1%	4
1	1008018-2	INSULATOR, BOTTOM	3
1	1008018-1	INSULATOR, TOP	2
1	1008013	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007101	
1007102	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

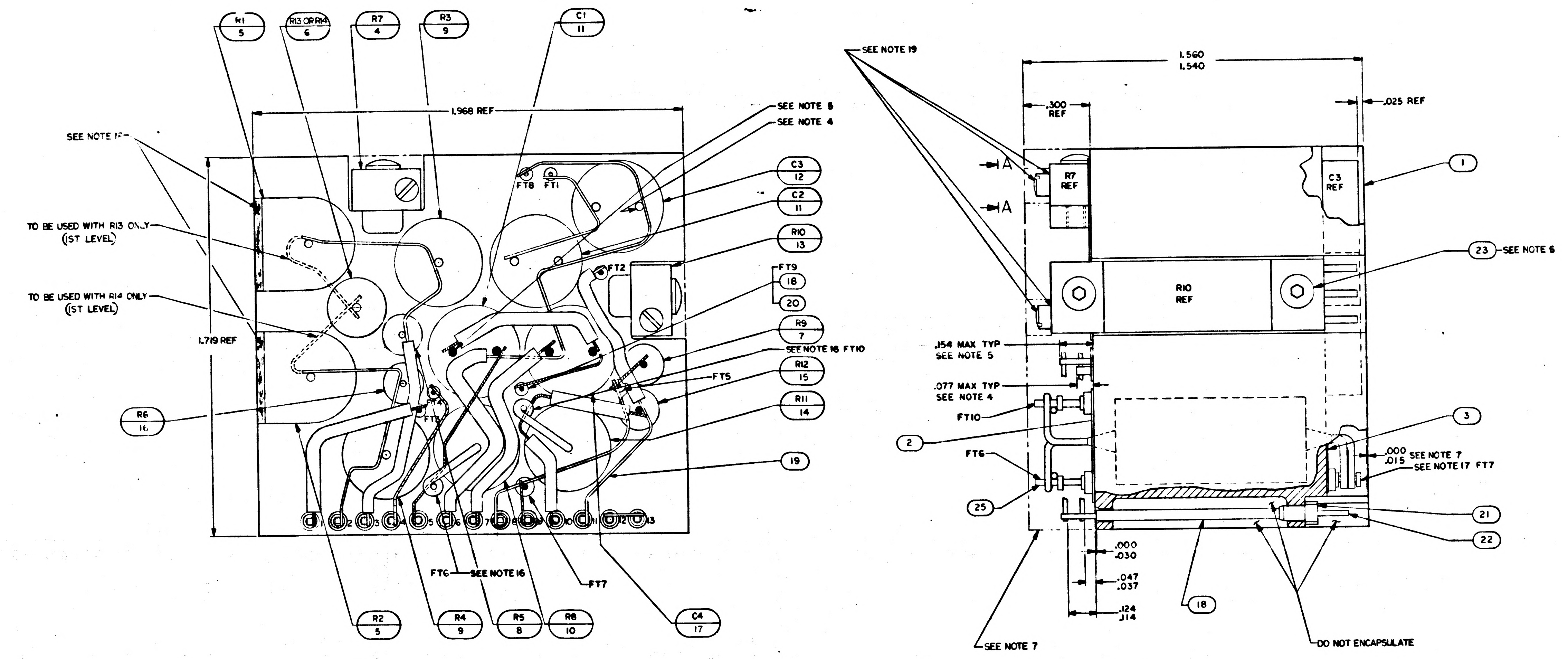
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN Tom Gillespie DATE 10 JAN 63
CHECKED 14 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

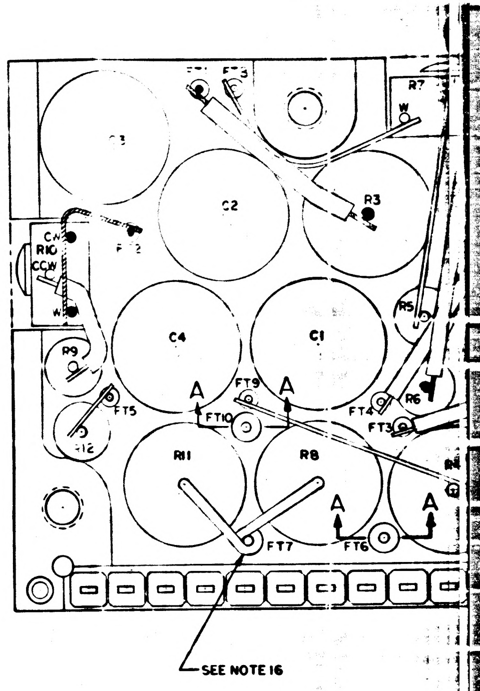
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

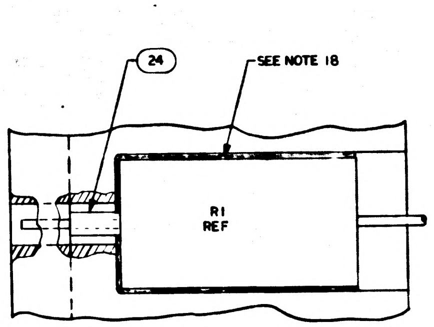
PIPA CALIBRATION
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007009
SCALE 5/1
WT
SHEET 1 OF 1

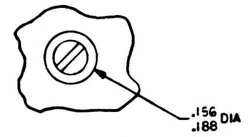
1007009


R1 5
R13 OR R14 6
R7 4
R3 9
C1 11
SEE NOTE 12
TO BE USED WITH R13 ONLY (1ST LEVEL)
TO BE USED WITH R14 ONLY (1ST LEVEL)
1.968 REF
1.719 REF
SEE NOTE 5
SEE NOTE 4
C3 12
C2 11
R10 13
FT9 18 20
R9 7
SEE NOTE 16 FT10
R12 15
FT5
R11 14
19
R6 16
FT8 FT1 FT2 FT3
FT6
SEE NOTE 16
FT7
R2 5
R4 9
R5 8
R8 10
C4 17
SEE NOTE 19
1.560
1.540
.300 REF
.025 REF
A
R7 REF
C3 REF
1
R10 REF
23 SEE NOTE 6
.154 MAX TYP SEE NOTE 5
.077 MAX TYP SEE NOTE 4
FT10
2
FT6
25
3
.000 .015 SEE NOTE 7
SEE NOTE 17 FT7
21
22
.000 .030
.047 .037
.124 .114
18
SEE NOTE 7
DO NOT ENCAPSULATE

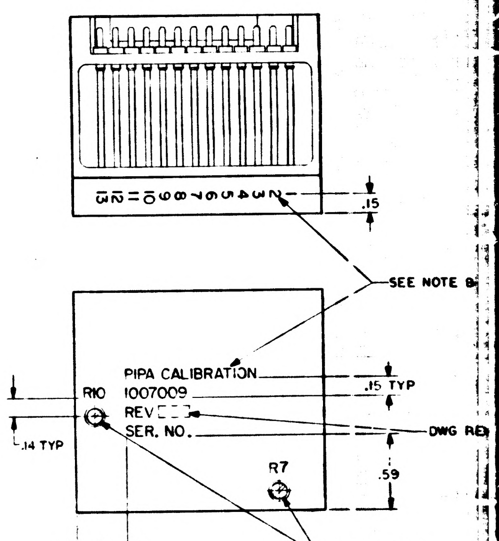

R7
R3
C3
C2
R10 CCW
C4
C1
R9
R5
R6
FT5
FT9
FT10
A
R11
R8
FT7
FT6
SEE NOTE 16


24
SEE NOTE 18
R1 REF

VIEW B-B
2 PLACES



VIEW A-A
2 PLACES


13 12 11 10 9 8 7 6 5 4 3 2
.15
SEE NOTE 8
PIPA CALIBRATION
R10
1007009
REV
SER. NO.
.15 TYP
DWG REV
.14 TYP
R7
.59
.41
SEE NOTE 20

MARKING VIEW
SCALE 2/1

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY ZINK CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO FIND NO. 23
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
8. MARK .060/.100 HIGH WHITE PER ND1002019
9. STAKE FIND NO.6 THRU FIND NO. 12, FIND NO. 14 THRU FIND NO. 17 AND FIND NO. 25 PER ND1002009
10. AT FINAL TEST R13 OR R14 TO BE SELECTED FROM CHART A
11. AT FINAL TEST C3 AND C4 TO BE SELECTED FROM CHART B
12. AT FINAL TEST R11 TO BE SELECTED FROM CHART C
13. AT FINAL TEST R12 TO BE SELECTED FROM CHART D
14. AT FINAL TEST R5 AND R6 TO BE SELECTED FROM CHART E
15. AR DENOTES AS REQUIRED
16. SOLDER PER MSFC-PROC-158A
17. CUT FT7 AT TOP OF TURRET
18. BOND FIND NO.5 PER ND1002041
19. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
20. AFTER FINAL ADJUSTMENT, SEAL ADJUSTING SCREW PER ND

CHART A

PART NO.	VALUE Ω
1010251-1	31.9K
1010251-2	36.0K
1010251-3	41.2K
1010251-4	48.2K
1010251-5	58.01K
1010251-6	72.6K
1010251-7	97.1K
1010251-8	146.0K
1010251-9	292.4K

CHART B

PART NO.	VALUE uF
1010289-	.0100
1010289-	.0108
1010289-	.0116
1010289-	.0124
1010289-	.0132
1010289-	.0140
1010289-	.0148
1010289-	.0156
1010289-	.0164
1010289-	.0172
1010289-	.0180
1010289-	.0188
1010289-	.0196
1010289-	.0204
1010289-	.0212
1010289-	.0220
1010289-	.0228

CHART C

PART NO.	VALUE Ω
1010253-1	61.556
1010253-2	60.934
1010253-3	60.326
1010253-4	59.729
1010253-5	59.144
1010253-6	58.570
1010253-7	58.008
1010253-8	57.456
1010253-9	56.914
1010253-10	56.383
1010253-11	55.861

CHART D

PART NO.	VALUE Ω
1010283-1	72.5K
1010283-2	36.2K
1010283-3	24.2K
1010283-4	18.1K
1010283-5	14.5K
1010283-6	12.1K
1010283-7	10.4K
1010283-8	9.06K
1010283-9	8.05K
1010283-10	7.25K
1010283-11	6.59K

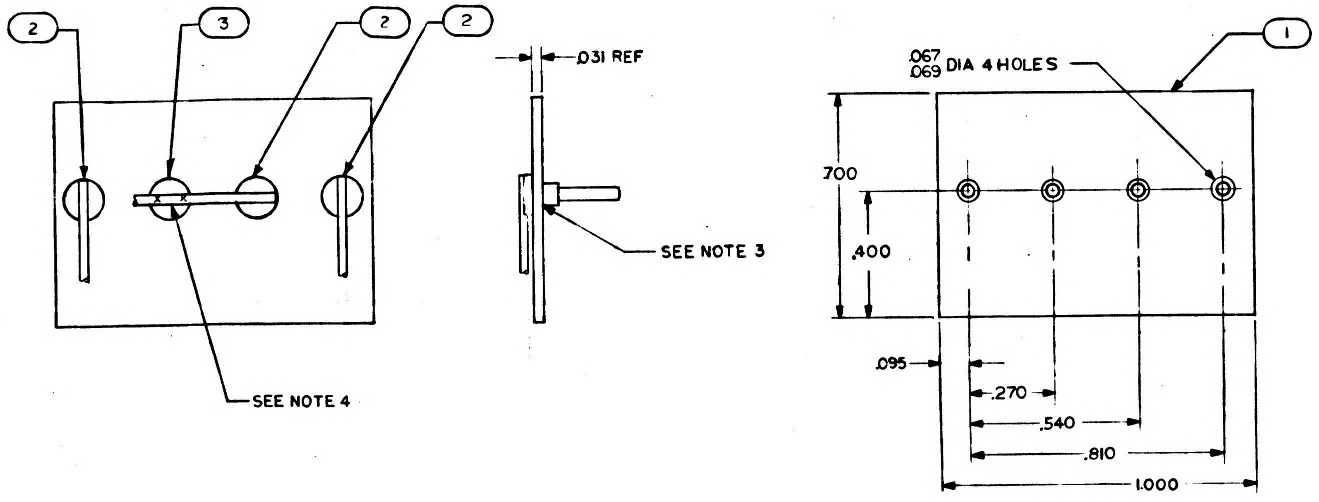
CHART E

PART NO.	VALUE Ω	PART NO.	VALUE Ω
1010377-76	82.5K	1010377-94	105.0 K
1010377-77	83.75K	1010377-95	106.25K
1010377-78	85.0K	1010377-96	107.5K
1010377-79	86.25K	1010377-97	108.75K
1010377-80	87.5K	1010377-98	110.0 K
1010377-81	88.75K	1010377-99	111.25K
1010377-82	90.0K	1010377-100	112.5K
1010377-83	91.25K	1010377-101	113.75K
1010377-84	92.5K	1010377-102	115.0K
1010377-85	93.75K	1010377-103	116.25
1010377-86	95.0K	1010377-104	117.5K
1010377-87	96.25K		
1010377-88	97.5K		
1010377-89	98.75K		
1010377-90	100.0K		
1010377-91	101.25K		
1010377-92	102.5K		
1010377-93	103.75K		

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS CLASS B TDRR 00315

SYM	DESCRIPTION	DATE	APPROVAL
A	UPGRADED FOR CLASS A RELEASE PER TDRR 00503	9-2-63	J.C.L. WK.



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: .031 THK GLASS EPOXY PER MIL-P-18177 TYPE GEE
3. ASSEMBLE TERMINALS AS SHOWN AND BOND PER ND-1002004
4. WELD PER ND 1002005

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1008000	TERMINAL LUG	3
3	1007000-2	TERMINAL LUG ASSY	2
1	1007011-1	TERMINAL BOARD	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007013	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS ±.010
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT

DRAWN E. O'Connell DATE 1-14-63
CHECKED L. P. Kingsbury
APPROVAL L. C. Smith 1-25-63
APPROVAL
NASA APPROVAL [illegible] 1-30-63
MIT APPROVAL [illegible] 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERMINAL BOARD ASSY

28V DC REGULATOR

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007011
SCALE 4:1
WT
SHEET OF

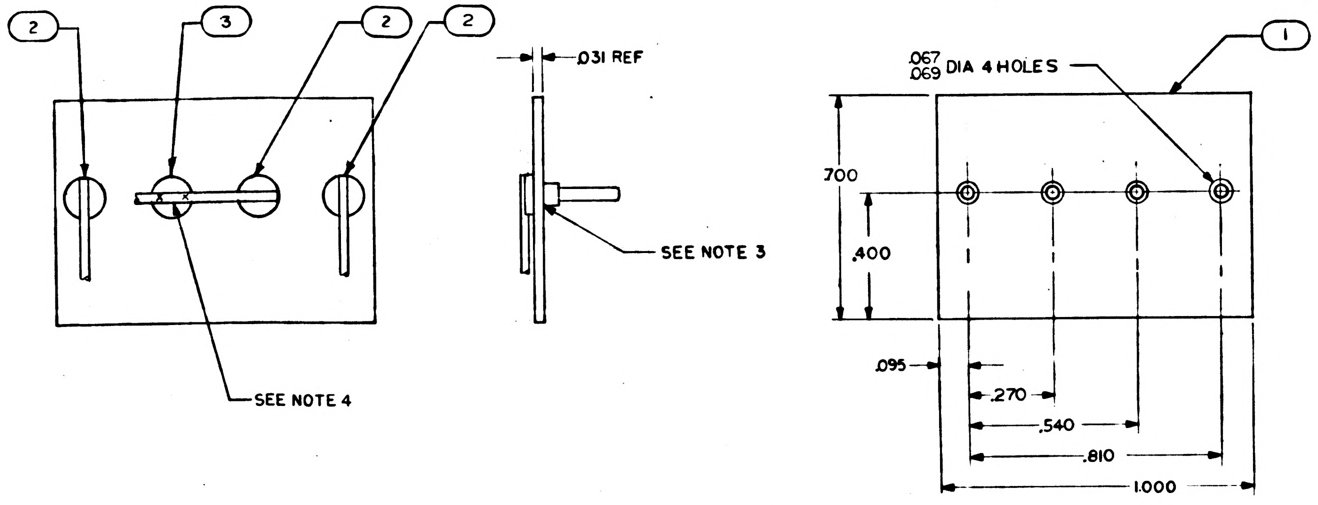
A 1007011

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS CLASS B TDRR 00315

SYM	DESCRIPTION	DATE	APPROVAL
A	UPGRADED FOR CLASS A RELEASE PER TDRR 00503	9-2-63	J.C.D. WK
B	REVISED PER TDRR 01184	5-8-63	S.C.S. WK

Ⓜ



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: .031 THK GLASS EPOXY PER G¢ ND 1002135
3. ASSEMBLE TERMINALS AS SHOWN AND BOND PER ND-1002004
4. WELD PER ND 1002005

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1008000	TERMINAL LUG	3
3	1007000-2	TERMINAL LUG ASSY	2
1	1007011-1	TERMINAL BOARD	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007013	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.010 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT — —
FINAL FINISH — —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG NO. CONTRACT
DRAWN E. O'Connell DATE 1-14-63
CHECKED
APPROVAL 1-25-63
APPROVAL
NASA APPROVAL 4-30-63
MIT APPROVAL 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERMINAL BOARD ASSY
28V DC REGULATOR

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007011
SCALE 4:1
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INCHES
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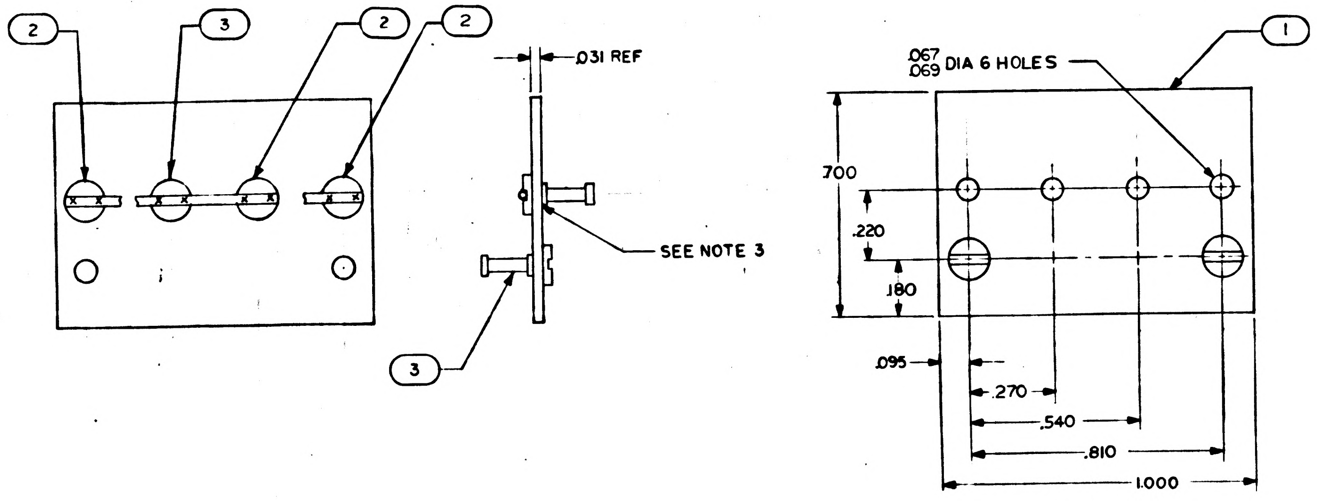
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 00315 DATE 1-30-63

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: .031 THK GLASS EPOXY PER MILL-P-18177 TYPE GEE
3. ASSEMBLE TERMINALS AS SHOWN AND BOND PER ND-1002004

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	1008000	TERMINAL LUG	3
3	1007000-2	TERMINAL, LUG ASSY	2
1	1007011-1	TERMINAL BOAD	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007013	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± -/-/- DECIMALS ±.010 ANGLES ± -/-/-
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT -/-/-
FINAL FINISH -/-/-

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO.
CONTRACT
DRAWN E. O'Connell DATE 1-14-63
CHECKED
APPROVAL 1-25-63
APPROVAL
NASA APPROVAL 1-30-63
MIT APPROVAL 30 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERMINAL BOARD ASSY
28V DC REGULATOR

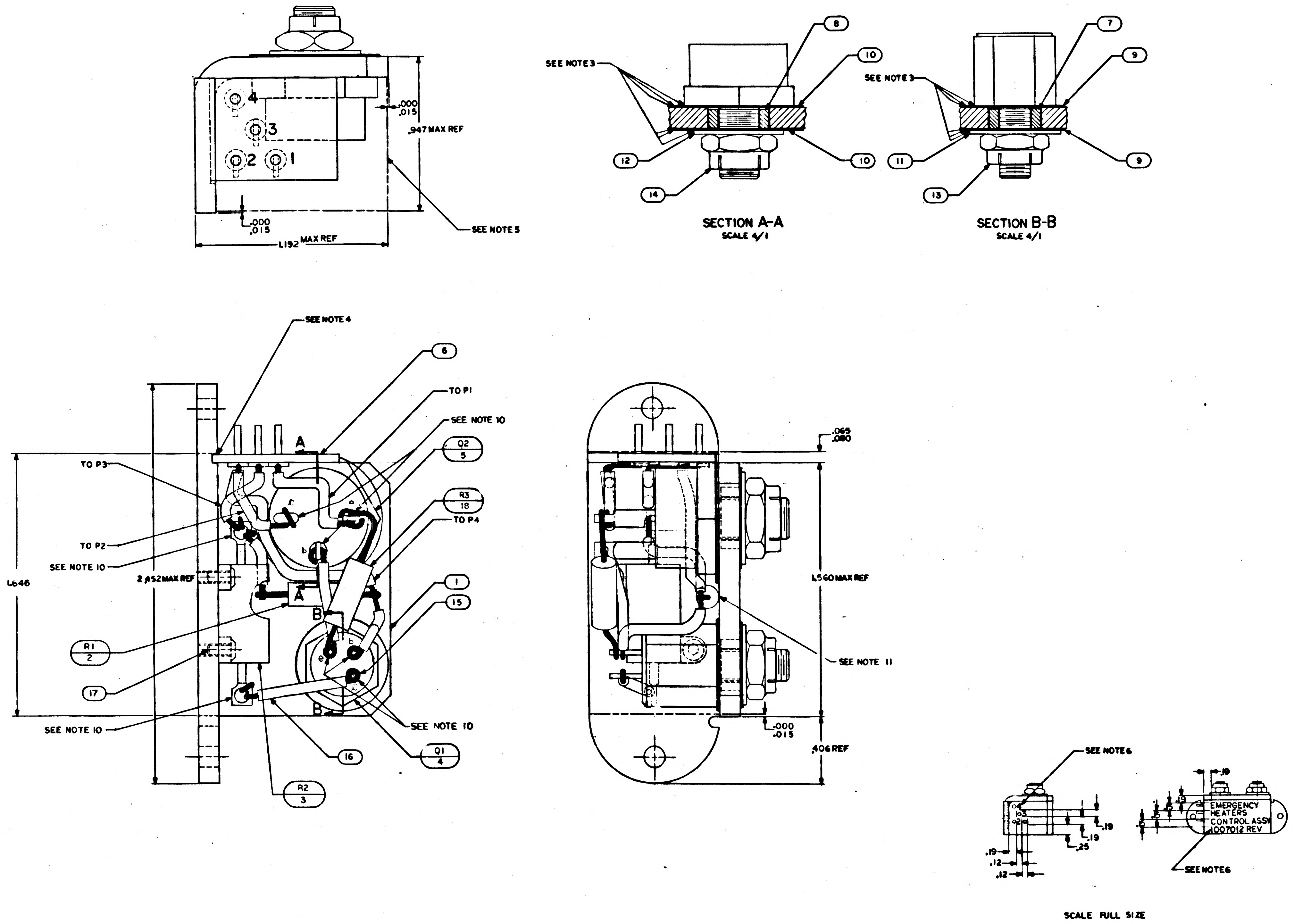
CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007011
SCALE 4:1
WT
SHEET OF

1007011

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TD RR 00415

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01186	5-7-63	SCS



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SEE NOTE 5
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SEE NOTE 3
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SECTION A-A
SCALE 4/1
SEE NOTE 3
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13
SECTION B-B
SCALE 4/1
SEE NOTE 4
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TO P1
SEE NOTE 10
Q2
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R3
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TO P4
TO P3
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TO P2
SEE NOTE 10
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SEE NOTE 11
.000
.015
.406 REF
SEE NOTE 6
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EMERGENCY HEATERS CONTROL ASSY 1007012 REV
SEE NOTE 6
SCALE FULL SIZE

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005 EXCEPT WHERE NOTED
3. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY
4. BOND FIND NO. 6 TO FIND NO. 1 PER ND 1002004
5. ENCAPSULATE MODULE PER ND-002106
6. MARK .060/.100 HIGH BLACK PER ND 1002019
7. MOUNTING TORQUE FOR FIND NO. 4 AND FIND NO. 5, 10/15 INCH POUNDS
8. AR DENOTES AS REQUIRED
9. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
10. SOLDER PER ND-1002071 USING ND-1002075
11. BOND FIND NO. 3 TO FIND NO. 1 PER ND 1002004

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010019	SCHEMATIC	REF
1	1006750-32	RESISTOR 1K ±2% 1/4 WATT	18
2	1006783-5	SCREW BUTTON HD. HEX SKT	17
AR	1006776-20	INSULATION SLEEVING	16
AR	1006787-3	WIRE ELECTRICAL	15
1	NAS1022-C4	LOCKNUT THIN HEX	14
1	NAS1022-C3	LOCKNUT THIN HEX	13
1	1008020-2	WASHER FLAT	12
1	1008020-1	WASHER FLAT	11
4	1008024-3	WASHER FLAT INSULATOR	10
4	1008024-2	WASHER FLAT INSULATOR	9
1	1008021-2	BUSHING INSULATOR	8
1	1008021-1	BUSHING INSULATOR	7
1	1008016	TERMINAL BOARD	6
1	1010273	TRANSISTOR (2N1724)	5
1	1010269	TRANSISTOR (2N2151)	4
1	1010325-265	RESISTOR 562 Ω ±1% 5 WATT	3
1	1006760-56	RESISTOR 10 K ±5% 1/2 WATT	2
1	1008017	BRACKET, MOUNTING	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT

DRAWN W.F. DATE 1/16/63
CHECKED
APPROVAL 1/31/63
APPROVAL 2/9/63
NASA APPROVAL Feb 18 63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

EMERGENCY HEATERS
CONTROL MODULE
WIRED ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007012
SCALE 4/1
WT
SHEET 1 OF 1

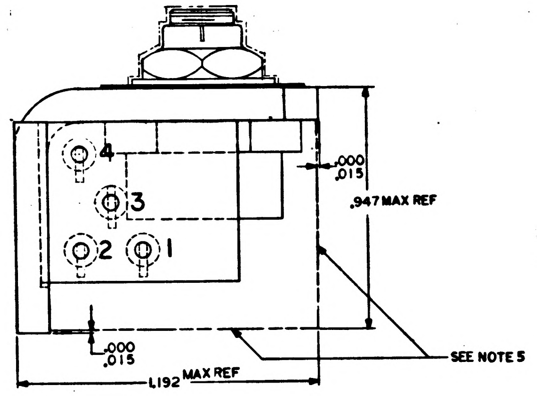
1007012 A

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00415

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01186	5-7-63	S.C.S.
B	REVISED PER TDRR 02117	7-22-63	L.C.S.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SEE NOTE 5
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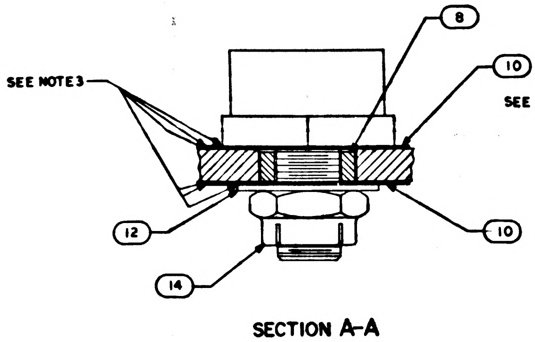
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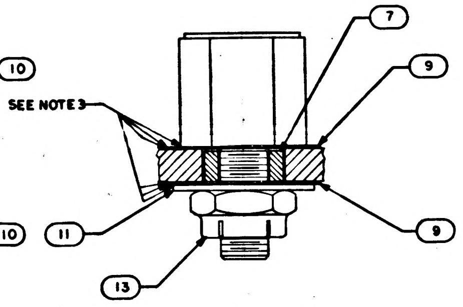
SECTION A-A
SCALE 4/1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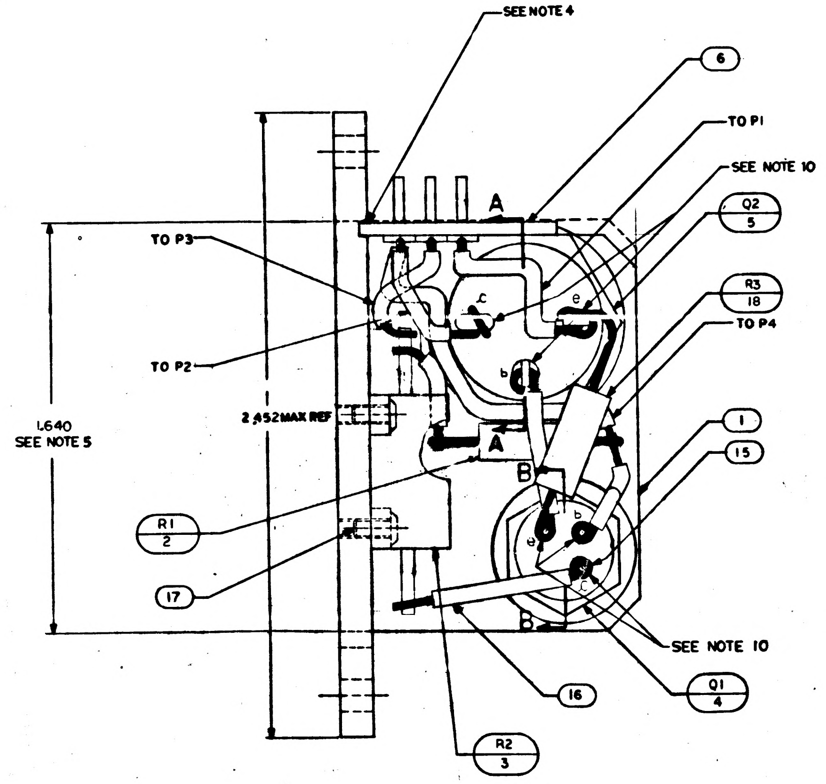
SECTION B-B
SCALE 4/1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TO P1
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SEE NOTE 5
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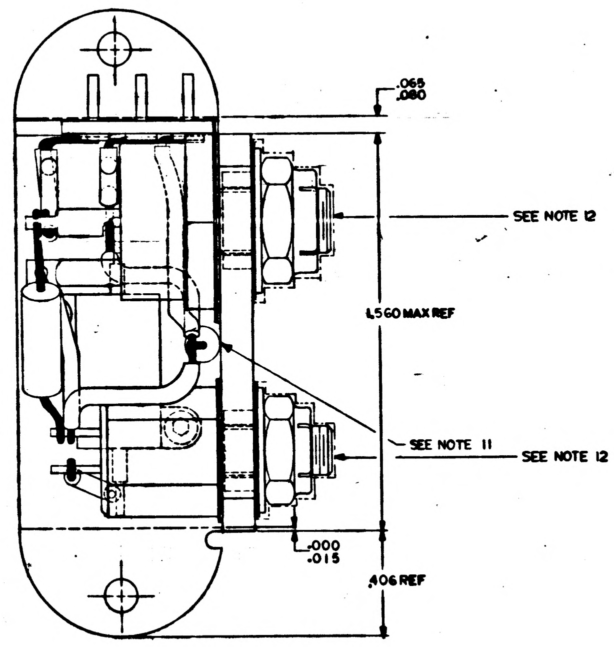
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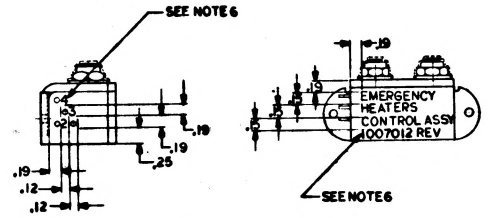
SEE NOTE 6
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EMERGENCY
HEATERS
CONTROL ASSY
1007012 REV
SEE NOTE 6

SCALE FULL SIZE

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002065 EXCEPT WHERE NOTED
3. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY
4. BOND FIND NO. 6 TO FIND NO. 1 PER ND 1002004
5. ENCAPSULATE MODULE PER ND-1002106
6. MARK .060/.100 HIGH BLACK PER ND 1002019
7. MOUNTING TORQUE FOR FIND NO. 4 AND FIND NO. 5, 10/15 INCH POUNDS
8. AR DENOTES AS REQUIRED
9. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
10. SOLDER PER ND-1002071 USING ND-1002075
11. BOND FIND NO. 3 TO FIND NO. 1 PER ND 1002004
12. BRUSH COAT STUDS PER ND-1002186

MASTER

LIST OF MATERIALS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010019	SCHEMATIC	REF
1	1006750-32	RESISTOR 1K ±2% 1/4 WATT	18
2	1006783-5	SCREW BUTTON HD. HEX SKT	17
AR	1006776-20	INSULATION SLEEVING	16
AR	1006787-3	WIRE ELECTRICAL	15
1	NAS1022-C4	LOCKNUT THIN HEX	14
1	NAS1022-C3	LOCKNUT THIN HEX	13
1	1008020-2	WASHER FLAT	12
1	1008020-1	WASHER FLAT	11
4	1008024-3	WASHER FLAT INSULATOR	10
4	1008024-2	WASHER FLAT INSULATOR	9
1	1008021-2	BUSHING INSULATOR	8
1	1008021-1	BUSHING INSULATOR	7
1	1008016	TERMINAL BOARD	6
1	1010273	TRANSISTOR (2N1724)	5
1	1010269	TRANSISTOR (2N2151)	4
1	1010325-265	RESISTOR 562 Ω ±1% 5 WATT	3
1	1006760-56	RESISTOR 10 K ±5% 1/2 WATT	2
1	1008017	BRACKET, MOUNTING	1

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS ±.03
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO
CONTRACT
DRAWN W. F. Tracy DATE 1/16/63
CHECKED R. L. Rinaldi
APPROVAL 1/31/63
APPROVAL L. C. 2/9/63
NASA APPROVAL Feb 18/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

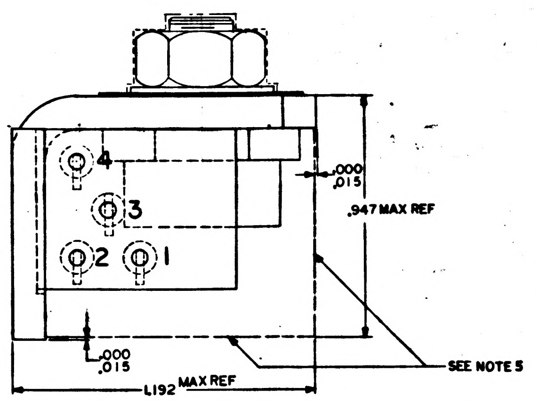
EMERGENCY HEATERS
CONTROL MODULE
WIRED ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007012
SCALE 4/1
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TD RR 00415

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01186	5-7-63	S.C.S. WK
B	REVISED PER TDRR 02117	7-32-63	W.C.S. WK
C	REVISED PER TDRR 03948		WK
D	REVISED PER TDRR 03949		WK



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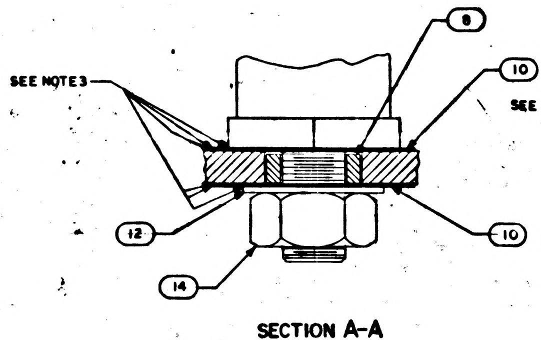
SEE NOTE 5



SEE NOTE 3
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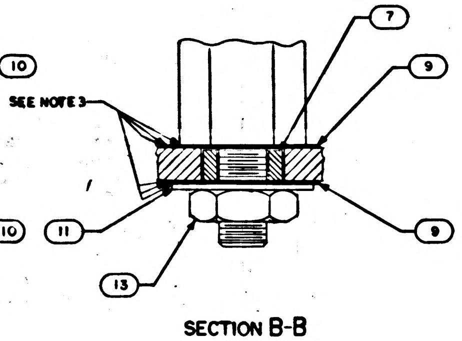
SECTION A-A
SCALE 4/1



SEE NOTE 3
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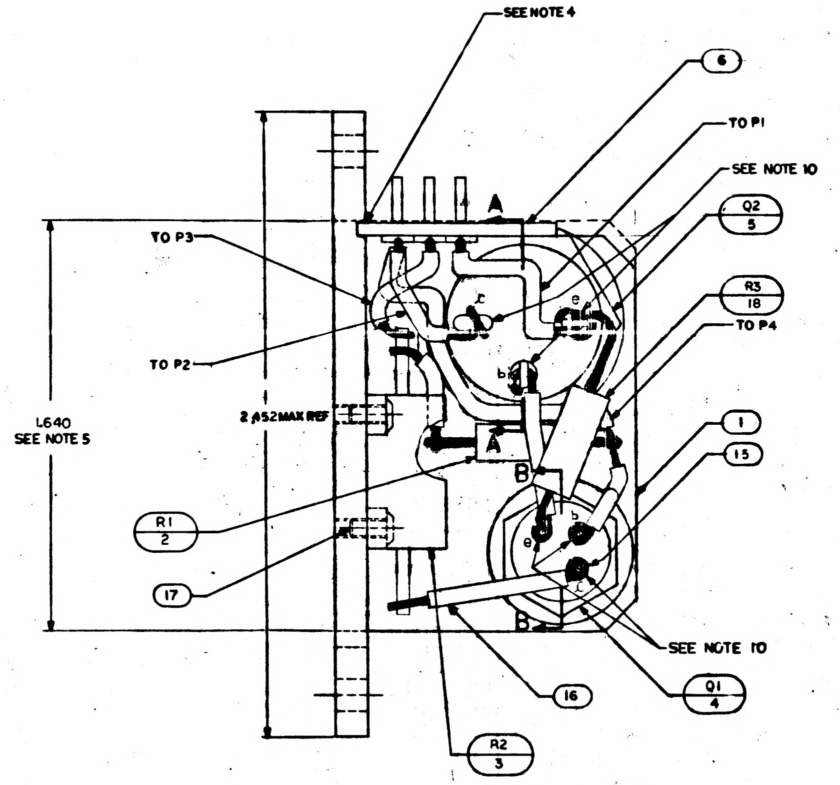
SECTION B-B
SCALE 4/1



SEE NOTE 4
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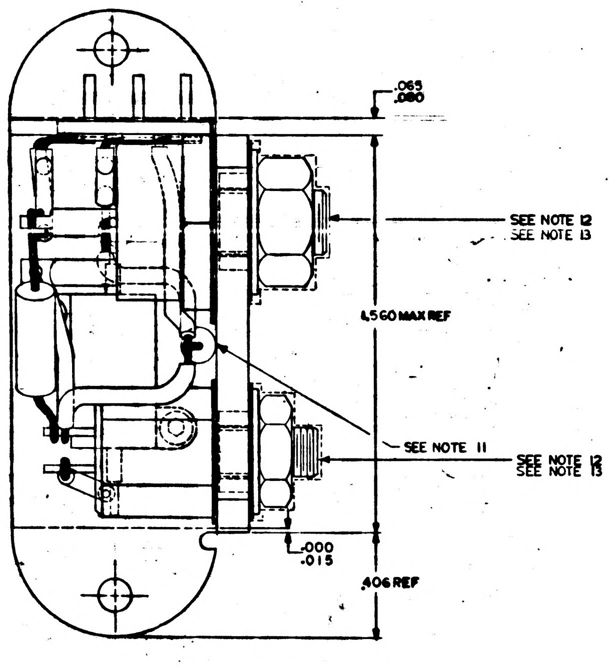

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SEE NOTE 12
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1.560 MAX REF
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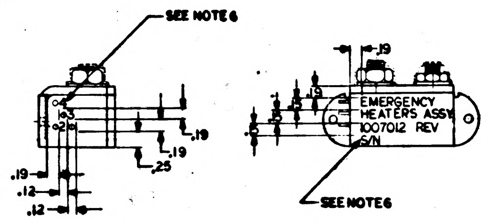

SEE NOTE 6
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EMERGENCY
HEATERS ASSY
1007012 REV
S/N
SEE NOTE 6

SCALE FULL SIZE

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005 EXCEPT WHERE NOTED
3. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY
4. BOND FIND NO. 6 TO FIND NO. 1 PER ND 1002004
5. ENCAPSULATE MODULE PER ND-1002106
6. MARK .060/.100 HIGH BLACK PER ND 1002019 & SERIALIZE PER ND 1002023
7. MOUNTING TORQUE FOR FIND NO. 4 AND FIND NO. 5, 10/15 INCH POUNDS
8. AR DENOTES AS REQUIRED
9. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
10. SOLDER PER ND-1002071 USING ND-1002075
11. BOND FIND NO. 3 TO FIND NO. 1 PER ND 1002004
12. BRUSH COAT STUDS PER ND-1002186
13. APPLY SEALING COMPOUND PER MIL-S-40083, CLASS 31 TO FIND NOS 13 & 14 AT ASSEMBLY, PRIOR TO BRUSH COAT

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010019	SCHEMATIC	REF
1	1006750-32	RESISTOR 1K ±2% 1/4 WATT	18
2	1006783-5	SCREW BUTTON HD. HEX SKT	17
AR	1006776-20	INSULATION SLEEVING	16
AR	1006787-3	WIRE ELECTRICAL	15
1	MS20341-416B	NUT, PLAIN HEX	14
1	MS35650-104	NUT, PLAIN HEX	13
1	1008020-2	WASHER FLAT	12
1	1008020-1	WASHER FLAT	11
4	1008024-3	WASHER FLAT INSULATOR	10
4	1008024-2	WASHER FLAT INSULATOR	9
1	1008021-2	BUSHING INSULATOR	8
1	1008021-1	BUSHING INSULATOR	7
1	1008016	TERMINAL BOARD	6
1	1010273	TRANSISTOR (2N1724)	5
1	1010269	TRANSISTOR (2N2151)	4
1	1010325-265	RESISTOR 562 Ω ±1% 5 WATT	3
1	1006760-56	RESISTOR 10 K ±5% 1/2 WATT	2
1	1008017	BRACKET, MOUNTING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN W.F. Troy DATE 1/16/63
CHECKED R.P. Kuiselmay
APPROVAL R.K. Nichols 1/31/63
APPROVAL L.C. Smith 2/8/63
NASA APPROVAL Feb 11/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

EMERGENCY HEATERS CONTROL MODULE
WIRED ASSY

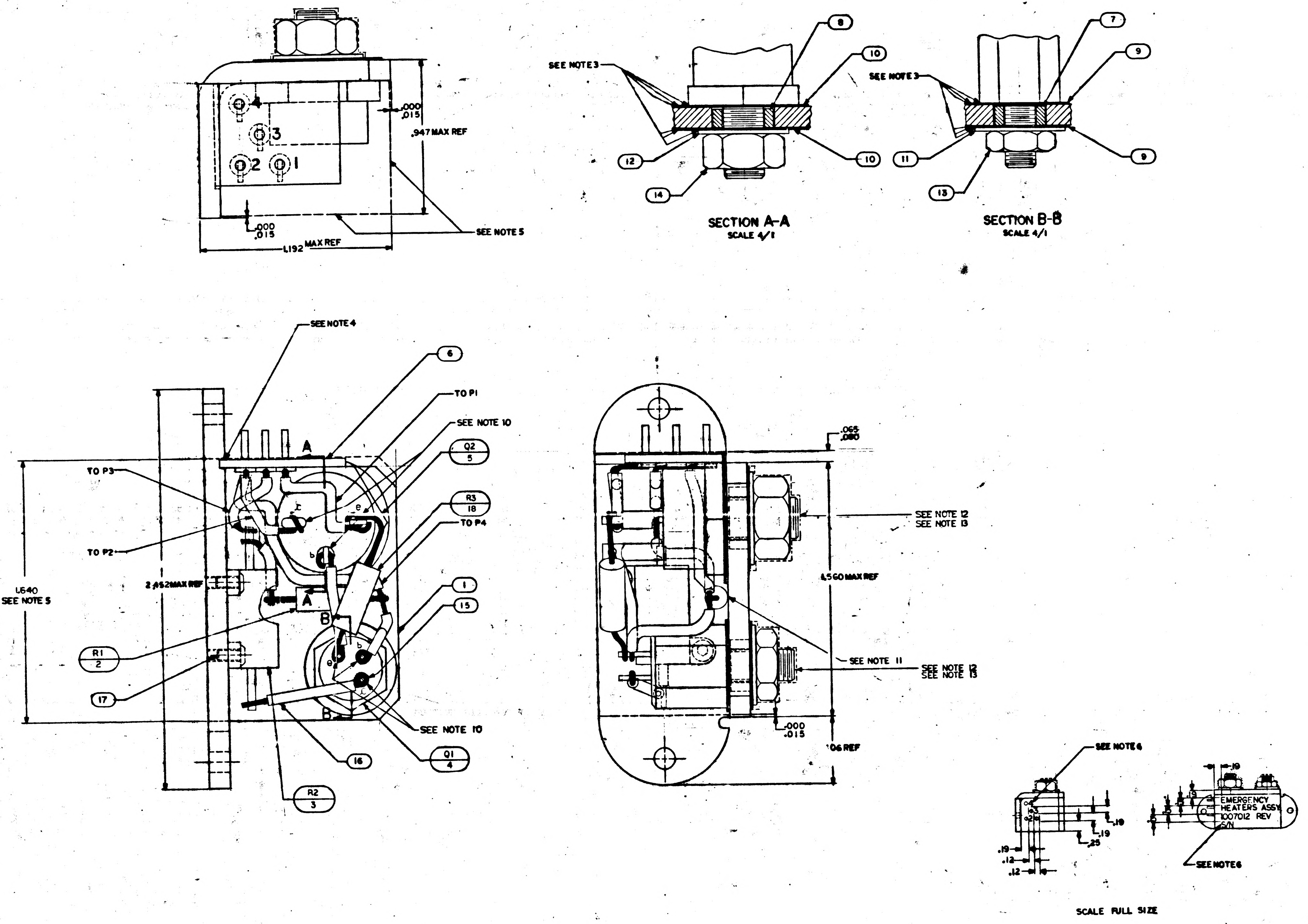
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007012
SCALE 4/1
WT
SHEET 1 OF 1

1007012 D

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00415

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01186	5-7-63	S.F.S. WK
B	REVISED PER TDRR 02119	7-22-63	WK
C	REVISED PER TDRR 03948		WK
D	REVISED PER TDRR 03949		WK
E	REVISED PER TDRR 04463	63	WK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SEE NOTE 5
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14
SECTION A-A
SCALE 4/1
SEE NOTE 3
7
9
11
9
13
SECTION B-B
SCALE 4/1
SEE NOTE 4
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TO P1
SEE NOTE 10
Q2
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R3
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TO P4
TO P3
TO P2
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SEE NOTE 5
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B
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SEE NOTE 10
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R2
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SEE NOTE 12
SEE NOTE 13
1.560 MAX REF
SEE NOTE 11
SEE NOTE 12
SEE NOTE 13
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.06 REF
SEE NOTE 6
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EMERGENCY HEATERS ASSY 1007012 REV S/N
SEE NOTE 6

SCALE FULL SIZE

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002065 ~~EXCEPT WHERE NOTED~~
3. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY
4. BOND FIND NO. 6 TO FIND NO. 1 PER ND 1002004
5. ENCAPSULATE MODULE PER ND-1002106
6. MARK .060/.100 HIGH BLACK PER ND 1002019 / SERIALIZE PER ND 1002023
7. MOUNTING TORQUE FOR FIND NO. 4 AND FIND NO. 5, 10/15 INCH POUNDS
8. AR DENOTES AS REQUIRED
9. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
10. SOLDER PER ND-1002071 USING ND-1002075
11. BOND FIND NO. 3 TO FIND NO. 1 PER ND 1002004
12. BRUSH COAT STUDS PER ND-1002009
13. APPLY SEALING COMPOUND PER MIL-S-40083, CLASS III TO FIND NOS 13 & 14 AT ASSEMBLY, PRIOR TO BRUSH COAT

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010019	SCHEMATIC	REF
1	1006750-32	RESISTOR 1K ±2% 1/4 WATT	18
2	1006783-5	SCREW BUTTON HD. HEX SKT	17
AR	1006776-20	INSULATION SLEEVING	16
AR	1006787-3	WIRE ELECTRICAL	15
1	MS20341-416B	NUT, PLAIN HEX	14
1	MS35650-104	NUT, PLAIN HEX	13
1	1008020-2	WASHER FLAT	12
1	1008020-1	WASHER FLAT	11
4	1008024-3	WASHER FLAT INSULATOR	10
4	1008024-2	WASHER FLAT INSULATOR	9
1	1008021-2	BUSHING INSULATOR	8
1	1008021-1	BUSHING INSULATOR	7
1	1008016	TERMINAL BOARD	6
1	1010273	TRANSISTOR (2N1724)	5
1	1010269	TRANSISTOR (2N2151)	4
1	1010325-265	RESISTOR 562 Ω ±1% 5 WATT	3
1	1006760-56	RESISTOR 10 K ±5% 1/2 WATT	2
1	1008017	BRACKET, MOUNTING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN W.F. Tracy DATE 1/16/63
CHECKED
APPROVAL 7/31/63
APPROVAL 2/9/63
NASA APPROVAL Feb 11, 63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

EMERGENCY HEATERS
CONTROL MODULE
WIRED ASSY

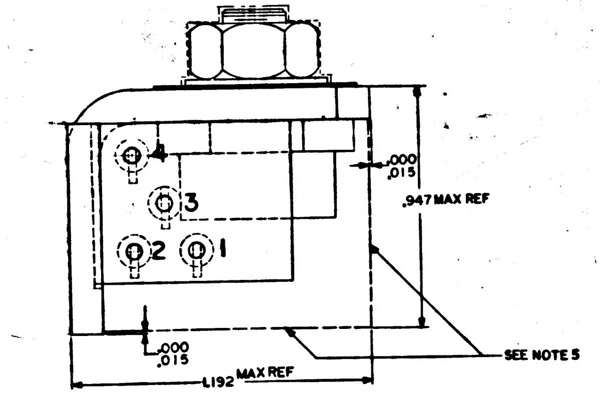
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007012
SCALE 4/1
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 00415

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01186	5-7-63	S.F.S. [illegible]
B	REVISED PER TDRR 03117	7-23-63	WK
C	REVISED PER TDRR 03948		WK
D	REVISED PER TDRR 03949		WK
E	REVISED PER TDRR 04463	[illegible] 63	WK
F	REVISED PER TDRR 04903	12-3-63	JAC WK
G	REVISED PER TDRR 05089	12-7-63	WK



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SEE NOTE 5
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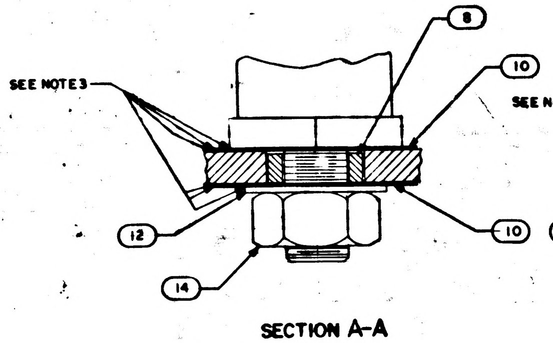

SEE NOTE 3
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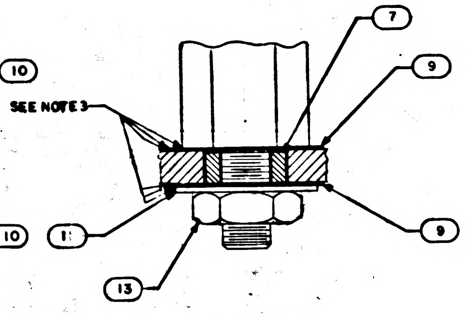
SECTION A-A
SCALE 4/1



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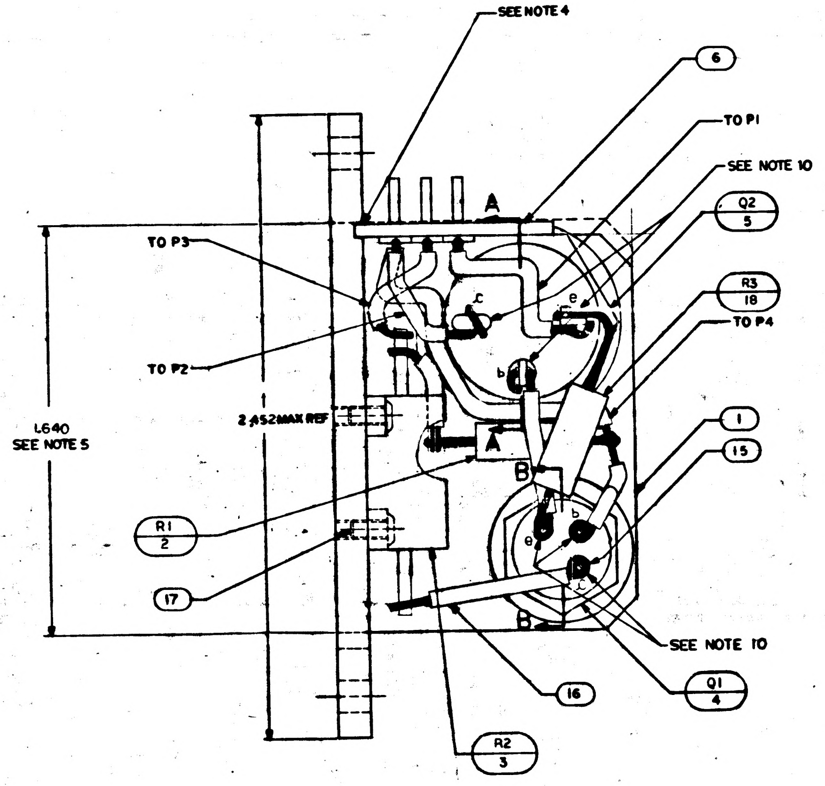
SECTION B-B
SCALE 4/1



SEE NOTE 4
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TO P1
SEE NOTE 10
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R3
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R2
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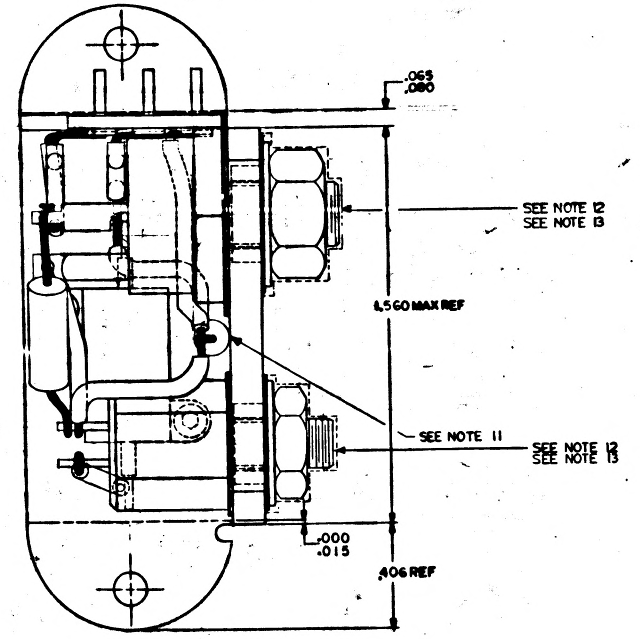

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SEE NOTE 12
SEE NOTE 13
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SEE NOTE 12
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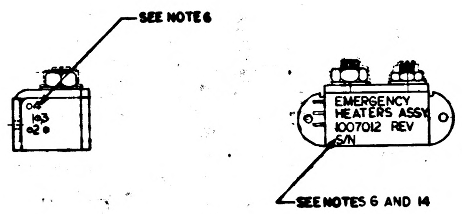


SEE NOTE 6
EMERGENCY HEATERS ASSY
1007012 REV
S/N
SEE NOTES 6 AND 14

SCALE FULL SIZE

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 100[illegible] EXCEPT WHERE NOTED
3. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY
4. BOND FIND NO. 6 TO FIND NO. 1 PER ND 1002004
5. ENCAPSULATE MODULE PER ND-1002106
6. MARK .100 TO .140 HIGH BLACK PER ND 1002019 / SERIALIZE PER ND 1002023
7. MOUNTING TORQUE FOR FIND NO. 4 AND FIND NO. 5, 10/15 INCH POUNDS
8. AR DENOTES AS REQUIRED
9. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
10. SOLDER PER ND1002071 USING ND1002075
11. BOND FIND NO. 3 TO FIND NO. 1 PER ND 1002004
12. BRUSH COAT STUDS PER ND-1002009
13. APPLY SEALING COMPOUND PER MIL-S-40083, CLASS 21 TO FIND NOS 13 & 14 AT ASSEMBLY, PRIOR TO BRUSH COAT
14. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
15. INSPECT PER PS-1007012
16. TEST PER FTM-1007012

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010019	SCHEMATIC	REF
1	1006750-32	RESISTOR 1K ±2% 1/4 WATT	18
2	1006783-5	SCREW BUTTON HD. HEX SKT	17
AR	1006776-20	INSULATION SLEEVING	16
AR	1006787-3	WIRE ELECTRICAL	15
1	MS20341-416B	NUT, PLAIN HEX	14
1	MS35650-104	NUT, PLAIN HEX	13
1	1008020-2	WASHER FLAT	12
1	1008020-1	WASHER FLAT	11
4	1008024-3	WASHER FLAT INSULATOR	10
4	1008024-2	WASHER FLAT INSULATOR	9
1	1008021-2	BUSHING INSULATOR	8
1	1008021-1	BUSHING INSULATOR	7
1	1008016	TERMINAL BOARD	6
1	1010273-1	TRANSISTOR (2N1724)	5
1	1010269-1	TRANSISTOR (2N2151)	4
1	1010325-265	RESISTOR 562 Ω ±1% 5 WATT	3
1	1006760-56	RESISTOR 10 K ±5% 1/2 WATT	2
1	1008017	BRACKET, MOUNTING	1

LIST OF MATERIALS

1000005	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible] 7/31/63
APPROVAL [illegible] 2/9/63
NASA APPROVAL [illegible] Feb [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

EMERGENCY HEATERS CONTROL MODULE
WIRED ASSY

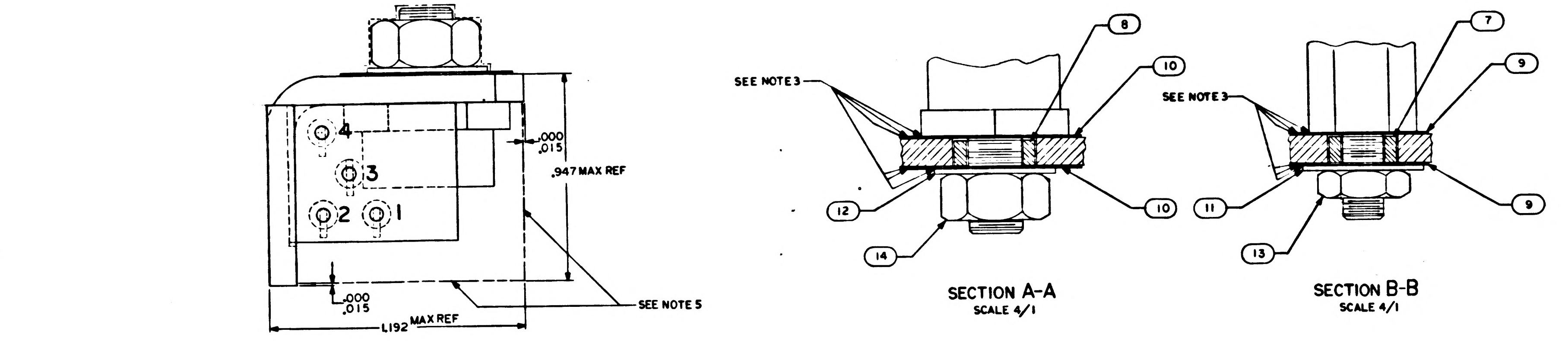
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007012
SCALE 4/1
WT
SHE 1 OF 1

1007012 G

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 00415

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01166	5-7-63	S.C.S. WK
B	REVISED PER TDRR 02117	7-3-63	J.C.S. WK
C	REVISED PER TDRR 03948		WK
D	REVISED PER TDRR 03949		WK
E	REVISED PER TDRR 04463	Nov 63	WK
F	REVISED PER TDRR 04909	12-3-63	jac WK
G	REVISED PER TDRR 05409	12-17-63	WK
H	REVISED PER TDRR 10357	Jun 64	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SEE NOTE 5
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SEE NOTE 3
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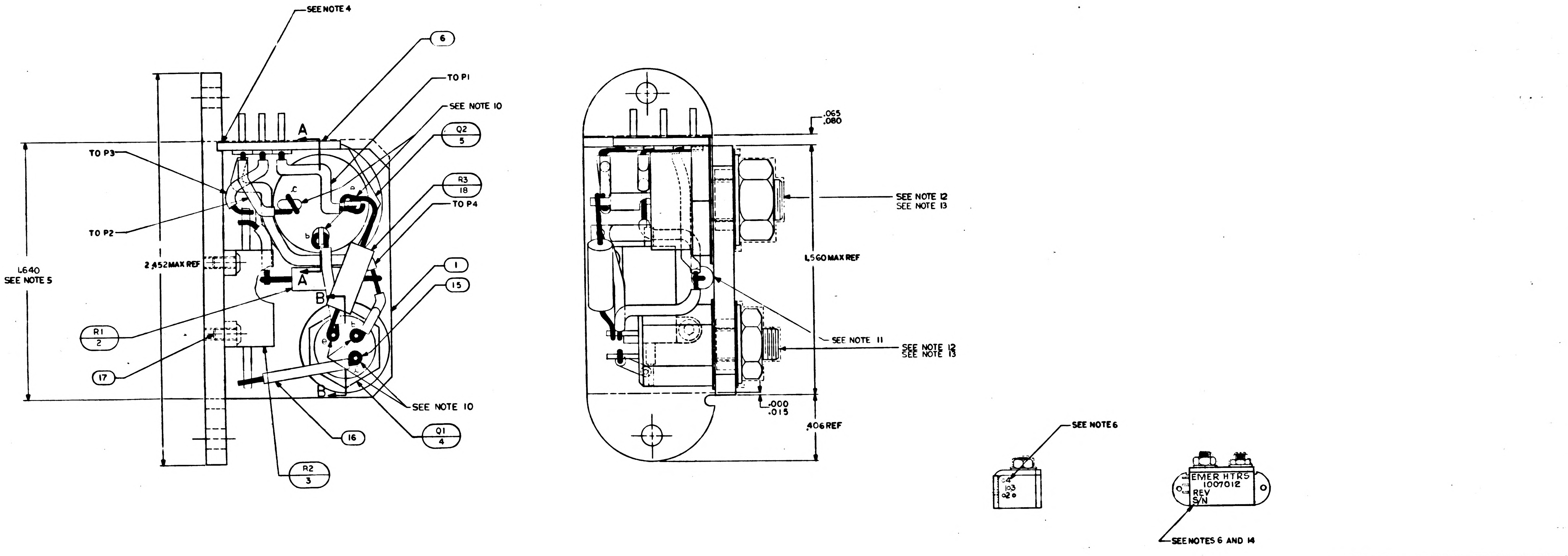
SECTION A-A
SCALE 4/1

SECTION B-B
SCALE 4/1


SEE NOTE 4
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TO P1
SEE NOTE 10
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SEE NOTE 5
2.452 MAX REF
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SEE NOTE 10
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Q1
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SEE NOTE 12
SEE NOTE 13
1.560 MAX REF
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SEE NOTE 6
C4
103
EMER HTRS
1007012
REV
S/N
SEE NOTES 6 AND 14

SCALE FULL SIZE

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005 EXCEPT WHERE NOTED
3. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY
4. BOND FIND NO. 6 TO FIND NO. 1 PER ND 1002004
5. ENCAPSULATE MODULE PER ND-1002106
6. MARK .100 TO .140 HIGH BLACK PER ND 1002019 & SERIALIZE PER ND 1002023
7. MOUNTING TORQUE FOR FIND NO. 4 AND FIND NO. 5, 10/15 INCH POUNDS
8. AR DENOTES AS REQUIRED
9. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
10. SOLDER PER ND-1002071 USING ND-1002075
11. BOND FIND NO. 3 TO FIND NO. 1 PER ND 1002004
12. BRUSH COAT STUDS PER ND-1002009
13. APPLY SEALING COMPOUND PER MIL-S-40083, CLASS 31 TO FIND NOS 13 & 14 AT ASSEMBLY, PRIOR TO BRUSH COAT
14. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
15. INSPECT PER PS-1007012
16. TEST PER FTM-1007012

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010019	SCHEMATIC	REF
1	1006750-32	RESISTOR 1K ±2% 1/4 WATT	18
2	1006783-5	SCREW BUTTON HD. HEX SKT	17
AR	1006776-20	INSULATION SLEEVING	16
AR	1006787-3	WIRE ELECTRICAL	15
1	MS20341-416B	NUT, PLAIN HEX	14
1	MS35650-104	NUT, PLAIN HEX	13
1	1008020-2	WASHER FLAT	12
1	1008020-1	WASHER FLAT	11
4	1008024-3	WASHER FLAT INSULATOR	10
4	1008024-2	WASHER FLAT INSULATOR	9
1	1008021-2	BUSHING INSULATOR	8
1	1008021-1	BUSHING INSULATOR	7
1	1008016	TERMINAL BOARD	6
1	1010273-1	TRANSISTOR (2N1724)	5
1	1010269-1	TRANSISTOR (2N2151)	4
1	1010325-265	RESISTOR 562 Ω ±1% 5 WATT	3
1	1006760-56	RESISTOR 10 K ±5% 1/2 WATT	2
1	1008017	BRACKET, MOUNTING	1

LIST OF MATERIALS

1000005	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN W F Tay DATE 1/16/63
CHECKED R P Russelung
APPROVAL R T Nichols 1/31/63
APPROVAL L C Smith 2/9/63
NASA APPROVAL Feb 16 63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

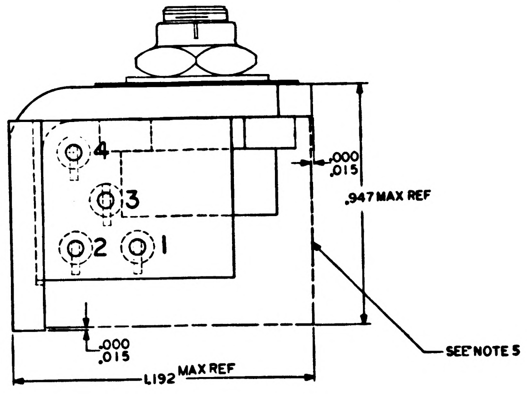
EMERGENCY HEATERS CONTROL MODULE
WIRED ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007012
SCALE 4/1
WT
SHEET 1 OF

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

SYM	DESCRIPTION	DATE	APPROVAL

REVISIONS TD RR 00415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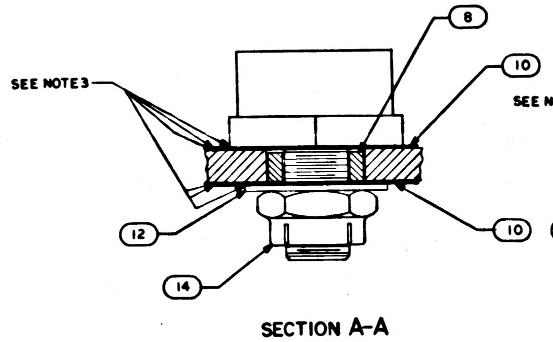
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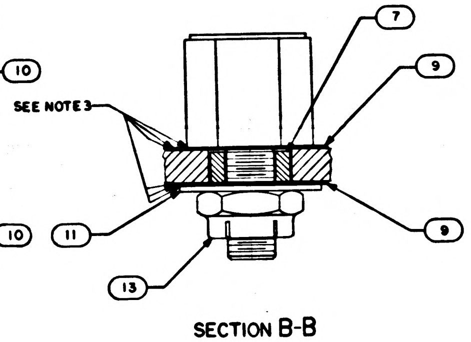
SECTION A-A
SCALE 4/1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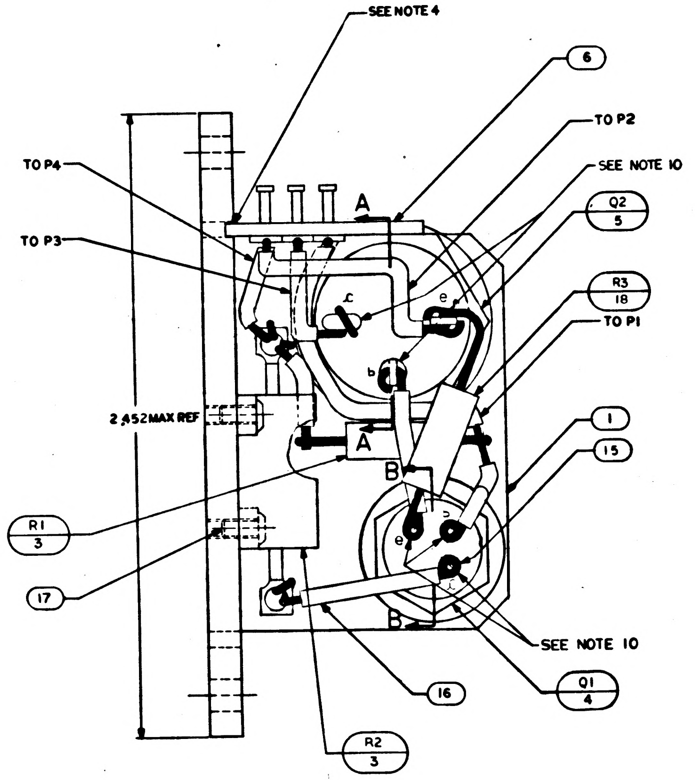
SECTION B-B
SCALE 4/1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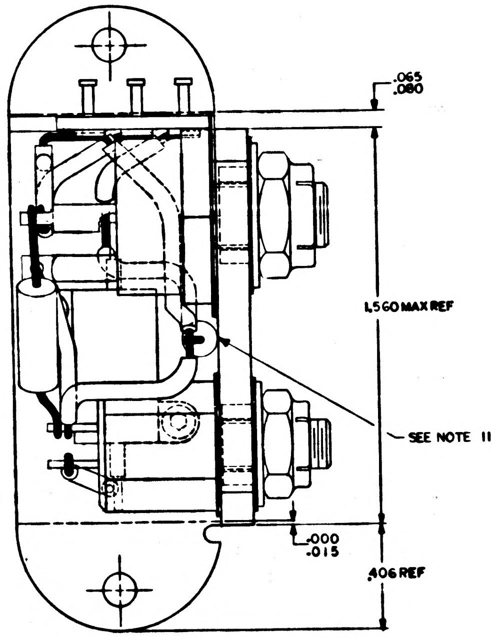
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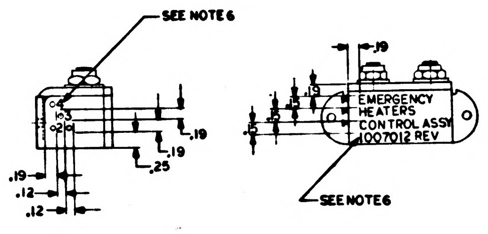
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EMERGENCY HEATERS CONTROL ASSY 1007012 REV
SEE NOTE 6

SCALE FULL SIZE

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005 EXCEPT WHERE NOTED
3. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY
4. BOND FIND NO. 6 TO FIND NO. 1 PER ND 1002004
5. ENCAPSULATE MODULE PER (EPOCAST 1786 WITH CATALYST 9115)
6. MARK .060/.100 HIGH BLACK PER ND 1002019
7. MOUNTING TORQUE FOR FIND NO. 4 AND FIND NO. 5, 10/15 INCH POUNDS
8. AR DENOTES AS REQUIRED
9. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
10. SOLDER PER MSFC-PROC-158A
11. BOND FIND NO. 3 TO FIND NO. 1 PER ND 1002004

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010019	SCHEMATIC	REF
1	1006760-	RESISTOR K ± % 1/2 WATT	18
2	1006783-5	SCREW BUTTON HD. HEX SKT	17
AR	1006776-20	INSULATION SLEEVING	16
AR	1006787-3	WIRE ELECTRICAL	15
1	NAS1022-C4	LOCKNUT THIN HEX	14
1	NAS1022-C3	LOCKNUT THIN HEX	13
1	1008020-2	WASHER FLAT	12
1	1008020-1	WASHER FLAT	11
4	1008024-3	WASHER FLAT INSULATOR	10
4	1008024-2	WASHER FLAT INSULATOR	9
1	1008021-2	BUSHING INSULATOR	8
1	1008021-1	BUSHING INSULATOR	7
1	1008016	TERMINAL BOARD	6
1	1010273	TRANSISTOR	5
1		TRANSISTOR (2N1721)	4
1	1010325	RESISTOR 560Ω ±1% 5 WATT	3
1	1006760-56	RESISTOR 10 K ±5% 1/2 WATT	2
1	1008017	BRACKET, MOUNTING	1

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS ±.03
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN W. F. Terry DATE 1/16/63
CHECKED
APPROVAL 1/31/63
APPROVAL 2/9/63
NASA APPROVAL Feb 14, 63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

EMERGENCY HEATERS
CONTROL MODULE
WIRED ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007012
SCALE 4/1
WT
SHEET 1 OF 1

1007012

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TDRR 00496

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
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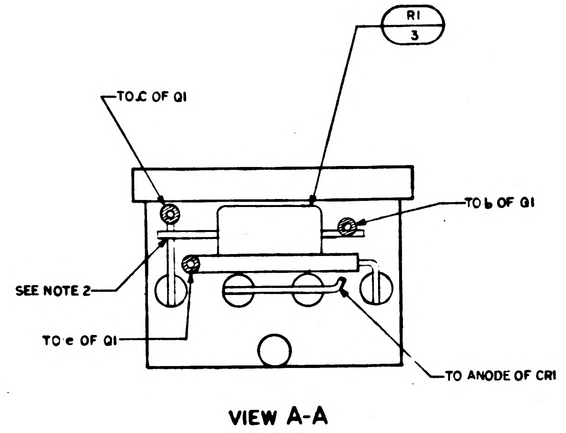
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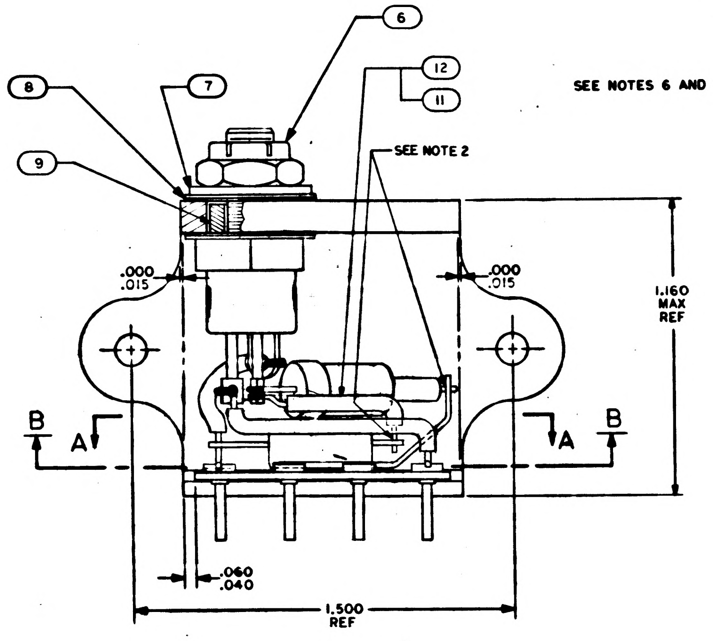
SEE NOTE 2
TO e OF Q1
TO ANODE OF CR1

VIEW A-A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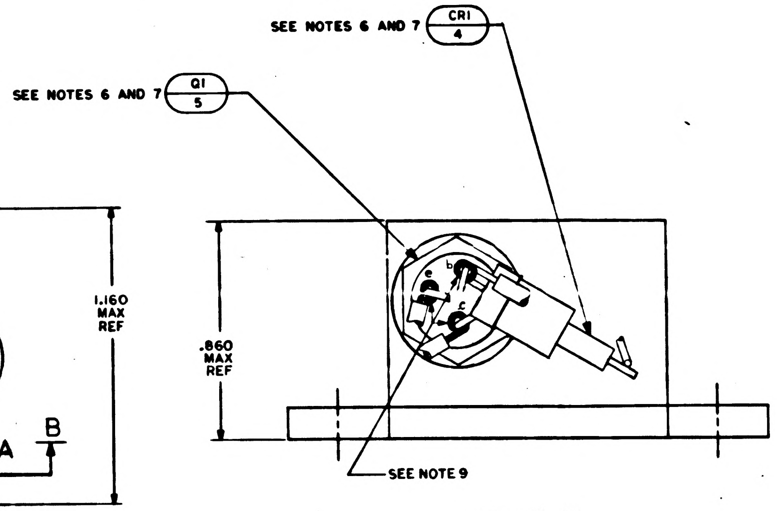
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SEE NOTES 6 AND 7
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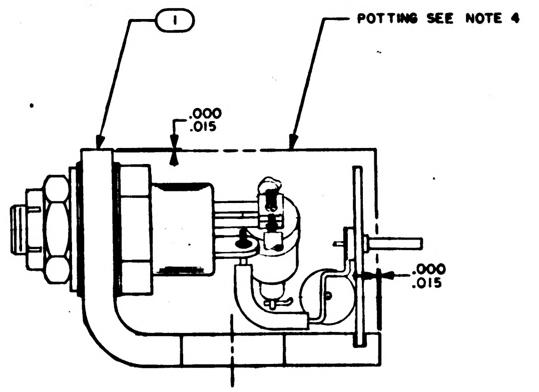
SEE NOTE 9

VIEW B-B
TERMINAL BOARD REMOVED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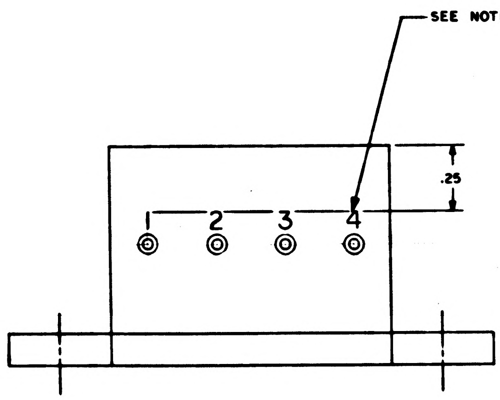
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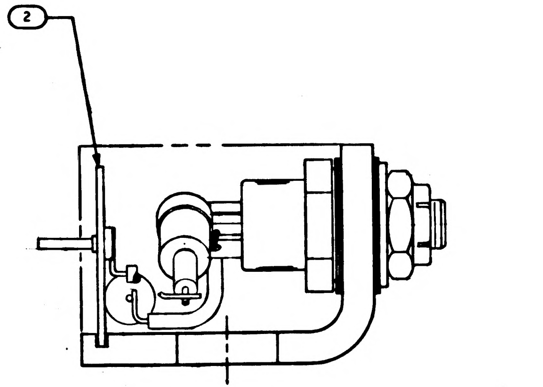

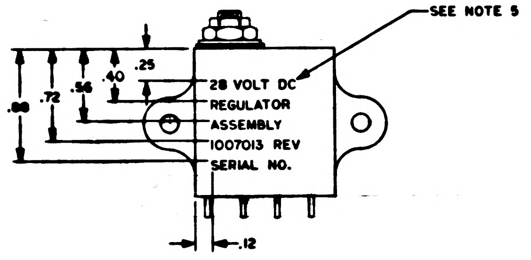
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28 VOLT DC
REGULATOR
ASSEMBLY
1007013 REV
SERIAL NO.
.12

MARKING VIEW
SCALE: 2:1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005
3. BOND FIND NO. 2 TO FIND NO. 1 PER ND-1002004
4. ENCAPSULATE PER ND-1002106
5. MARK .060/.100 HIGH BLACK CHARACTERS PER ND 1002019
6. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY TO FIND NO. 5
7. ASSEMBLY TORQUE FOR FIND NO. 5, 10/15 INCH POUNDS
8. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
9. SOLDER PER ND-100207 USING ND-1002075

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010003	SCHEMATIC	REF
AR	1006787-3	WIRE, ELECTRICAL	12
AR	1006776-20	INSULATION, SLEEVING	11
1	1008021-1	BUSHING, INSULATOR	9
4	1008024-1	WASHER, INSULATOR	8
1	1008020-1	WASHER, FLAT, STEEL	7
1	NAS 1022-C3	NUT, SELF LOCKING	6
1	1010269	TRANSISTOR	5
1	1010265-013	DIODE	4
1	1010312-035	RESISTOR, 270 Ω ±1% 2W	3
1	1007011	TERMINAL BOARD ASSEMBLY	2
1	1008022	BRACKET, MOUNTING	1

LIST OF MATERIALS

1000202	DL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT

DRAWN J. Banaski DATE 1/17/63
CHECKED
APPROVAL 2/9/63
APPROVAL L.C. Smith 2/9/63
NASA APPROVAL 3/2/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

28 VOLT DC REGULATOR ASSEMBLY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007013
SCALE 4/1
WT
SHEET 1 OF 1

1007013 A

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

TDRR 00496

		REVISIONS		
	SYM	DESCRIPTION	DATE	APPROVAL
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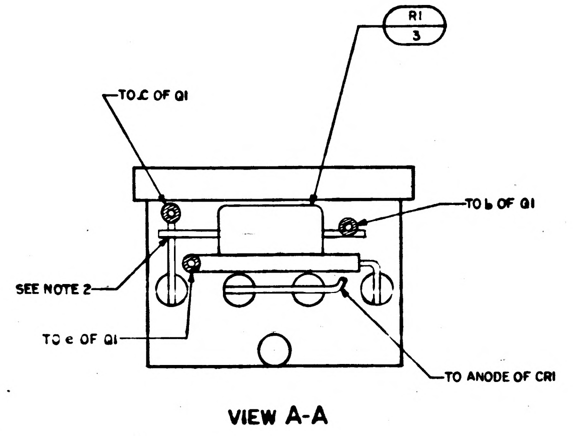
②	B	REVISED PER TDRR 01648	6-19-63	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SEE NOTE 2
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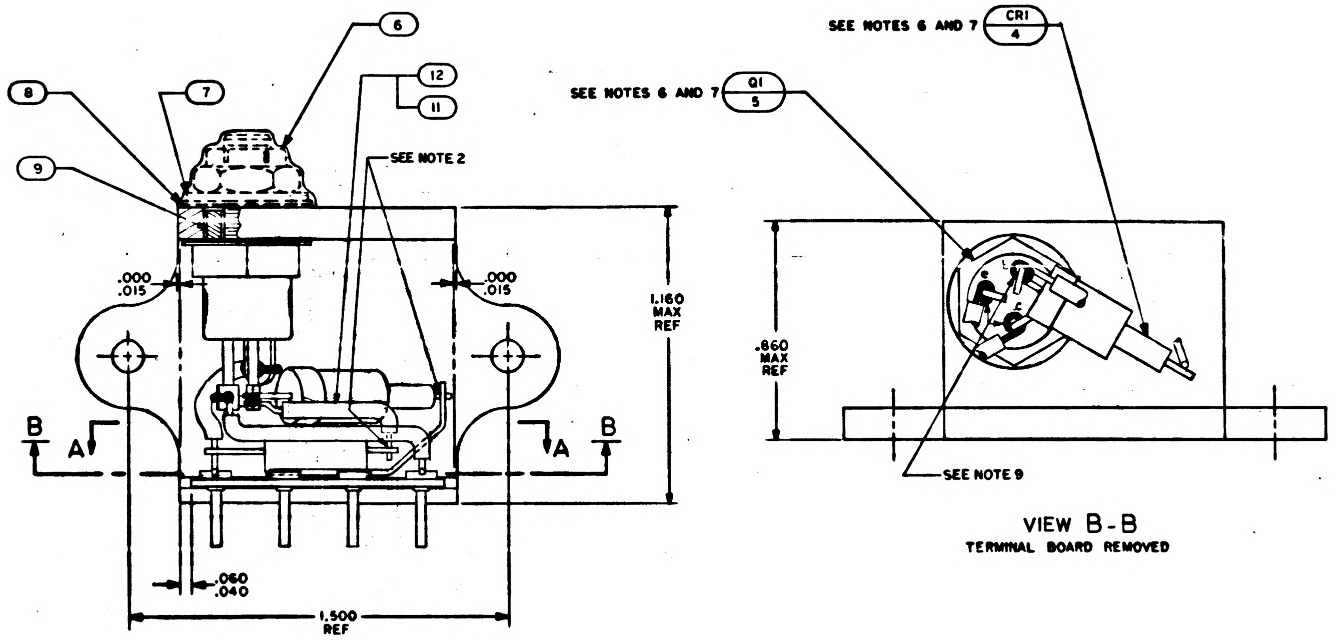
TO ANODE OF CR1

VIEW A-A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1.500
REF
SEE NOTES 6 AND 7
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SEE NOTES 6 AND 7
Q1
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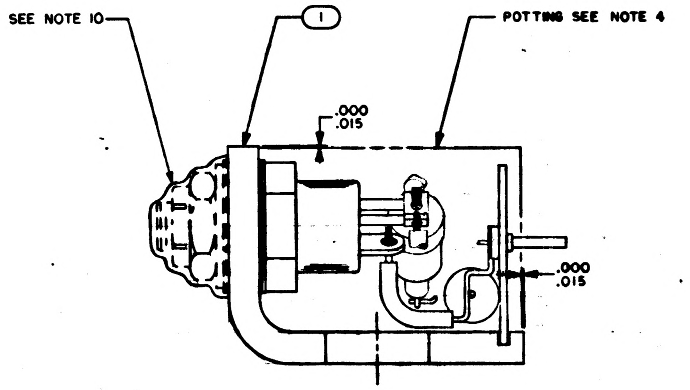
REF
SEE NOTE 9

VIEW B-B
TERMINAL BOARD REMOVED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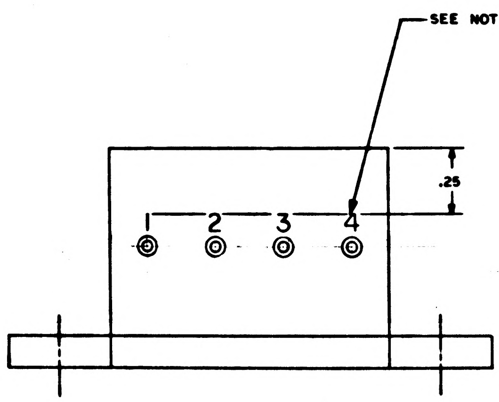
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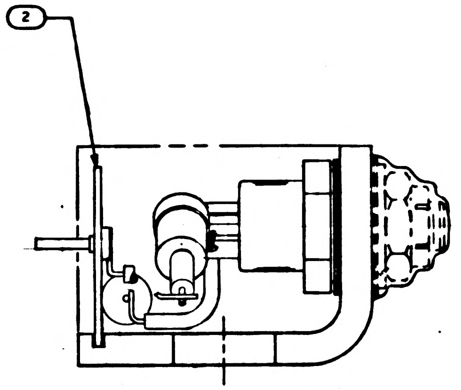
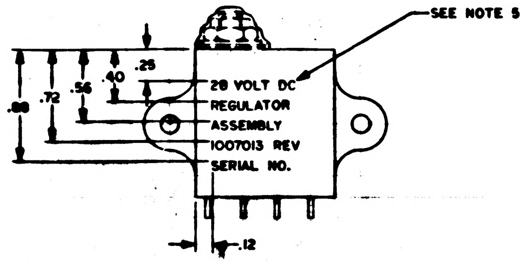


NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005
3. BOND FIND NO. 2 TO FIND NO. 1 PER ND-1002004
4. ENCAPSULATE PER ND-1002106
5. MARK .060/.100 HIGH BLACK CHARACTERS PER ND 1002019
6. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY TO FIND NO. 5
7. ASSEMBLY TORQUE FOR FIND NO. 5, 10/15 INCH POUNDS
8. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
9. SOLDER PER ND-1002071 USING ND-1002075
10. BRUSH COAT STUD PER ND 1002186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.88
28 VOLT DC
REGULATOR
ASSEMBLY
1007013 REV
SERIAL NO.
.12

MARKING VIEW
SCALE: 2:1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
⨯	1010003	SCHEMATIC	REF
AR	1006787-3	WIRE, ELECTRICAL	12
AR	1006776-20	INSULATION, SLEEVING	11
1	1008021-1	BUSHING, INSULATOR	9
4	1008024-1	WASHER, INSULATOR	8
1	1008020-1	WASHER, FLAT, STEEL	7
1	NAS 1022-C3	NUT, SELF LOCKING	6
1	1010269	TRANSISTOR	5
1	1010265-013	DIODE	4
1	1010312-035	RESISTOR, 270 Ω ±1% 2W	3
1	1007011	TERMINAL BOARD ASSEMBLY	2
1	1008022	BRACKET, MOUNTING	1

LIST OF MATERIALS

1007013 B

1000202	DL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN A. Brozeski DATE 1/17/63
CHECKED
APPROVAL 2/9/63
APPROVAL L.C. Smith 2/9/63
NASA APPROVAL 2/4/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

28 VOLT DC REGULATOR ASSEMBLY

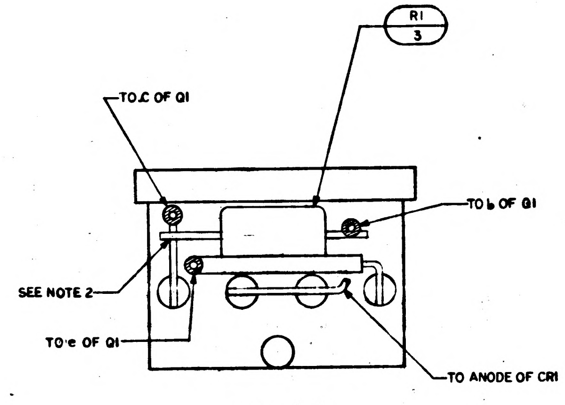
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007013
SCALE 4/1
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

TDRR 00496

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01164	5-8-63	S.C.S.
B	REVISED PER TDRR 01648	6-19-63	
C	REVISED PER TDRR 03946		
D	REVISED PER TDRR 03947		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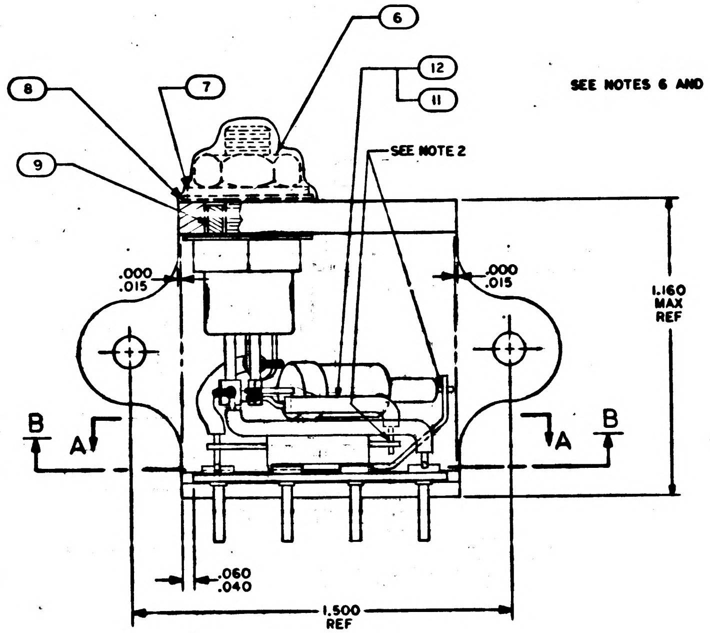
SEE NOTE 2
TO e OF Q1
TO ANODE OF CR1

VIEW A-A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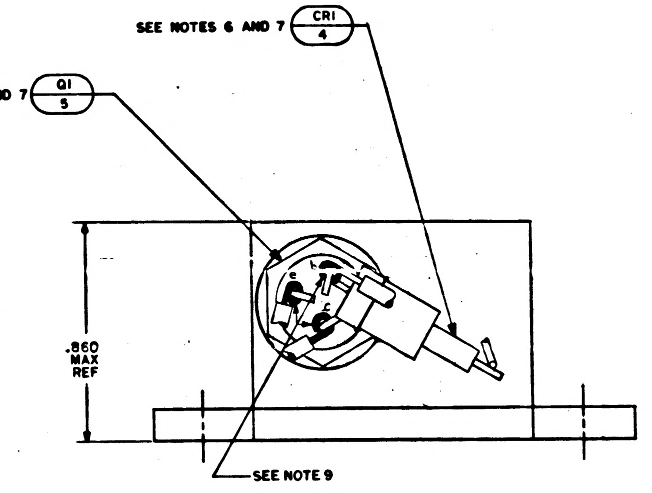
SEE NOTES 6 AND 7
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SEE NOTE 9

VIEW B-B
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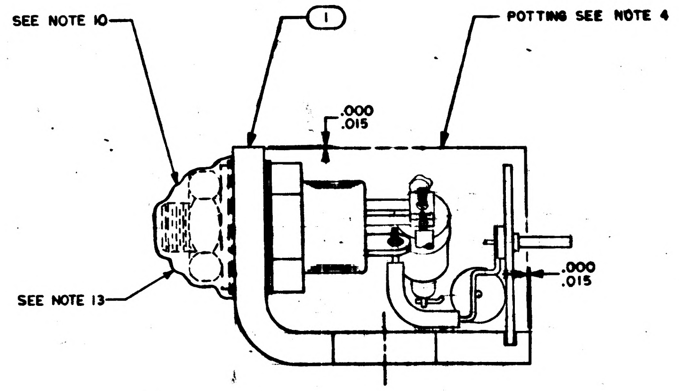
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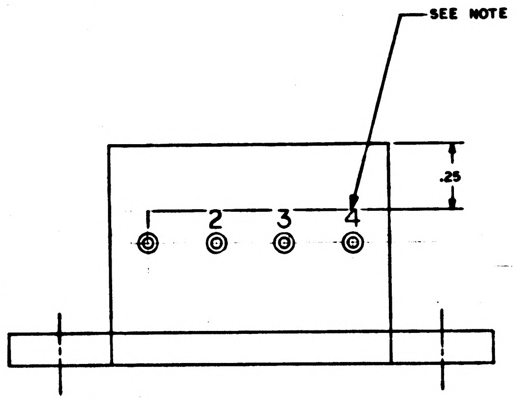
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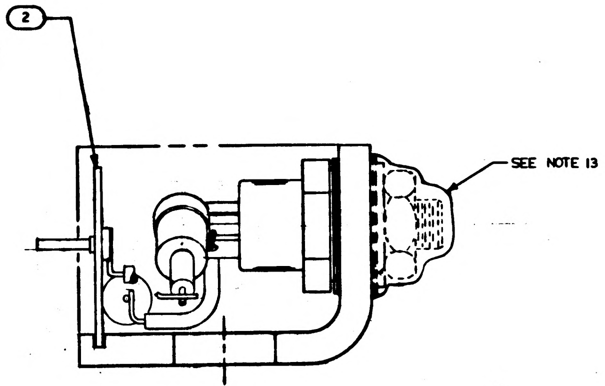
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NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005
3. BOND FIND NO. 2 TO FIND NO. 1 PER ND-1002004
4. ENCAPSULATE PER ND-1002106
5. MARK .060/.100 HIGH BLACK CHARACTERS PER ND 1002019/SERIALIZE PER ND 1002023
6. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY TO FIND NO. 5
7. ASSEMBLY TORQUE FOR FIND NO. 5, 10/15 INCH POUNDS
8. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
9. SOLDER PER ND-1002071 USING ND-1002075
10. BRUSH COAT STUD PER ND 1002009
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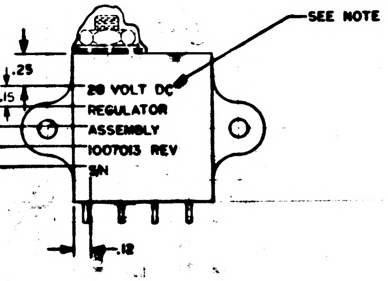
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28 VOLT DC
REGULATOR
ASSEMBLY
1007013 REV
S/N
.12

MARKING VIEW
SCALE: 2:1

MASTER

☒	1010003	SCHEMATIC	REF
AR	1006787-3	WIRE, ELECTRICAL	12
AR	1006776-20	INSULATION, SLEEVING	11
1	1008021-1	BUSHING, INSULATOR	9
4	1008024-1	WASHER, INSULATOR	8
1	1008020-1	WASHER, FLAT, STEEL	7
1	MS35650-104	NUT, PLAIN HEX	6
1	1010269	TRANSISTOR	5
1	1010265-013	DIODE	4
1	1010312-035	RESISTOR, 270 Ω ±1% 2W	3
1	1007011	TERMINAL BOARD ASSEMBLY	2
1	1008022	BRACKET, MOUNTING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1000202	DL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO.
CONTRACT
DRAWN A. Olenski DATE 1/17/63
CHECKED
APPROVAL 2/9/63
APPROVAL L.C. Smith 2/9/63
NASA APPROVAL 3/4/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

28 VOLT DC REGULATOR ASSEMBLY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007013
SCALE 4/1
WT
SHEET 1 OF 1

1007013 D

INCHES
PHOTOGRAPHIC SCALE ONLY

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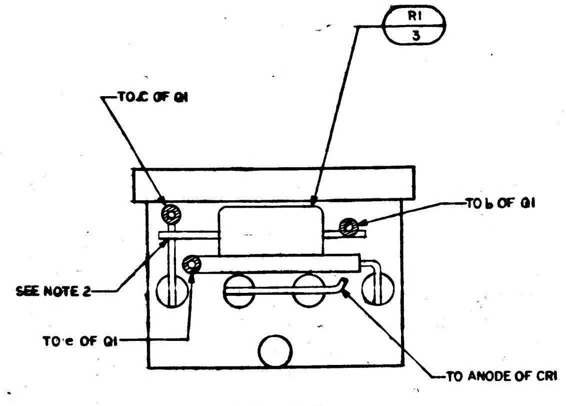
TDRR 00496

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01164	5-9-63	S.C.S.
B	REVISED PER TDRR 01648	6-19-63	
C	REVISED PER TDRR 03946		
D	REVISED PER TDRR 03947		
E	REVISED PER TDRR 05091		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SEE NOTE 2
TO e OF Q1
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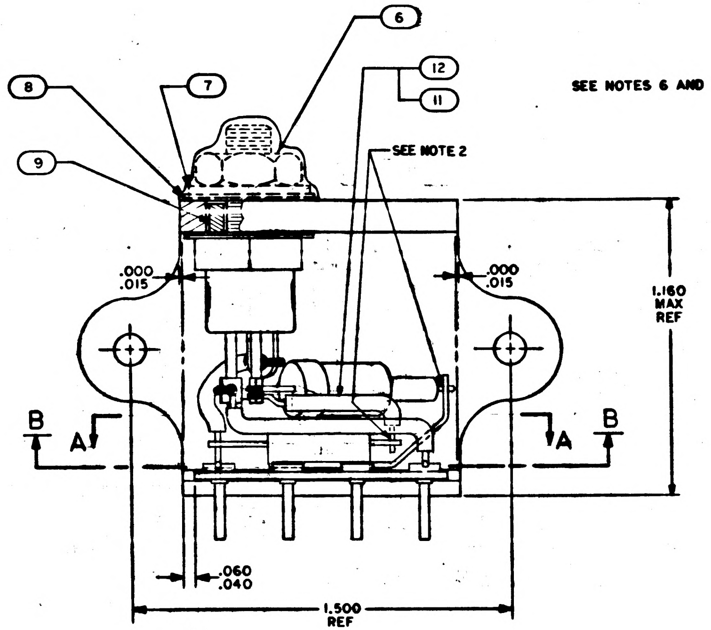
VIEW A-A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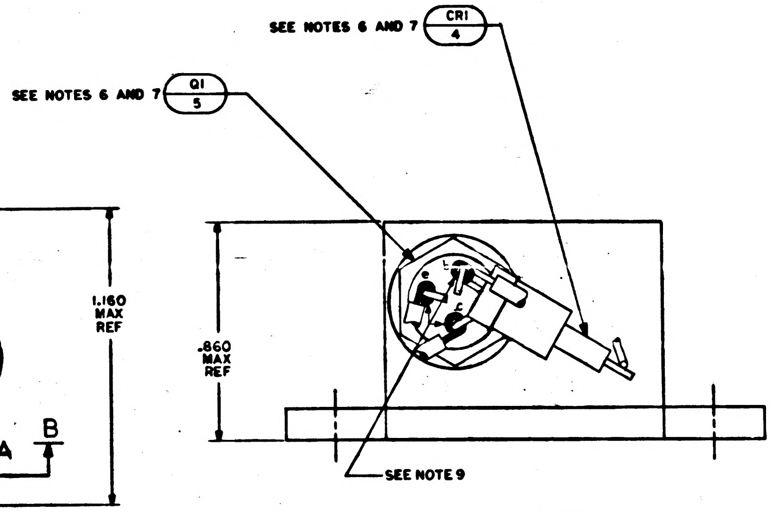
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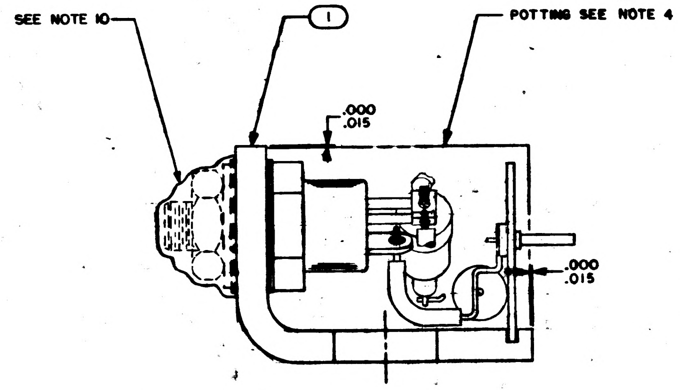
REF
SEE NOTE 9

VIEW B-B

TERMINAL BOARD REMOVED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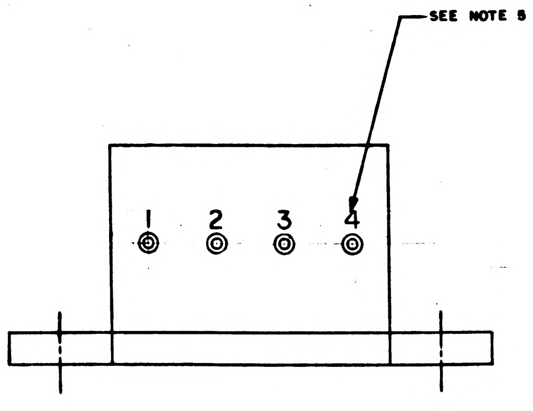
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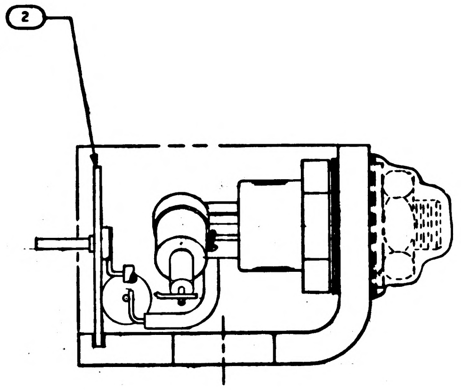
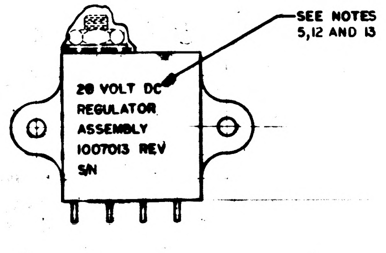


NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005
3. BOND FIND NO. 2 TO FIND NO. 1 PER ND-1002004
4. ENCAPSULATE PER ND-1002106
5. MARK .100 TO .140 HIGH BLACK CHARACTERS PER ND 1002019
6. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY TO FIND NO. 5
7. ASSEMBLY TORQUE FOR FIND NO. 5, 10/15 INCH POUNDS
8. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
9. SOLDER PER ND-1002071 USING ND-1002075
10. BRUSH COAT STUD PER ND 1002009
11. APPLY SEALING COMPOUND PER MIL-S-40083, CLASS 34, TO FIND NOS AT ASSEMBLY, PRIOR TO BRUSH COAT
12. SERIALIZE PER ND-1002023
13. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
14. INSPECT PER PS-1007013
15. TEST PER FTM-1007013


SEE NOTES
5,12 AND 13
28 VOLT DC
REGULATOR
ASSEMBLY
1007013 REV
S/N

MARKING VIEW
SCALE: 2:1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010003	SCHEMATIC	REF
AR	1006787-3	WIRE, ELECTRICAL	12
AR	1006776-20	INSULATION, SLEEVING	11
1	1008021-1	BUSHING, INSULATOR	9
4	1008024-1	WASHER, INSULATOR	8
1	1008020-1	WASHER, FLAT, STEEL	7
1	MS35650-104	NUT, PLAIN HEX	6
1	1010269	TRANSISTOR	5
1	1010265-013	DIODE	4
1	1010312-035	RESISTOR, 270 Ω ±1% 2W	3
1	1007011	TERMINAL BOARD ASSEMBLY	2
1	1008022	BRACKET, MOUNTING	1

LIST OF MATERIALS

1000202	DL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ±.03 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL —#—
HEAT TREATMENT —#—
FINAL FINISH —#—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN A. Dmoski DATE 1/17/63
CHECKED
APPROVAL 2/9/63
APPROVAL L.C. Smith 2/9/63
NASA APPROVAL 3/1/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

28 VOLT DC REGULATOR ASSEMBLY

CODE IDENT NO. SIZE E NASA DRAWING NO. 1007013
SCALE 4/1 WT SHEET 1 OF 1

E 1007013

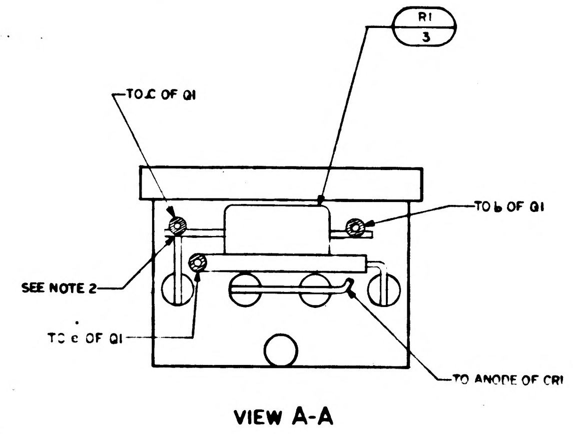
INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

TDRR 00496

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01164	5-8-63	SCS
B	REVISED PER TDRR 01648	9-63	
C	REVISED PER TDRR 03946		
D	REVISED PER TDRR 03947		
E	REVISED PER TDRR 05091		
F	REVISED PER TDRR 07936		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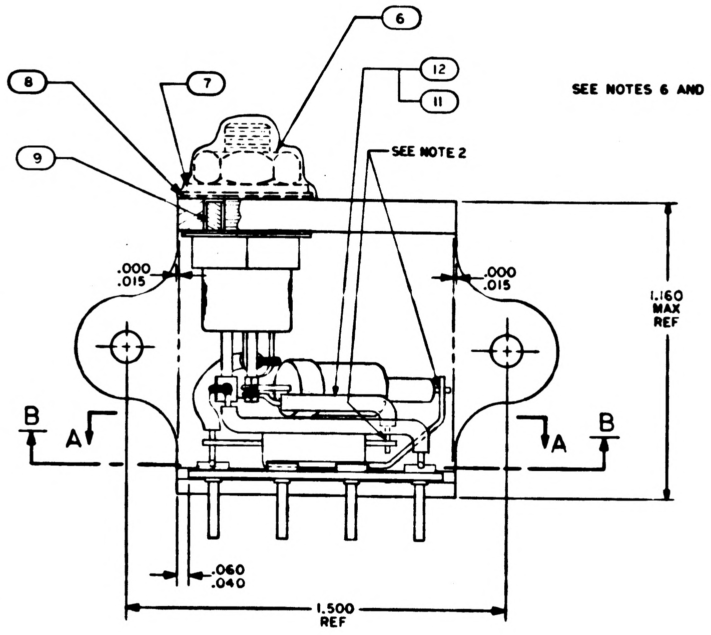
SEE NOTE 2
TO e OF Q1
TO ANODE OF CR1

VIEW A-A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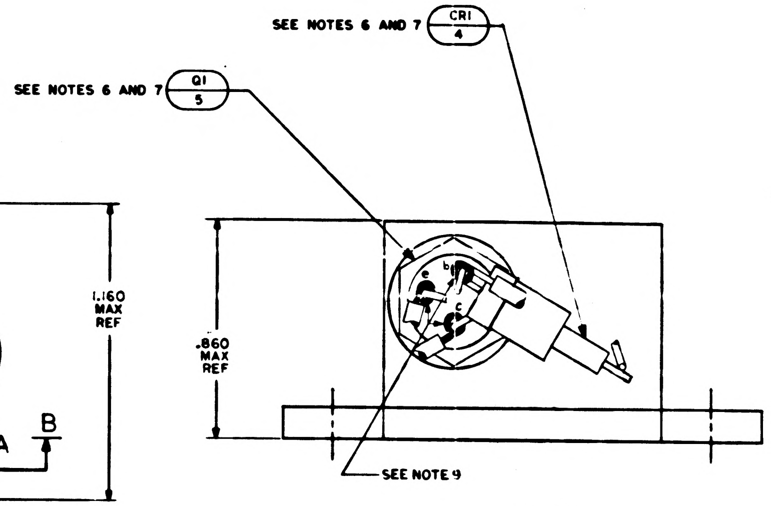
SEE NOTES 6 AND 7
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SEE NOTES 6 AND 7
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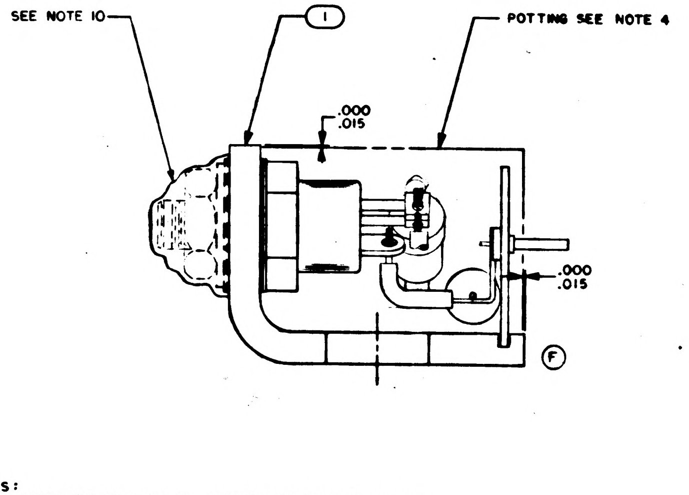
SEE NOTE 9

VIEW B-B
TERMINAL BOARD REMOVED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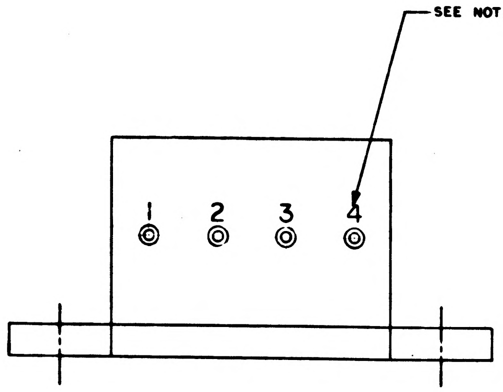
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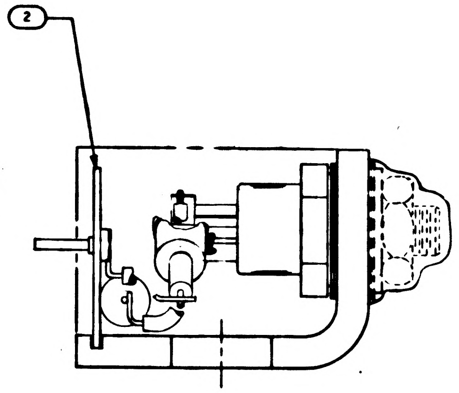

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005
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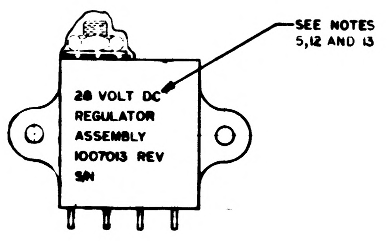
12. SERIALIZE PER ND-1002023
13. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
14. INSPECT PER PS-1007013
15. TEST PER FTM-1007013


SEE NOTES
5,12 AND 13
28 VOLT DC
REGULATOR
ASSEMBLY
1007013 REV
S/N

MARKING VIEW
SCALE: 2:1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010003	SCHEMATIC	REF
AR	1006787-3	WIRE, ELECTRICAL	12
AR	1006776-20	INSULATION, SLEEVING	11
1	1008021-1	BUSHING, INSULATOR	9
4	1008024-1	WASHER, INSULATOR	8
1	1008020-1	WASHER, FLAT, STEEL	7
1	MS35650-104	NUT, PLAIN HEX	6
1	1010269	TRANSISTOR	5
1	1010265-013	DIODE	4
1	1010312-035	RESISTOR, 270 Ω ±1% 2W	3
1	1007011	TERMINAL BOARD ASSEMBLY	2
1	1008022	BRACKET, MOUNTING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000202	DL 1000201

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS ± .03
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN J. Bengaski DATE 1/17/63
CHECKED
APPROVAL 2/8/63
APPROVAL C. Smith 2/8/63
NASA APPROVAL 3/1/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

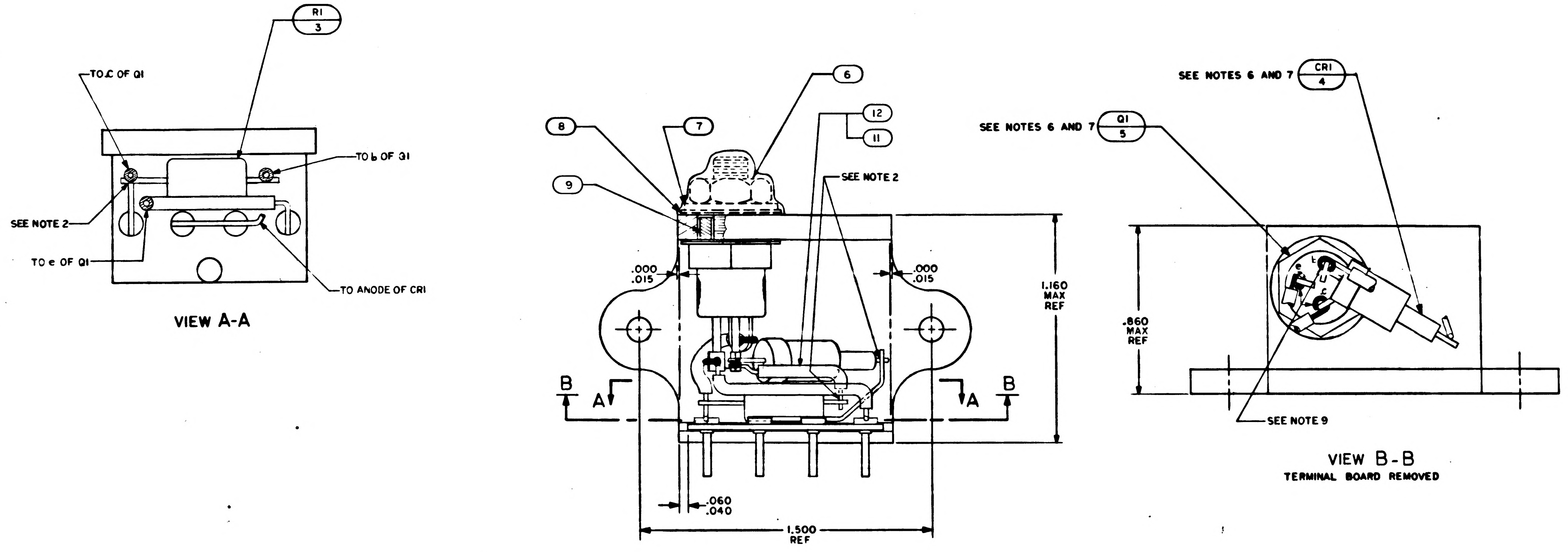
28 VOLT DC REGULATOR ASSEMBLY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007013
SCALE 4/1
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

TDRR 00496

	REVISIONS		
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01164	5-8-63	S.C.S.
B	REVISED PER TDRR 01648	6-19-63	
C	REVISED PER TDRR 03946		
D	REVISED PER TDRR 03947		
E	REVISED PER TDRR 05091		
F	REVISED PER TDRR 07936		
G	REVISED PER TDRR 10358	29 JAN 64	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SEE NOTE 2
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SEE NOTES 6 AND 7
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SEE NOTES 6 AND 7
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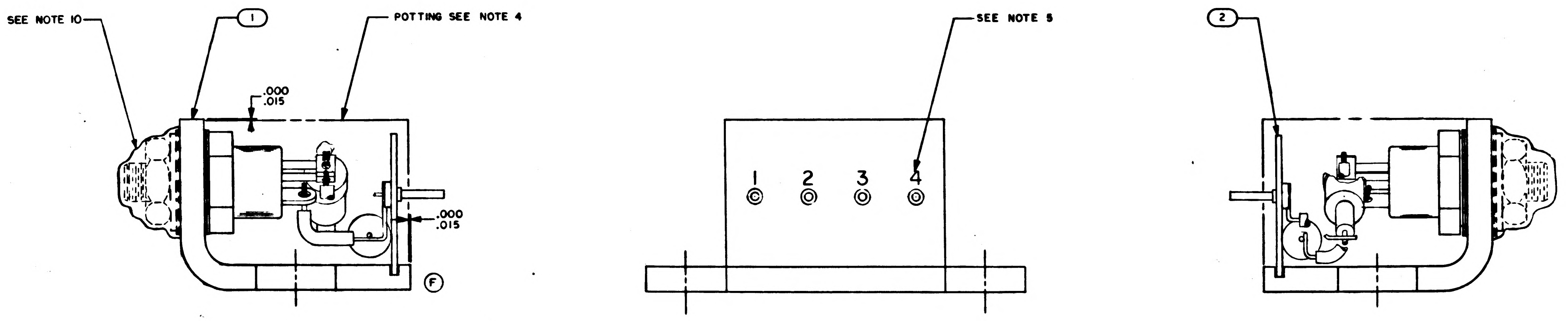
MAX
REF
SEE NOTE 9

VIEW A-A

VIEW B-B
TERMINAL BOARD REMOVED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SEE NOTE 5
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NOTES:

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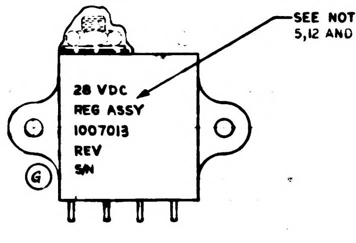

SEE NOTES
5, 12 AND 13
28 VDC
REG ASSY
1007013
REV
S/N
G

MARKING VIEW
SCALE: 2:1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010003	SCHEMATIC	REF
AR	1006787-3	WIRE, ELECTRICAL	12
AR	1006776-20	INSULATION, SLEEVING	11
1	1008021-1	BUSHING, INSULATOR	9
4	1008024-1	WASHER, INSULATOR	8
1	1008020-1	WASHER, FLAT, STEEL	7
1	MS35650-104	NUT, PLAIN HEX	6
1	1010269	TRANSISTOR	5
1	1010265-013	DIODE	4
1	1010312-035	RESISTOR, 270 Ω ±1% 2W	3
1	1007011	TERMINAL BOARD ASSEMBLY	2
1	1008022	BRACKET, MOUNTING	1

LIST OF MATERIALS

1000202	DL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT

DRAWN DATE 1/17/63
CHECKED
APPROVAL 2/9/63
APPROVAL S.C. Smith 2/9/63
NASA APPROVAL 3/4/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

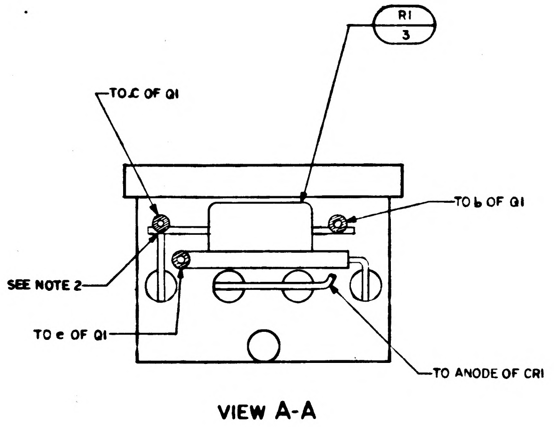
28 VOLT DC REGULATOR ASSEMBLY

CODE IDENT NO. SIZE E NASA DRAWING NO. 1007013
SCALE 4/1 WT SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

TDRR 00496

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01164	5-1-63	[illegible]
B	REVISED PER TDRR 01648	6-19-63	[illegible]
C	REVISED PER TDRR 03946		[illegible]
D	REVISED PER TDRR 03947		[illegible]
E	REVISED PER TDRR 05091	[illegible]	[illegible]
F	REVISED PER TDRR 07936		[illegible]
G	REVISED PER TDRR 0358	[illegible]	[illegible]
H	REVISED PER TDRR 16974	[illegible]	[illegible]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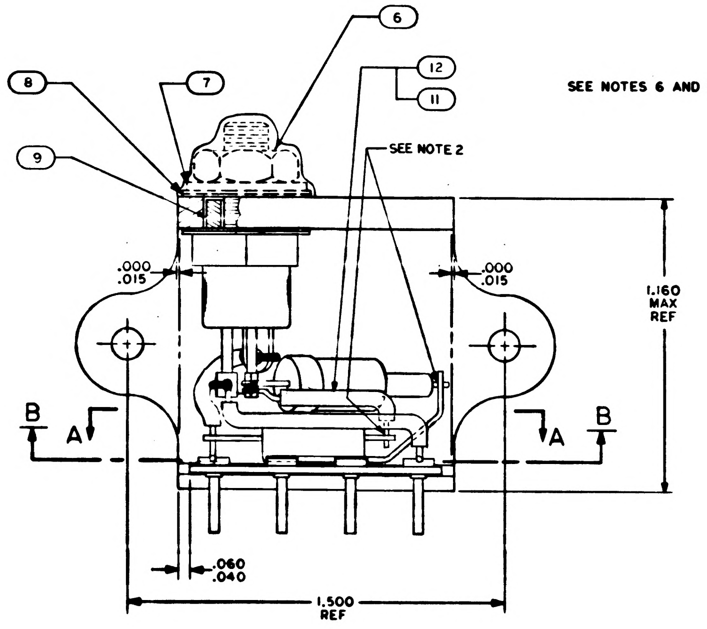
TO b OF Q1
SEE NOTE 2
TO e OF Q1
TO ANODE OF CR1

VIEW A-A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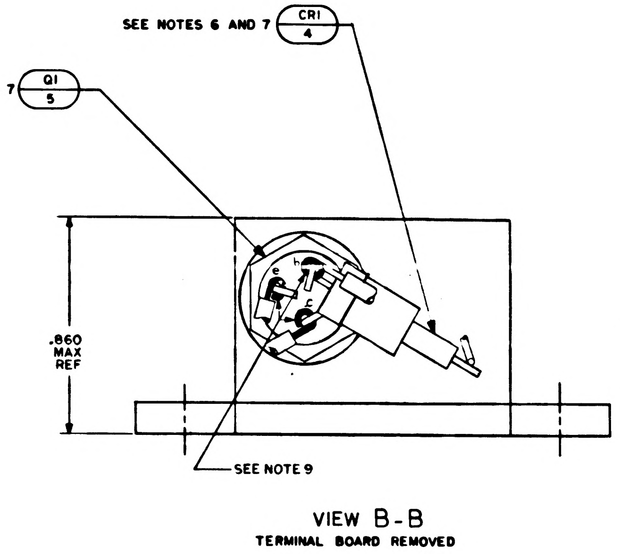
SEE NOTES 6 AND 7
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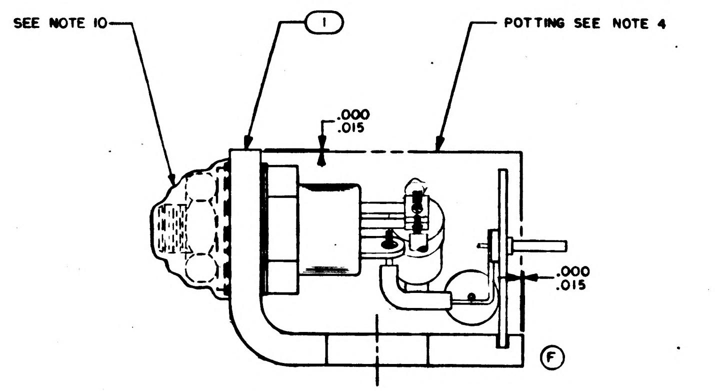
SEE NOTE 9

VIEW B-B
TERMINAL BOARD REMOVED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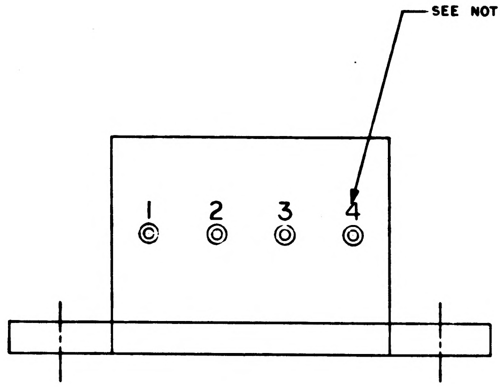
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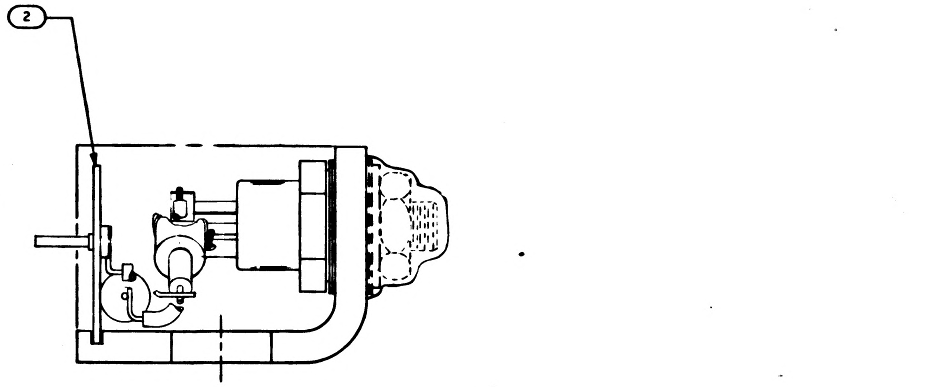

NOTES:

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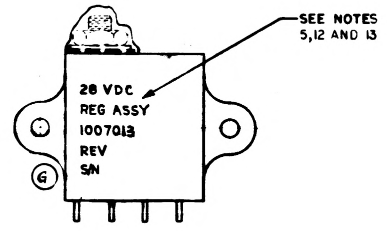
12. SERIALIZE PER ND-1002023
13. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
14. INSPECT PER PS-1007013
15. TEST PER FTM-1007013


SEE NOTES
5, 12 AND 13
28 VDC
REG ASSY
1007013
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S/N
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MARKING VIEW
SCALE: 2:1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010003	SCHEMATIC	REF
AR	1006787-3	WIRE, ELECTRICAL	12
AR	1006776-20	INSULATION, SLEEVING	11
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1	MS35650-104	NUT, PLAIN HEX	6
1	1010269-1	TRANSISTOR	5
1	1010265-013	DIODE	4
1	1010312-035	RESISTOR, 270 Ω ±1% 2W	3
1	1007011	TERMINAL BOARD ASSEMBLY	2
1	1008022	BRACKET, MOUNTING	1

LIST OF MATERIALS

H 1007013

NEXT ASSY	USED ON
1000202	DL 1000201

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ±.03 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT

DRAWN [illegible] DATE 1/17/63
CHECKED [illegible]
APPROVAL [illegible] 2/9/63
APPROVAL L.C. Smith 2/9/63
NASA APPROVAL [illegible] 3/4/63
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

28 VOLT DC REGULATOR ASSEMBLY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007013
SCALE 4/1
WT
SHEET 1 OF 1

TCRR 00496

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

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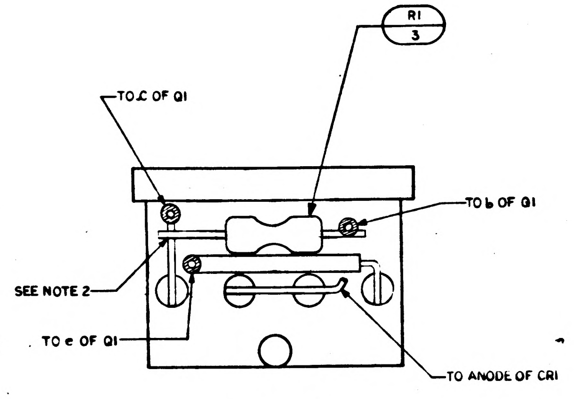
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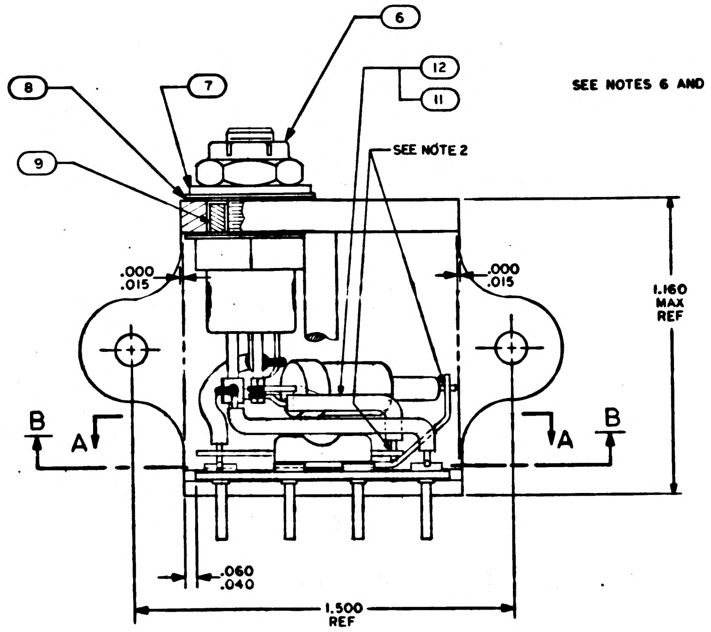
SEE NOTE 2
TO e OF Q1
TO ANODE OF CR1

VIEW A-A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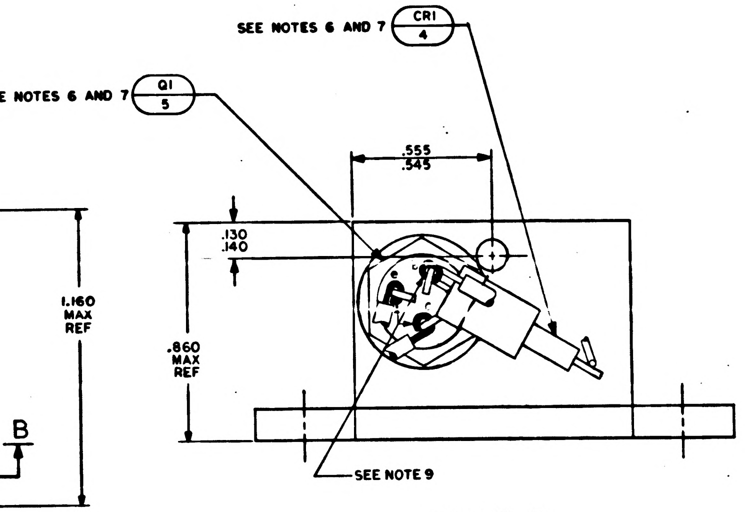
SEE NOTES 6 AND 7
CR1
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SEE NOTES 6 AND 7
Q1
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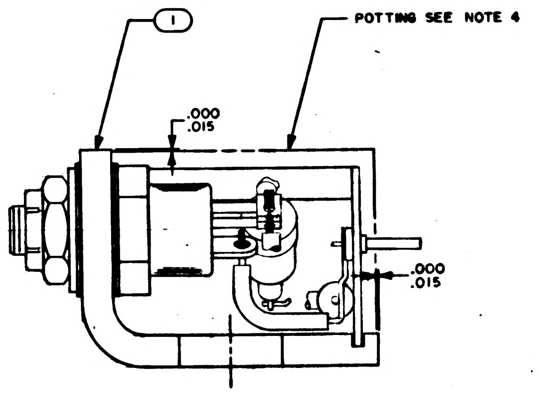
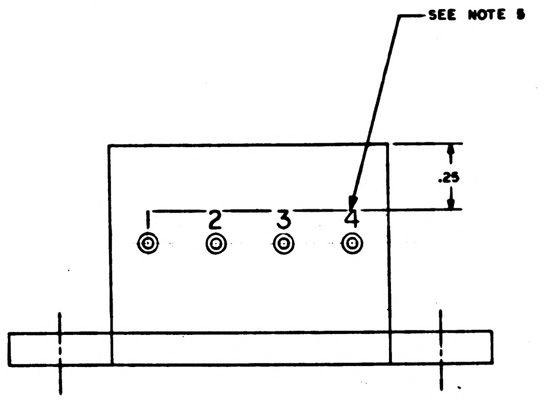
MAX
REF
SEE NOTE 9

VIEW B-B
TERMINAL BOARD REMOVED


1
POTTING SEE NOTE 4
.000
.015
.000
.015


SEE NOTE 8
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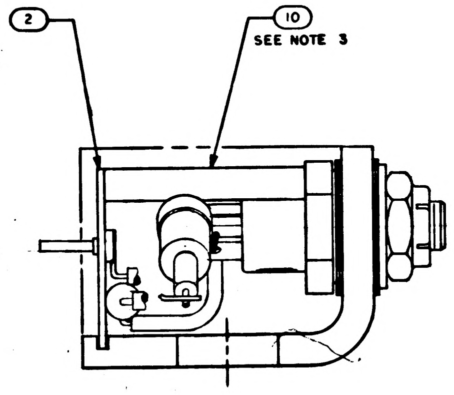
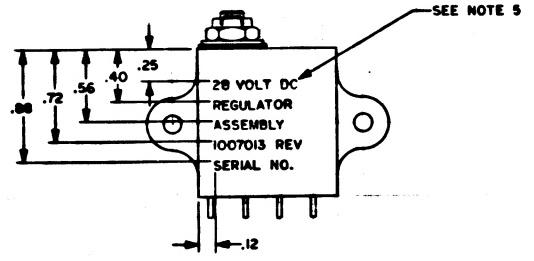
2
3
4


2
10
SEE NOTE 3

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WELD PER ND 1002005
3. BOND FIND NO. 10 TO FIND NO. 1 AND FIND NO. 2 PER ND 1002004
4. ENCAPSULATE PER ND
5. MARK .060/.100 HIGH BLACK CHARACTERS PER ND 1002019
6. APPLY SILICONE GREASE PER MIL-L-15719 AT ASSEMBLY TO FIND NO. 5
7. ASSEMBLY TORQUE FOR FIND NO. 5, 10/15 INCH POUNDS
8. DIP COAT PER ND 1002068 PRIOR TO ENCAPSULATION
9. SOLDER PER MIL-S-6872


SEE NOTE 5
.25
.40
.56
.72
.88
28 VOLT DC
REGULATOR
ASSEMBLY
1007013 REV
SERIAL NO.
.12

MARKING VIEW
SCALE: 2:1

MASTER

☒	1010003	SCHEMATIC	REF
AR	1006787-3	WIRE, ELECTRICAL	12
AR	1006776-20	INSULATION, SLEEVING	11
1	1008027	POST, SPACER	10
1	1008021-1	BUSHING, INSULATOR	9
4	1008024-1	WASHER, INSULATOR	8
1	1008020-1	WASHER, FLAT, STEEL	7
1	NAS 1022-C3	NUT, SELF LOCKING	6
1	1010269	TRANSISTOR	5
1	1010265-013	DIODE	4
1	1006760-28	RESISTOR, 680Ω, 1/2W, 2%	3
1	1007011	TERMINAL BOARD ASSEMBLY	2
1	1008022	BRACKET, MOUNTING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1000202	DL 1000201

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —#— DECIMALS ±.03 ANGLES ± —#—
DO NOT SCALE THIS DRAWING
MATERIAL —#—
HEAT TREATMENT —#—
FINAL FINISH —#—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN A. Olmpski DATE 1/17/63
CHECKED
APPROVAL 2/9/63
APPROVAL J.C. Smith 2/9/63
NASA APPROVAL 3/4/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

28 VOLT DC REGULATOR ASSEMBLY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007013
SCALE 4/1
WT
SHEET 1 OF 1

1007013

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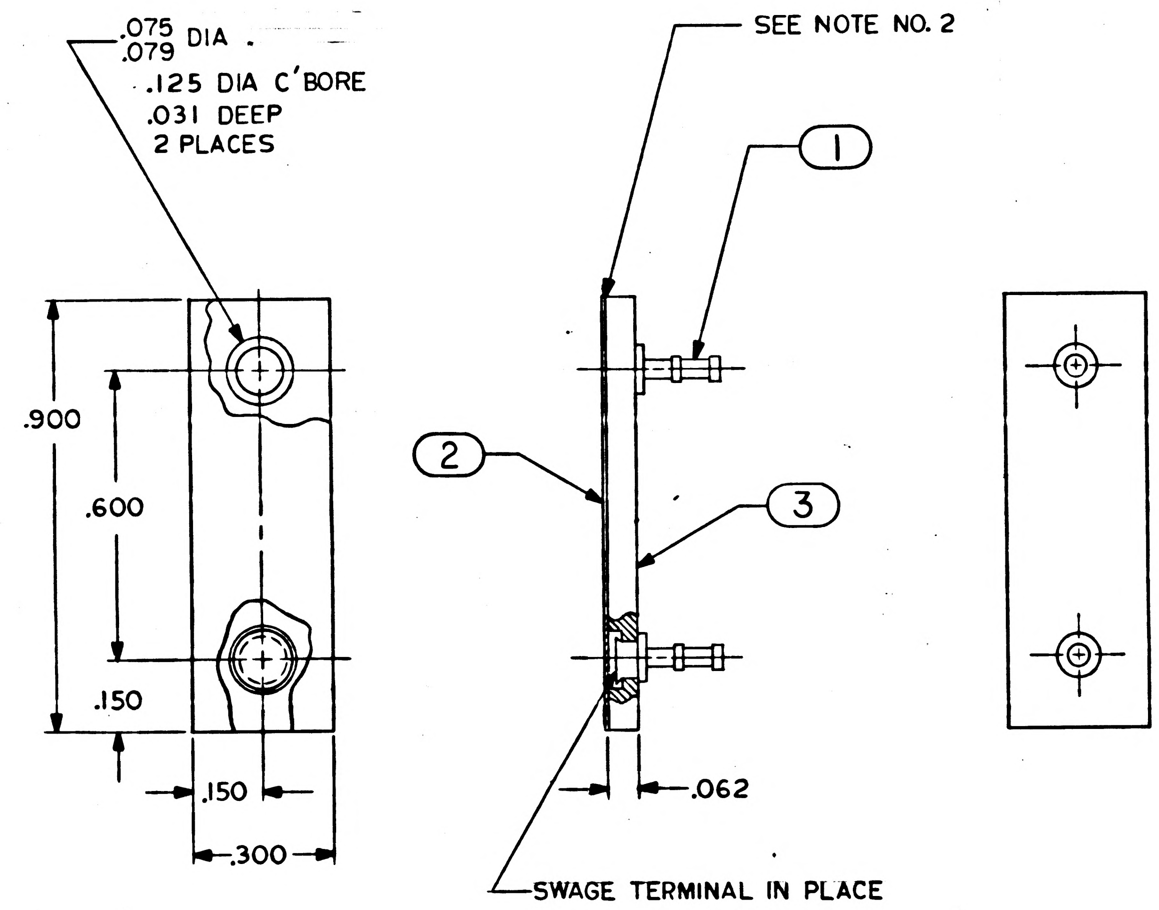
1007014

REVISIONS TDRR00380

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00887	4-14-63	SCS WH



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND FIND NO. 2 TO FIND NO. 3 PER ND-1002004
3. MATERIAL: GLASS FIBER BASE EPOXY-RESIN MIL-P-18177, TYPE GEB
4. TERMINAL: MIL-T-55155/12 SE-12 TIN PLATE PER MIL-P-10727

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1007014-1	TERMINAL BOARD	3
1	1008028	INSULATOR	2
2	SEE NOTE NO. 4	TERMINAL LUG	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007029	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE NO. 3
HEAT TREATMENT —
FINAL FINISH —

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INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN L.J. BERKELEY DATE 1-23-63
CHECKED
APPROVAL S.C. Smith 2-9-63
APPROVAL
NASA APPROVAL 2-13-63
MIT APPROVAL

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TERMINAL BOARD
SUSPENSION CAPACITOR

CODE IDENT NO. SIZE C NASA DRAWING NO. 1007014
SCALE 4/1 WT SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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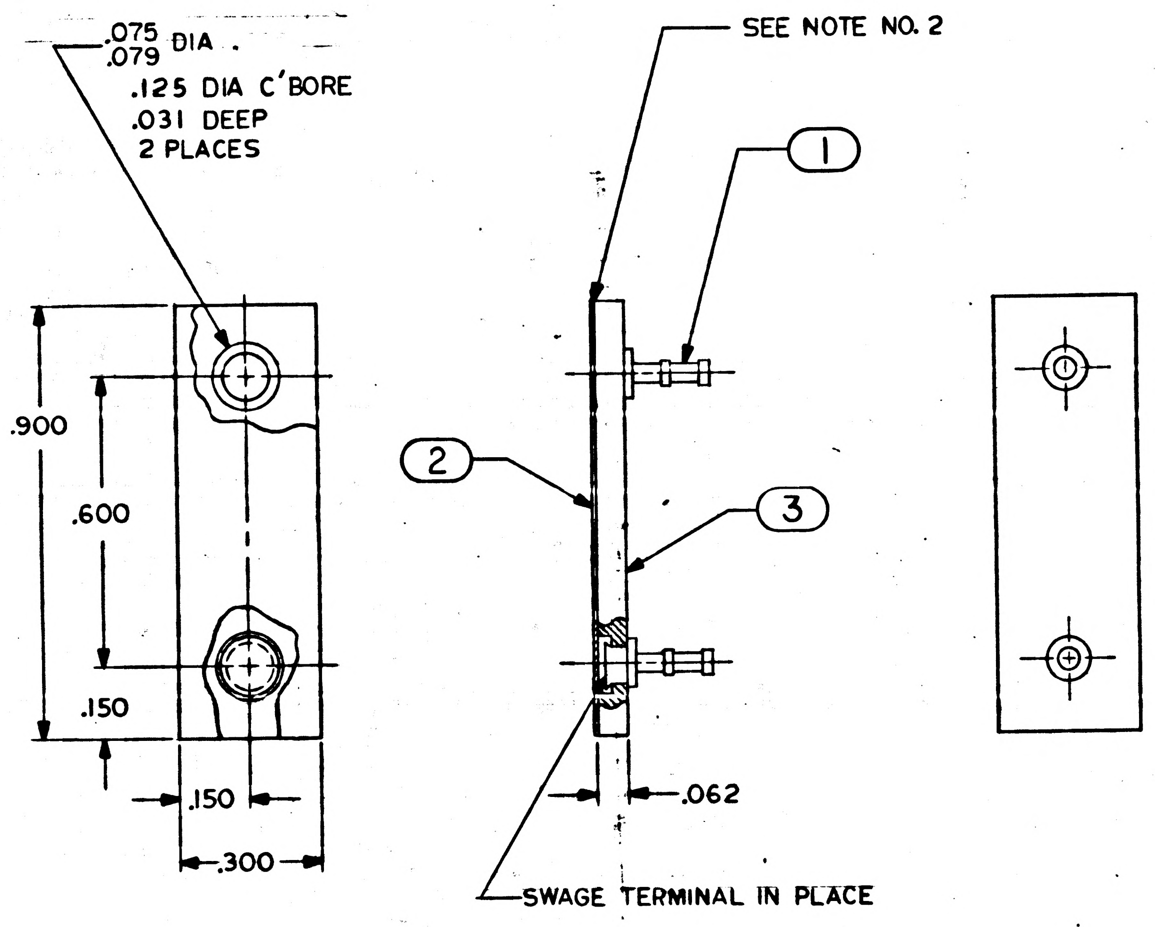
1007014 B

REVISIONS TDRR00380

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00887	[illegible]	SCR WH
B	REVISED PER TDRR 03950	10-17-63	LK WH



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND FIND NO.2 TO FIND NO.3 PER ND-1002004
3. MATERIAL: GLASS FIBER BASE EPOXY-RESIN MIL-P-18177, TYPE GEB

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1007014-1	TERMINAL BOARD	3
1	1008028	INSULATOR	2
2	1000252	TERMINAL SOLDER, SWAGED	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1000013	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS ±.005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE NO.3
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT
DRAWN L.J. BERKELEY DATE 1-23-63
CHECKED
APPROVAL S.C. Smith 2-9-63
APPROVAL
NASA APPROVAL [illegible] 2-13-63
MIT APPROVAL W [illegible] B [illegible]

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HOUSTON, TEXAS

TERMINAL BOARD
SUSPENSION CAPACITOR

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007014
SCALE 4/1
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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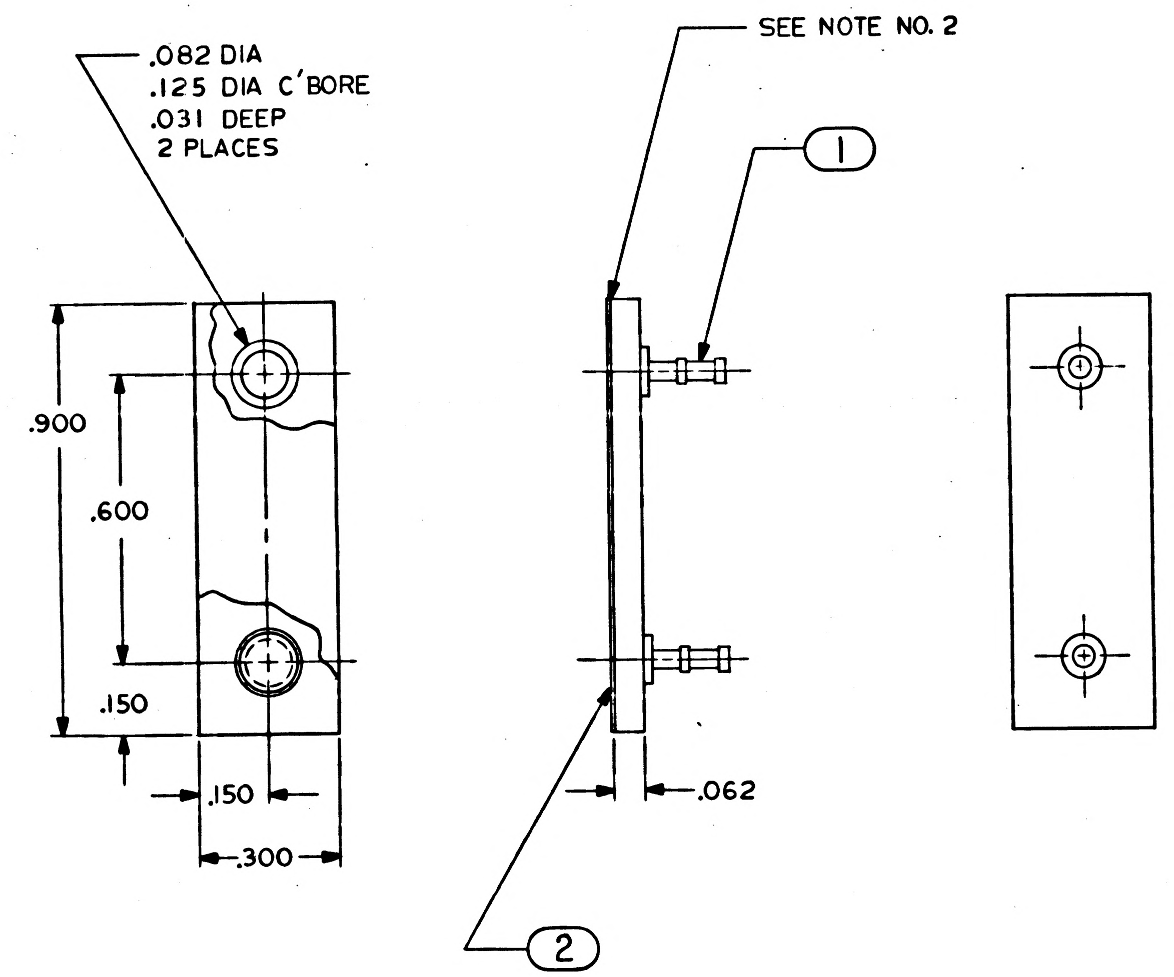
1007014

REVISIONS TDRR00380

SYM	DESCRIPTION	DATE	APPROVAL



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND FIND NO. I AS SHOWN PER-ND-1002004
3. MATERIAL: GLASS EPOXY BOARD MIL-P-18177, TYPE GEB

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1008028	INSULATOR	2
2		TERMINAL LUG	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± ~~/~~ DECIMALS ±.005 ANGLES ± ~~/~~
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE NO.3

HEAT TREATMENT
—//—

FINAL FINISH
—//—

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INSTRUMENTATION LAB
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DWG. NO. CONTRACT

DRAWN L.J. BERKELEY DATE 1-23-63
CHECKED
APPROVAL S.C. Smith 2-9-63
APPROVAL

NASA APPROVAL 2-13-63

MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERMINAL BOARD
SUSPENSION CAPACITOR

CODE IDENT NO. | SIZE C | NASA DRAWING NO. 1007014

SCALE 4/1 | WT | SHEET OF

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REVISIONS TDRR 00375			
SYM	DESCRIPTION	DATE	APPROVAL
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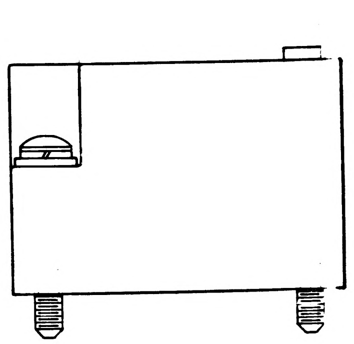
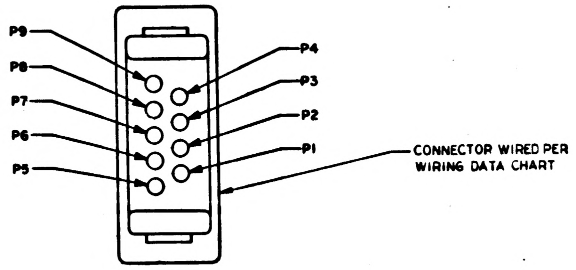
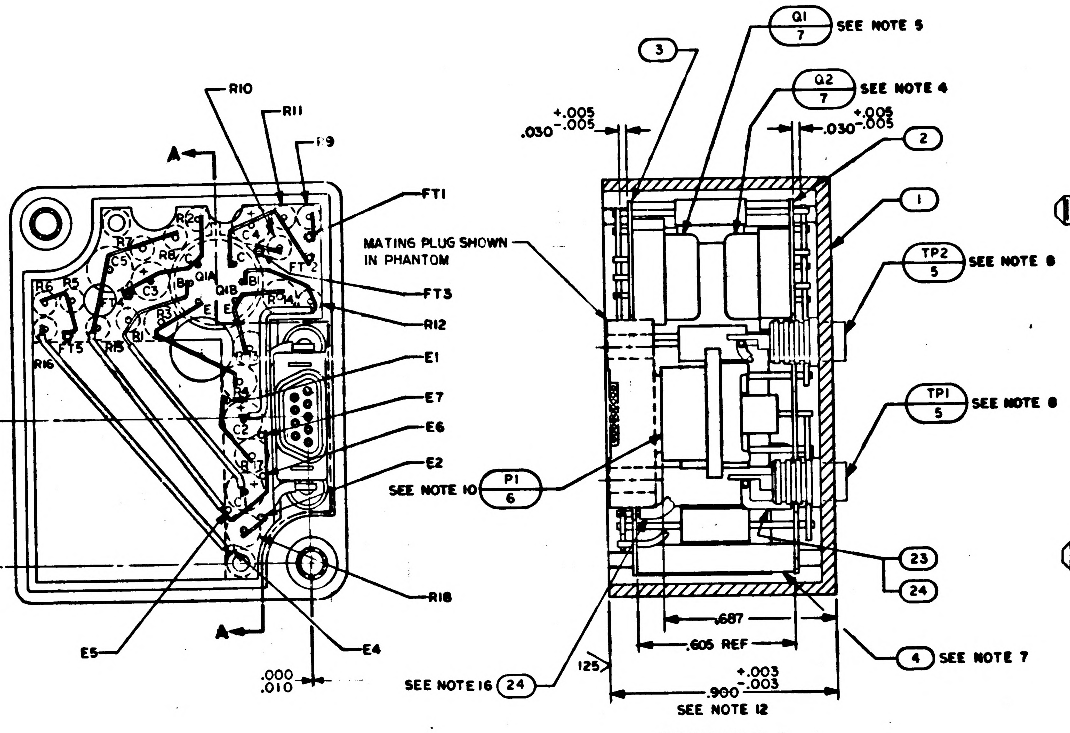


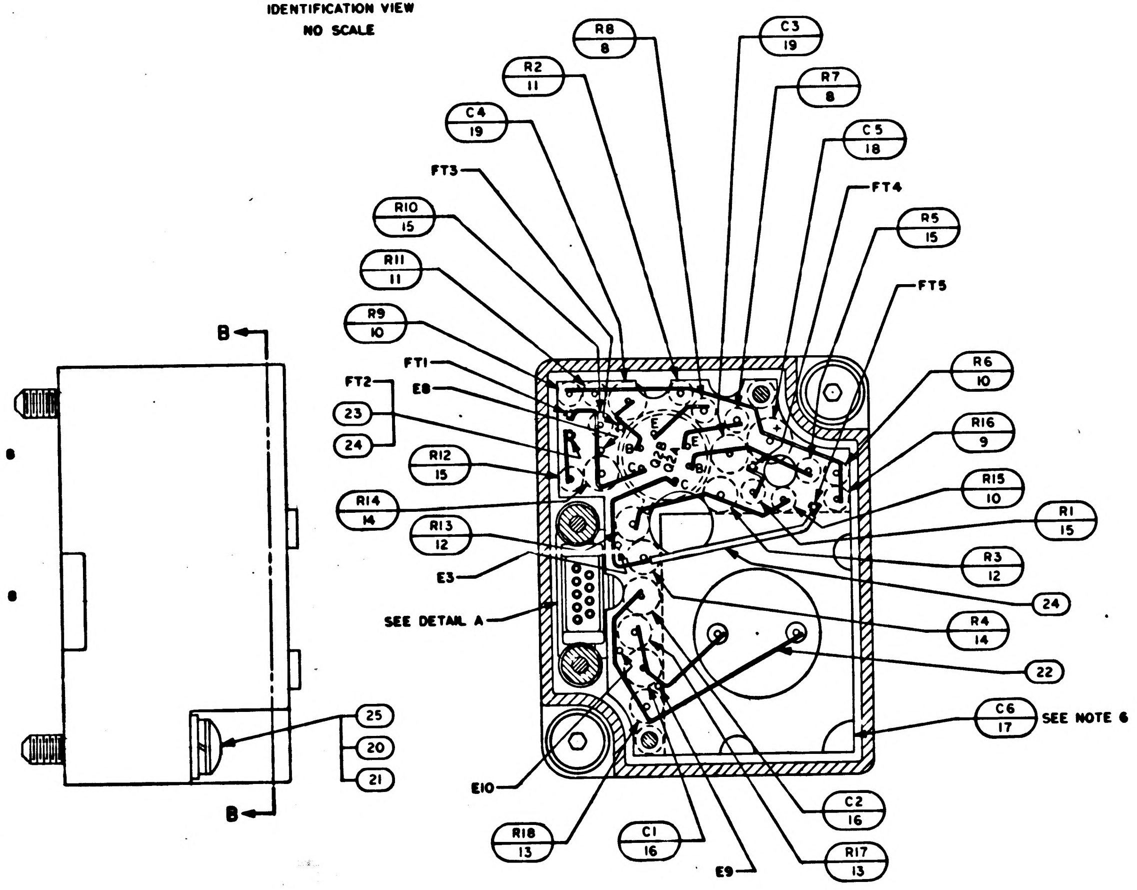
WIRING DATA		
IDENTIFICATION	FROM CIRCUIT POINT	TO CIRCUIT POINT
GRD	P1	E5
28 VDC	P2	E4
INPUT HI	P3	E1
OUTPUT NO.1	P4	E3
INPUT LO	P5	E2
SHIELD	P6	E6
INPUT C.T.	P7	E7
SPARE	P8	SPARE
OUTPUT NO.2	P9	E8
HI	TP1	E9
LO	TP2	E10


P9
P8
P7
P6
P5
P4
P3
P2
P1
CONNECTOR WIRED PER
WIRING DATA CHART

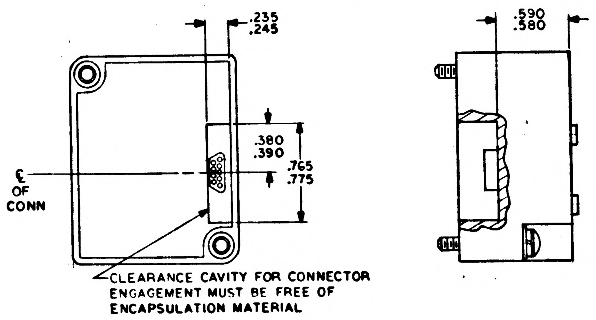
DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE


A
R10
R11
R9
FT1
MATING PLUG SHOWN IN PHANTOM
FT3
R12
E1
E7
E6
E2
SEE NOTE 10
R18
E5
E4
.570
.000
.010
3
Q1 7 SEE NOTE 5
Q2 7 SEE NOTE 4
2
1
TP2 5 SEE NOTE 8
TP1 5 SEE NOTE 8
P1 6
23
24
4 SEE NOTE 7
SEE NOTE 16 24
+.005
.030 -.005
.030
.687
.605 REF
.125
+.003
.900 -.003
SEE NOTE 12

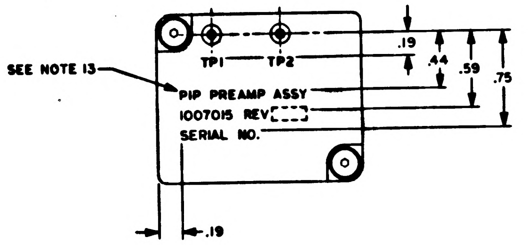
SECTION A-A


B
25
20
21
R8 8
C3 19
R2 11
R7 8
C4 19
C5 18
FT3
FT4
R10 15
R5 15
R11 11
FT5
R9 10
FT1
FT2
E8
23
24
R6 10
R16 9
R12 15
R15 10
R14 14
R1 15
R13 12
R3 12
E3
24
SEE DETAIL A
R4 14
22
C6 17
SEE NOTE 6
E10
C2 16
R18 13
C1 16
E9
R17 13

SECTION B-B


.235
.245
.590
.580
.380
.390
.765
.775
℄ OF CONN
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

VIEW SHOWING MOLD CAVITY


SEE NOTE 13
TP1
TP2
PIP PREAMP ASSY
1007015 REV
SERIAL NO.
.19
.44
.59
.75
.19

MARKING VIEW
SCALE: 2:1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND 1002003
3. ALL WELDS TO BE PER NASA DOCUMENT ND 1002005
4. BOND FIND NO. 7 (Q2) TO FIND NO. 2 PER ND 1002004
5. BOND FIND NO. 7 (Q1) TO FIND NO. 3 PER ND 1002004
6. BOND FIND NO. 17 TO FIND NO. 3 PER ND 1002004
7. BOND FIND NO. 4 TO FIND NO. 2 AND 3 PER ND 1002004
8. BOND FIND NO. 5 TO FIND NO. 1 PER ND 1002004
9. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
10.
11. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
12. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
13. MARK .060 TO .100 HIGH BLACK PER ND 1002019
14. ENCAPSULATE MODULE PER ND 1002106
15. AR DENOTES AS REQUIRED
16. APPLY FIND NO. 24 TO ALL CONNECTOR LEADS

☒	1010006	SCHEMATIC	REF
2	1008002-1	SCREW. EXTERNALLY RELIEVED BODY	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL	23
AR	1006757-1	WIRE, ELECTRICAL	22
2	MS35338-78	WASHER, LOCK	21
2	MS15795-303	WASHER, FLAT	20
2	1006755-45	CAPACITOR	19
1	1010393-	CAPACITOR	18
1	1010317 -	CAPACITOR	17
2	1006755-69	CAPACITOR	16
4	1010369-95	RESISTOR	15
2	1010311-	RESISTOR	14
2	1010311-	RESISTOR	13
2	1010311-	RESISTOR	12
2	1006750-50	RESISTOR	11
3	1006750-48	RESISTOR	10
1	1006750-62	RESISTOR	9
2	1006750-1	RESISTOR	8
2	1010376-2	TRANSISTOR	7
1	1010318-2	CONNECTOR, RECP., ELECTRICAL	6
2	1010292-1	TERMINAL, FEEDTHRU	5
2	1008026	SPACER	4
1	1008034	WIRING BOARD, BOTTOM	3
1	1008033	WIRING BOARD, TOP	2
1	1008012	HOUSING, MODULE	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± # DECIMALS ± .03 ANGLES ± # DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB Cambridge Mass DWG NO CONTRACT	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
	DL1000001	MATERIAL #	DRAWN DATE 1-28-63 CHECKED APPROVAL 2-9-63 APPROVAL 2-9-63	PIP PREAMP ASSY
1000005	DL1000201	HEAT TREATMENT #	NASA APPROVAL 2-13-63	CODE IDENT NO. SIZE E NASA DRAWING NO 1007015
NEXT ASSY	USED ON	FINAL FINISH #	MIT APPROVAL 13 Feb 63	SCALE 4:1 WT SHEET OF 1
APPLICATION				

1007015 A

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007015
31 January 1964
Class A Release
TDRR 06057

PROCUREMENT SPECIFICATION

PIP PREAMPLIFIER ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
9-29-64	A	13048	2	WK	WJR

This specification consists of page i
to iii and 1 to 4 inclusive.

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly, part of the Gimbal Mounted Electronics, amplifies the signal from the PIP Signal Generator and applies the amplified signal to the AC Differential Amplifier.

3.3 FUNCTIONAL REQUIREMENTS

3.3.1 Electrical Input. The assembly shall perform as specified herein with electrical inputs as follows:

a. DC Supply Voltage: 28 vdc ±2% Nominal, 30.8 vdc Enhanced, 25.2 vdc Degraded.
b. Input Signal:

(1) 0 to 2.2V pp sine wave, frequency variable from 100 cps to 100 kc ±2%, total harmonic distortion <1%.

3.3.2 Insulation Resistance. The resistance between the assembly pins and the assembly mounting screws shall be equal to or greater than 100 megohms.

3.3.3 Signal Output. The signal output shall be as shown in Table 1.

TABLE I - SIGNAL OUTPUT

SUPPLY VOLTAGE	FREQ	INPUT LEVEL mv p-p	OVERALL GAIN	FILTER GAIN	OVERALL PHASE	FILTER PHASE	DISTORTION	AMPLIFIER GAIN
28 VDC	100	100	10±30%	-	-	-	-	-
↕	320	↕	10±20%	-	-	-	-	-
	1K		9.5±10%	-	-	-	-	-
	3.2K		6.9±5%	0.69±3%	-46.5± 3°	-46.5±1°	≤5%	10.2±3%
	10K	100	2.9±10%	-	-	-	-	-
	32K	500	0.95±20%	-	-	-	-	-
28 VDC	100K	500	0.30±30%	-	-	-	-	-
30.8 VDC	3.2K	100	6.9±5%	-	-	-	-	-
25.2 VDC	3.2K	100	6.9±5%	-	-	-	-	-

3.3.4 Transient Response. The assembly shall recover from phase shift effects of turn-on transients within 200 msec.

APOLLO G&N Specification
FTM-1007015 A
31 January 1964
Class A Release
TDRR 06056

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
5/26/64	A	08755	2	WK.	WJR

This specification consists of page i to iii and 1 to 4 inclusive.

APOLLO G&N Specification
FTM-1007015A
31 January 1964

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

This document has been prepared to provide the Final Test Method which must be met by the PIP Preamplifier Assembly prior to acceptance for use on APOLLO G&N Equipment.

WH Kupfer 31 Jan 64
MIT/IL DATE

W S Swingle 1/31/64
NASA/MSC APPROVAL DATE

APOLLO G&N Specification
FTM-1007015A
31 January 1964

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

1. GENERAL REQUIREMENTS. Unless otherwise specified, the supplier is responsible for the performance of all inspections to the satisfaction of the National Aeronautics and Space Administration (NASA) representative. Except as otherwise specified, the supplier may utilize his facilities or any commercial laboratory acceptable to NASA. Inspection records of the examination and tests shall be kept complete and available to NASA as specified in the contract on order.

1.1 SCOPE. This specification lists the inspections for the PIP Preamplifier Assembly hereafter called the assembly, which must be conducted prior to acceptance. The procedures herein shall be followed in detail in order to ascertain whether the item merits acceptance or warrants rejection.

1.2 APPLICABLE DOCUMENTS. This specification shall be used in conjunction with Drawing 1007015. When the requirements of Drawing 1007015 and this specification are in conflict, resolution must be obtained from the MIT APOLLO Management Office via the purchaser.

1.2.1 Drawings. Drawings for the assembly are listed on Drawing 1007015.

1.2.2 Supplementary Documents. The following documents supplement the instructions herein.

DRAWINGS

APOLLO G&N

1007015	PIP Preamplifier Assembly
1010006	Schematic, PIP Preamplifier (For Reference Only)

APOLLO G&N Specification
FTM-1007015 A
~~31 January 1964~~
26 May 1964 (Rev. A)

1.3 SPECIAL NOTES

1.3.1 Test Conditions. The assembly shall be tested under the following environmental conditions:

a.	Ambient Temperature	25° ±10°C
b.	Relative Humidity	90% max
c.	Barometric Pressure	28 to 32 inches of Hg

1.3.2 Test Limits. Where space is provided in the test procedure to indicate the value of specific reading obtained, the specific reading shall be recorded if a limit or limits is given for a test. Further, the initials of the individual performing the inspection shall be inserted above the value observed and recorded. If limits are not stated, it is required that the individual performing the test initial in the space provided indicating that the requirements were met satisfactorily.

1.3.3 Test and Inspection Sequence. Unless otherwise specified, the sequence of testing and inspection is suggested and may be performed in any order which will permit the most economical use of manpower and equipment.

1.3.3.1 Flowgram. The suggested sequence of operations is as shown in the Flowgram of Figure 1.

2. PIP PREAMPLIFIER ASSEMBLY, INSPECTION

2.1 EXAMINATION AND TESTS

2.1.1 Nonconforming Units. The failure of the end product to pass any examination or test of this section will automatically classify the unit as nonconforming. When nonconforming units are corrected by the supplier, the unit shall be reinspected. When corrective action has been taken, the reinspection of a nonconforming unit may be limited to the test or examination which defined the nonconformance; or, when so directed by the cognizant inspector, a complete reexamination or retest of the unit may be required. Nonconforming units which have not been corrected will be considered for acceptance only upon formal application by the supplier to the cognizant NASA representative.

2.1.2 Applicable JDC's. The following JDC's form a part of this procedure:

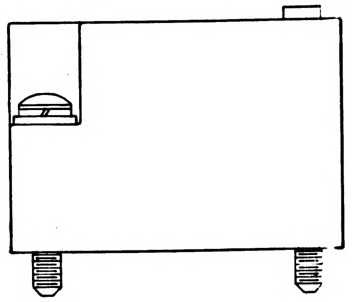
- JDC 09678
- JDC 09498
- JDC 09499
- JDC 09500
- JDC 09501
- JDC 09502
- JDC 09503

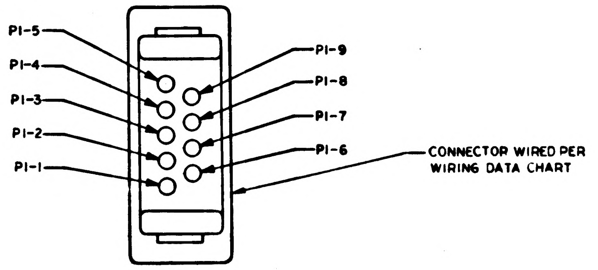
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 00375

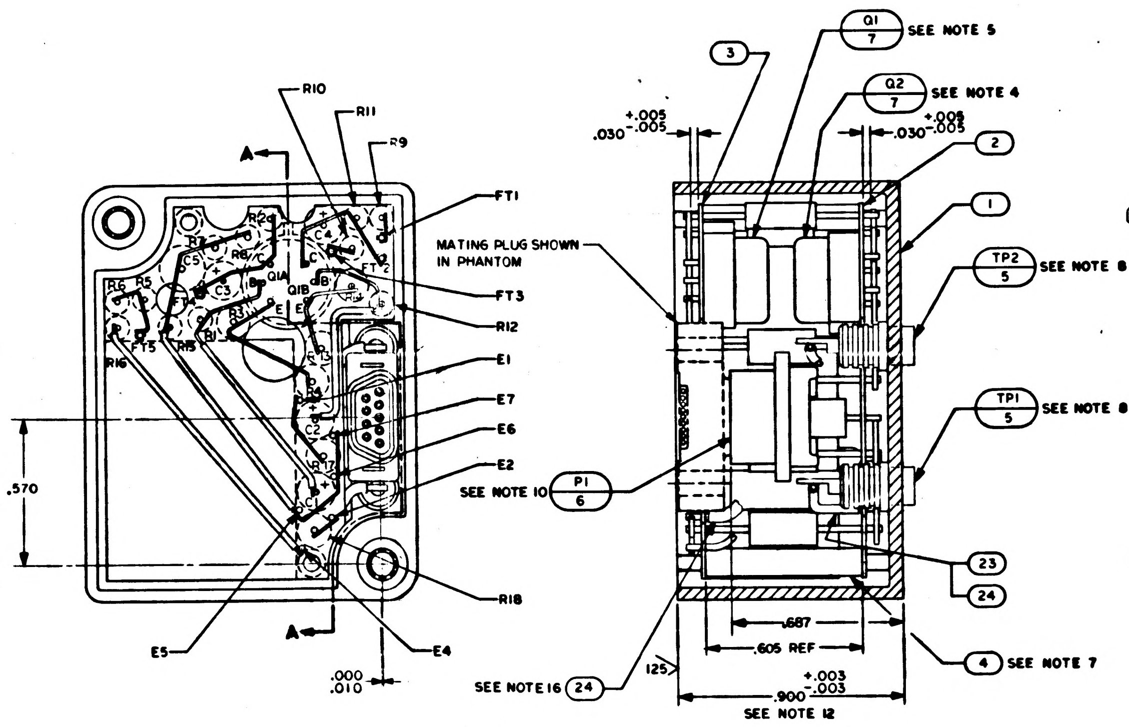
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00619	5-13-63	KE WK
B	REVISED PER TDRR 01311	5-22-63	[illegible]

WIRING DATA		
IDENTIFICATION	FROM CIRCUIT POINT	TO CIRCUIT POINT
GRD	P6	E5
28 VDC	P7	E4
INPUT HI	P8	E1
OUTPUT NO.1	P9	E3
INPUT LO	P1	E2
SHIELD	P2	E6
INPUT C.T.	P3	E7
SPARE	P4	SPARE
OUTPUT NO.2	P5	E8
HI	TP1	E9
LO	TP2	E10

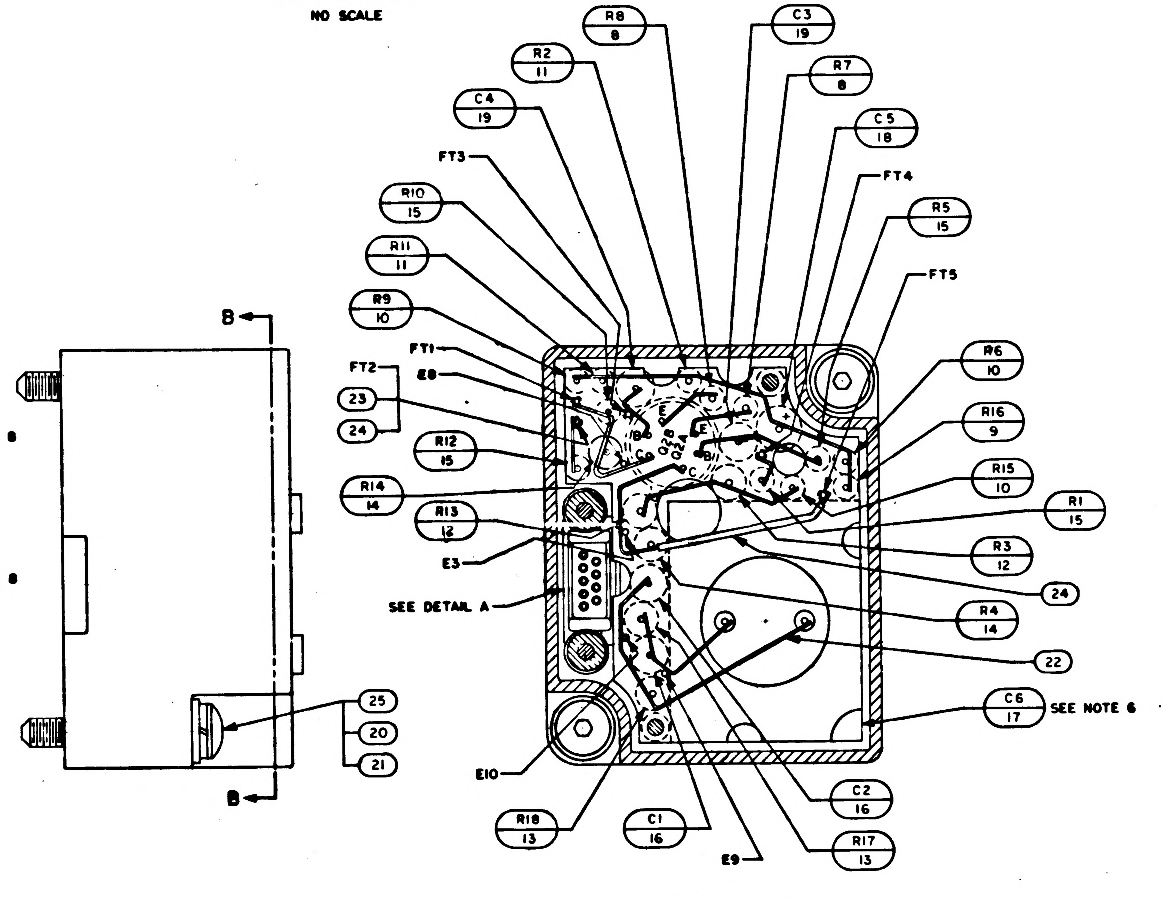



P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6
CONNECTOR WIRED PER WIRING DATA CHART

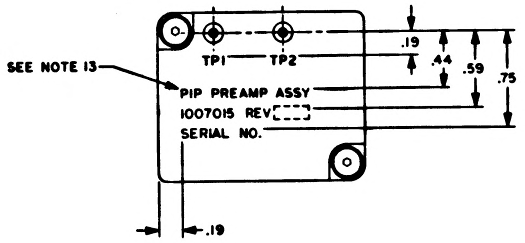
DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE


R10
R11
R9
A
FT1
MATING PLUG SHOWN IN PHANTOM
FT3
R12
E1
E7
E6
E2
SEE NOTE 10
P1 6
R18
E5
E4
A
.570
.000 .010
R2
R7
C5
R8
C4
FT2
Q1A
Q1B
C3
FT4
R6
R5
R3
R1
R13
R4
C2
R17
C1
FT5
R15
R16
3
Q1 7 SEE NOTE 5
Q2 7 SEE NOTE 4
.030 +.005 -.005
.030 +.005 -.005
2
1
TP2 5 SEE NOTE 8
TP1 5 SEE NOTE 8
23
24
4 SEE NOTE 7
SEE NOTE 16 24
.687
.605 REF
125
.900 +.003 -.003
SEE NOTE 12

SECTION A-A


B
B
25
20
21
R8 8
C3 19
R2 11
R7 8
C4 19
C5 18
FT3
FT4
R10 15
R5 15
R11 11
FT5
R9 10
FT1
FT2
E8
23
24
R6 10
R16 9
R12 15
R15 10
R14 14
R1 15
R13 12
R3 12
E3
24
SEE DETAIL A
R4 14
22
C6 17 SEE NOTE 6
E10
C2 16
R18 13
C1 16
E9
R17 13
Q2B
Q2A
E
B
C

SECTION B-B

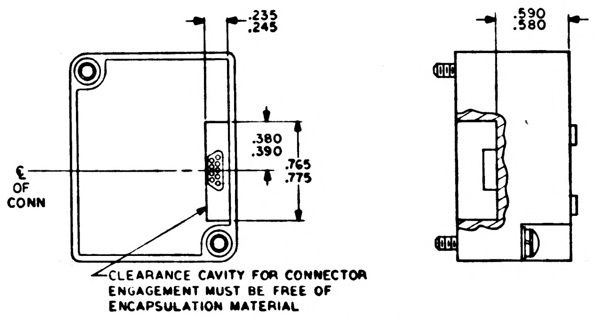

SEE NOTE 13
TP1
TP2
PIP PREAMP ASSY
1007015 REV
SERIAL NO.
.19
.44
.59
.75
.19

MARKING VIEW
SCALE: 2:1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND 1002003
3. ALL WELDS TO BE PER NASA DOCUMENT ND 1002005
4. BOND FIND NO.7 (Q2) TO FIND NO. 2 PER ND 1002004
5. BOND FIND NO.7 (Q1) TO FIND NO. 3 PER ND 1002004
6. BOND FIND NO.17 TO FIND NO. 3 PER ND 1002004
7. BOND FIND NO. 4 TO FIND NO. 2 AND 3 PER ND 1002004
8. BOND FIND NO. 5 TO FIND NO. 1 PER ND 1002004
9. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
10.

11. DIPCOAT PER ND 1002068 PRIOR TO ENCAPSULATION
12. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
13. MARK .060 TO .100 HIGH BLACK PER ND 1002019
14. ENCAPSULATE MODULE PER ND 1002106
15. AR DENOTES AS REQUIRED
16. APPLY FIND NO. 24 TO ALL CONNECTOR LEADS


.235 .245
.380 .390
.765 .775
℄ OF CONN
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL
.590 .580

VIEW SHOWING MOLD CAVITY

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010006	SCHEMATIC	REF
2	1008002-1	SCREW. EXTERNALLY RELIEVED BODY	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL	23
AR	1006757-1	WIRE, ELECTRICAL	22
2	MS35338-78	WASHER, LOCK	21
2	MS15795-303	WASHER, FLAT	20
2	1006755-45	CAPACITOR	19
1	1010393-037	CAPACITOR	18
1	1010317	CAPACITOR	17
2	1006755-69	CAPACITOR	16
4	1010369-95	RESISTOR	15
2	1010311-097	RESISTOR	14
2	1010311-023	RESISTOR	13
2	1010311-001	RESISTOR	12
2	1006750-50	RESISTOR	11
3	1006750-48	RESISTOR	10
1	1006750-49	RESISTOR	9
2	1006750-1	RESISTOR	8
2	1010376-1	TRANSISTOR	7
1	1010318-2	CONNECTOR, RECP., ELECTRICAL	6
2	1010292-1	TERMINAL, FEEDTHRU	5
2	1008026	SPACER	4
1	1008034	WIRING BOARD, BOTTOM	3
1	1008033	WIRING BOARD, TOP	2
1	1008012	HOUSING, MODULE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
	DL1000001
1000005	DL1000E01

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ·# DECIMALS ±.03 ANGLES ·#
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT

DRAWN Wm Healy DATE 1-28-63
CHECKED [illegible]
APPROVAL [illegible] 2-9-63
APPROVAL [illegible] 2-9-63
NASA APPROVAL [illegible] 2-15-63
MIT APPROVAL [illegible] 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIP PREAMP ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007015
SCALE 4:1
WT
SHEET OF 1

1007015 B

INCHES 0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007015 B
[illegible] January 1964
Class A Release
TDRR 06057

PROCUREMENT SPECIFICATION

PIP PREAMPLIFIER ASSEMBLY

Record of Revisions

M Ⓜ

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
9-29-64	A	13048	2 RDG [illegible]	WK	WJR
11-4-64	B	14027	2 RDG [illegible]	WK	WJR

This specification consists of page i to iii and 1 to 4 inclusive.

APOLLO G&N Specification
FTM-1007015 B
31 January 1964
Class A Release
TDRR 06056

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
5/26/64	A	08755	2	WK.	WJR
6/23/64	B	10421	1, 2	WK	[illegible]

This specification consists of page i to iii and 1 to 4 inclusive.

APOLLO G&N Specification
FTM-1007015A
31 January 1964

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

This document has been prepared to provide the Final Test Method which must be met by the PIP Preamplifier Assembly prior to acceptance for use on APOLLO G&N Equipment.

31 Jan 64
MIT/IL DATE

1/31/64
NASA/MSC APPROVAL DATE

APOLLO G&N Specification
FTM-1007015 A
31 January 1964

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JF:jp

APOLLO G&N Specification
FTM-1007015B
~~31 January 1964~~
23 June 1964 (Rev. B)

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

1. GENERAL REQUIREMENTS. Unless otherwise specified, the supplier is responsible for the performance of all inspections to the satisfaction of the National Aeronautics and Space Administration (NASA) representative. Except as otherwise specified, the supplier may utilize his facilities or any commercial laboratory acceptable to NASA. Inspection records of the examination and tests shall be kept complete and available to NASA as specified in the contract or order.

1.1 SCOPE. This specification lists the inspections for the PIP Preamplifier Assembly hereafter called the assembly, which must be conducted prior to acceptance. The procedures herein shall be followed in detail in order to ascertain whether the item merits acceptance or warrants rejection.

1.2 PRECAUTION. Whenever test power is applied to the PIP Preamplifier, the unit shall be mounted on a heatsink. Unless otherwise specified, the temperature of the heatsink shall be maintained at $53^{\circ} \pm 5^{\circ}$C. The thermal resistance between the PIP Preamplifier and the heatsink shall be 5°C.per watt, maximum.

1.3 APPLICABLE DOCUMENTS. This specification shall be used in conjunction with Drawing 1007015. When the requirements of Drawing 1007015 and this specification are in conflict, resolution must be obtained from the MIT APOLLO Management Office via the purchaser.

1.3.1 Drawings. Drawings for the assembly are listed on Drawing 1007015.

1.3.2 Supplementary Documents. The following documents supplement the instructions herein.

DRAWINGS

APOLLO G&N

1007015	PIP Preamplifier Assembly
1010006	Schematic, PIP Preamplifier (For Reference Only)

APOLLO G&N Specification
FTM-1007015A
31 January 1964

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

This document has been prepared to provide the Final Test Method which must be met by the PIP Preamplifier Assembly prior to acceptance for use on APOLLO G&N Equipment.

WH Kupfer 31 Jan 64
MIT/IL DATE

1/31/64
NASA/MSC APPROVAL DATE

PREPARED BY TITLE DATE
A J Ferguson Spec. Engr. Writer 14 Dec 63
AC Spark Plug

EXAMINED BY TITLE DATE
L S Ferrin Sr. Proj. Engr. 12-12-63
AC Spark Plug

APPROVED BY TITLE DATE
J L Sitomer Assoc. Dir 1/30/64
MIT/IL

APPROVED BY TITLE DATE

MIT/IL

APPROVED BY TITLE DATE

MIT/IL

APOLLO G&N Specification
FTM-1007015B
~~31 January 1964~~
23 June 1964 (Rev. B)

FINAL TEST METHOD
FOR
PIP PREAMPLIFIER ASSEMBLY

1. GENERAL REQUIREMENTS. Unless otherwise specified, the supplier is responsible for the performance of all inspections to the satisfaction of the National Aeronautics and Space Administration (NASA) representative. Except as otherwise specified, the supplier may utilize his facilities or any commercial laboratory acceptable to NASA. Inspection records of the examination and tests shall be kept complete and available to NASA as specified in the contract or order.

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1.2 PRECAUTION. Whenever test power is applied to the PIP Preamplifier, the unit shall be mounted on a heatsink. Unless otherwise specified, the temperature of the heatsink shall be maintained at $53^{\circ} \pm 5^{\circ}$C. The thermal resistance between the PIP Preamplifier and the heatsink shall be 5°C.per watt, maximum.

1.3 APPLICABLE DOCUMENTS. This specification shall be used in conjunction with Drawing 1007015. When the requirements of Drawing 1007015 and this specification are in conflict, resolution must be obtained from the MIT APOLLO Management Office via the purchaser.

1.3.1 Drawings. Drawings for the assembly are listed on Drawing 1007015.

1.3.2 Supplementary Documents. The following documents supplement the instructions herein.

DRAWINGS

APOLLO G&N

1007015	PIP Preamplifier Assembly
1010006	Schematic, PIP Preamplifier (For Reference Only)

1.4 SPECIAL NOTES

1.4.1 Test Conditions. The assembly shall be tested under the following environmental conditions:

a.	Ambient Temperature	25° ±10°C
b.	Relative Humidity	90% max
c.	Barometric Pressure	28 to 32 inches of Hg

1.4.2 Test Limits. Where space is provided in the test procedure to indicate the value of specific reading obtained, the specific reading shall be recorded if a limit or limits is given for a test. Further, the initials of the individual performing the inspection shall be inserted above the value observed and recorded. If limits are not stated, it is required that the individual performing the test initial in the space provided indicating that the requirements were met satisfactorily.

1.4.3 Test and Inspection Sequence. Unless otherwise specified, the sequence of testing and inspection is suggested and may be performed in any order which will permit the most economical use of manpower and equipment.

1.4.3.1 Flowgram. The suggested sequence of operations is as shown in the Flowgram of Figure 1.

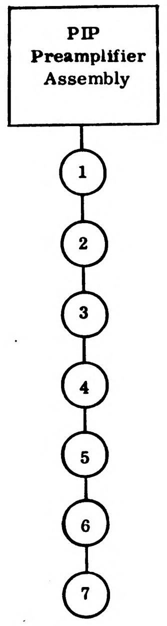
2. PIP PREAMPLIFIER ASSEMBLY, INSPECTION

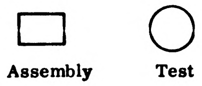
2.1 EXAMINATION AND TESTS

2.1.1 Nonconforming Units. The failure of the end product to pass any examination or test of this section will automatically classify the unit as nonconforming. When nonconforming units are corrected by the supplier, the unit shall be reinspected. When corrective action has been taken, the reinspection of a nonconforming unit may be limited to the test or examination which defined the nonconformance; or, when so directed by the cognizant inspector, a complete reexamination or retest of the unit may be required. Nonconforming units which have not been corrected will be considered for acceptance only upon formal application by the supplier to the cognizant NASA representative.

2.1.2 Applicable JDC's. The following JDC's form a part of this procedure:

JDC 09678
JDC 09498
JDC 09499
JDC 09500
JDC 09501
JDC 09502
JDC 09503


PIP
Preamplifier
Assembly
1
2
3
4
5
6
7


Assembly
Test

1. Workmanship-Vibration Test
2. Visual and Mechanical Inspection
3. Insulation Resistance Test
4. Signal Output Test
5. Transient Response Test
6. Common Mode Rejection Test
7. Output Noise Test

INSPECTION AND TEST FLOWGRAM

FIGURE 1

APOLLO G&N Specification
FTM-1007015 A
31 January 1964

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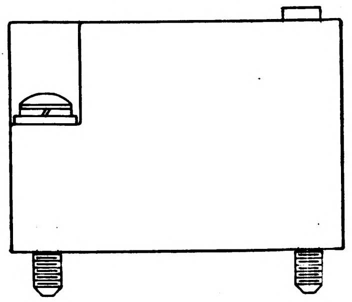
JF:jp

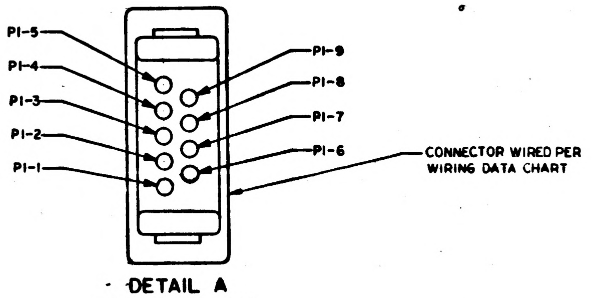
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 00 3??

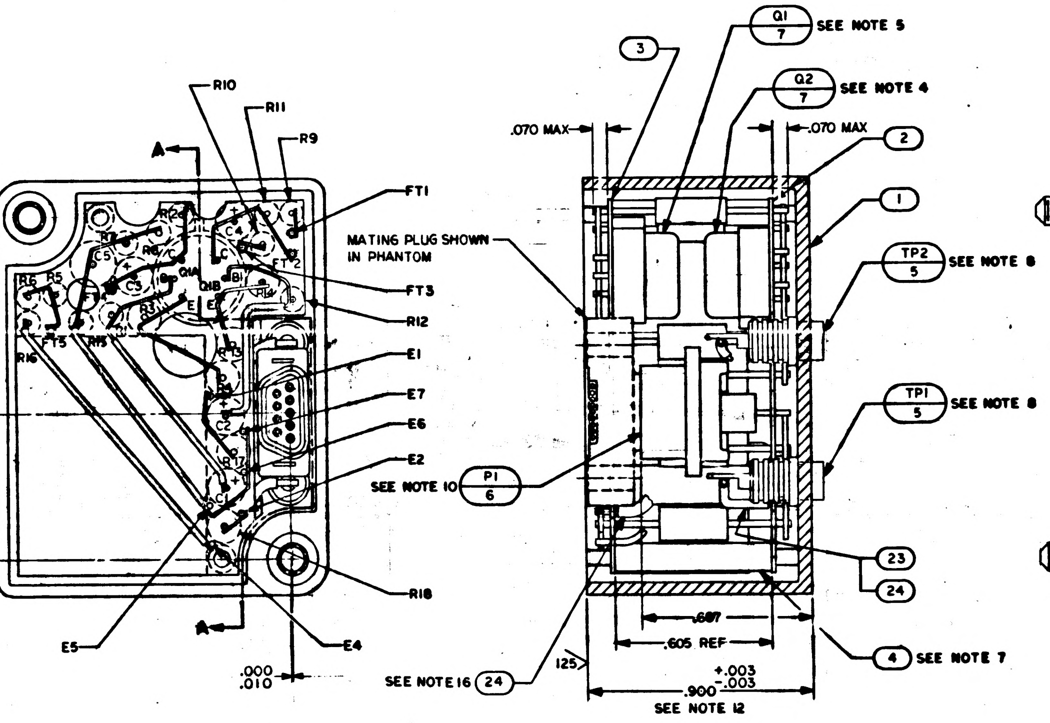
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00619	5-13-63	WK
B	REVISED PER TDRR 01311	5-22-63	775 WK
C	REVISED PER TDRR 05057	9 DEC 63	WK

WIRING DATA		
IDENTIFICATION	FROM CIRCUIT POINT	TO CIRCUIT POINT
GRD	P6	E5
28 VDC	P7	E4
INPUT HI	P8	E1
OUTPUT NO.1	P9	E3
INPUT LO	P1	E2
SHIELD	P2	E6
INPUT C.T.	P3	E7
SPARE	P4	SPARE
OUTPUT NO.2	P5	E8
HI	TP1	E9
LO	TP2	E10

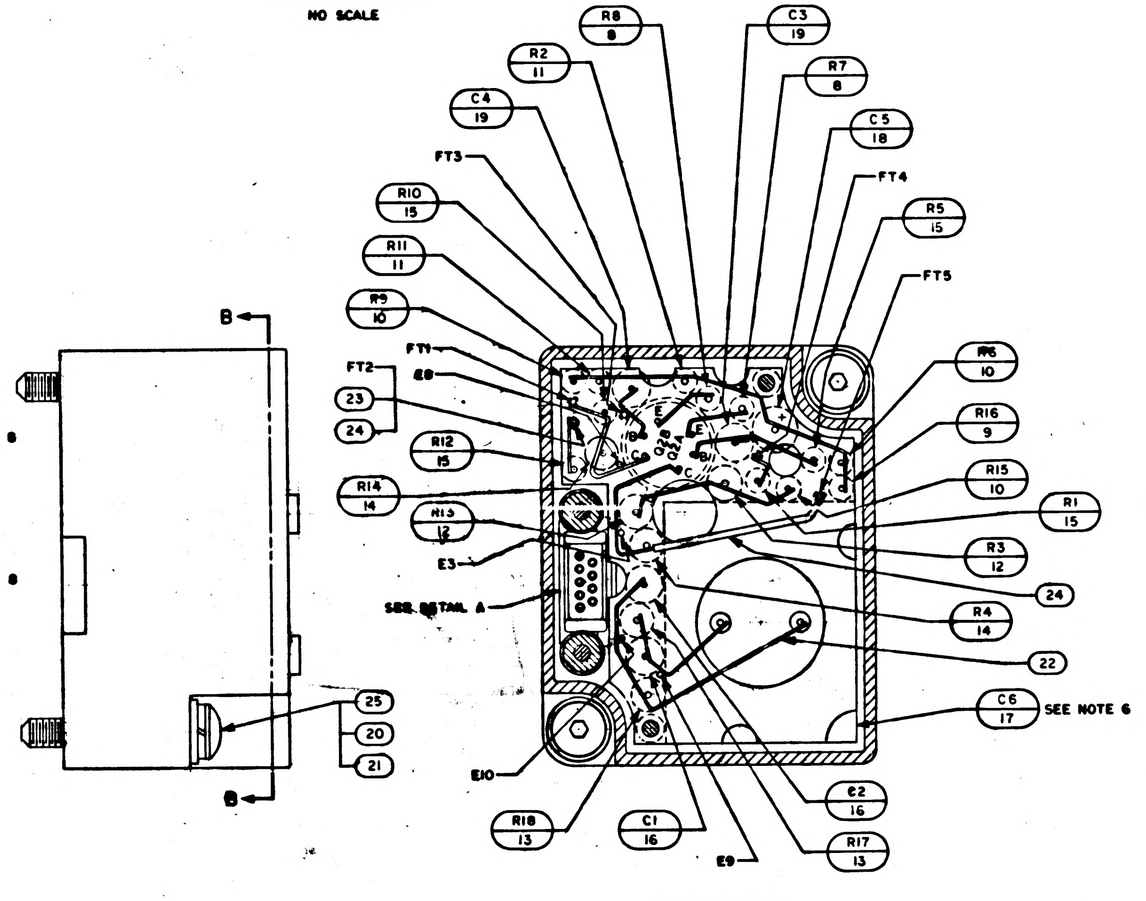



P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6
CONNECTOR WIRED PER WIRING DATA CHART

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE


R10
R11
R9
A
FT1
FT3
R12
E1
E7
E6
E2
R18
E4
E5
A
.570
.000
.010
R16
R5
R6
FT5
R15
MATING PLUG SHOWN IN PHANTOM
SEE NOTE 10
P1
6
3
Q1
7
SEE NOTE 5
Q2
7
SEE NOTE 4
.070 MAX
.070 MAX
2
1
TP2
5
SEE NOTE 8
TP1
5
SEE NOTE 8
23
24
4
SEE NOTE 7
SEE NOTE 16
24
.125
.687
.605 REF
.900 +.003 -.003
SEE NOTE 12

SECTION A-A


B
B
25
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21
R8
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R2
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C3
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R7
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C4
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C5
18
FT3
FT4
R10
15
R5
15
FT5
R11
11
R9
10
FT1
E8
FT2
23
24
R6
10
R16
9
R12
15
R15
10
R14
14
R1
15
R13
12
E3
R3
12
SEE DETAIL A
24
R4
14
22
C6
17
SEE NOTE 6
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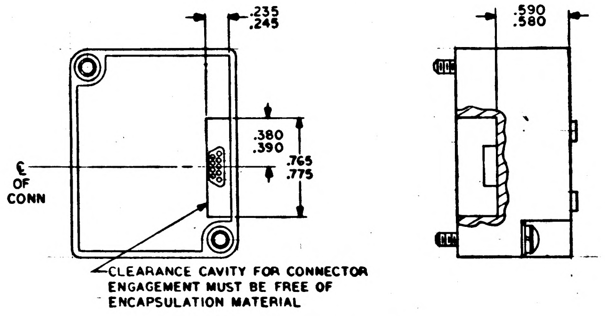
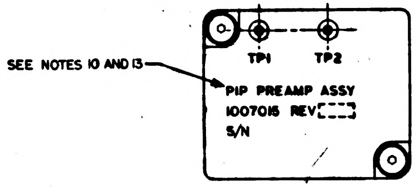
C2
16
R18
13
C1
16
E9
R17
13

SECTION B-B


.235
.245
.380
.390
.765
.775
℄ OF CONN
.590
.580
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

VIEW SHOWING MOLD CAVITY


TP1
TP2
SEE NOTES 10 AND 13
PIP PREAMP ASSY
1007015 REV
S/N

MARKING VIEW
SCALE: 2:1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND 1002003
3. ALL WELDS TO BE PER NASA DOCUMENT ND 1002005
4. BOND FIND NO.7 (Q2) TO FIND NO. 2 PER ND 1002004
5. BOND FIND NO.7 (Q1) TO FIND NO. 3 PER ND 1002004
6. BOND FIND NO.17 TO FIND NO. 3 PER ND 1002004
7. BOND FIND NO. 4 TO FIND NO. 2 AND 3 PER ND 1002004
8. BOND FIND NO. 5 TO FIND NO. 1 PER ND 1002004
9. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MINIMUM
10. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
11. DIPCOAT PER ND 1002068 PRIOR TO ENCAPSULATION
12. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
13. MARK .060 TO .100 HIGH BLACK PER ND 1002019
14. ENCAPSULATE MODULE PER ND 1002106
15. AR DENOTES AS REQUIRED
16. APPLY FIND NO. 24 ~~TO ALL CONNECTOR LEADS~~
17. INSPECT PER PS-1007015
18. TEST PER FTM-1007015

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010006	SCHEMATIC	REF
2	1008002-1	SCREW, EXTERNALLY RELIEVED BODY	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL	23
AR	1006757-1	WIRE, ELECTRICAL	22
2	MS35338-78	WASHER, LOCK	21
2	MS15795-303	WASHER, FLAT	20
2	1006755-45	CAPACITOR	19
1	1010393-037	CAPACITOR	18
1	1010317	CAPACITOR	17
2	1006755-69	CAPACITOR	16
4	1010369-95	RESISTOR	15
2	1010311-097	RESISTOR	14
2	1010311-023	RESISTOR	13
2	1010311-001	RESISTOR	12
2	1006750-50	RESISTOR	11
3	1006750-48	RESISTOR	10
1	1006750-49	RESISTOR	9
2	1006750-[illegible]	RESISTOR	8
2	1010376-1	TRANSISTOR	7
1	1010318-2	CONNECTOR, RECP., ELECTRICAL	6
2	1010292-1	TERMINAL, FEEDTHRU	5
2	1008026	SPACER	4
1	1008034	WIRING BOARD, BOTTOM	3
1	1008033	WIRING BOARD, TOP	2
1	1008012	HOUSING, MODULE	1

LIST OF MATERIALS

1007015 C

MASTER

NEXT ASSY	USED ON
	DL1000001
1000005	DL1000201

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± .03 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN Wm Healy DATE 1-28-63
CHECKED R.P. [illegible]
APPROVAL [illegible] 2-9-63
APPROVAL [illegible] 2-9-63
NASA APPROVAL [illegible] 2-13-63
MIT APPROVAL [illegible] 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIP PREAMP ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007015
SCALE 4:1
WT
SHEET 1 OF 1

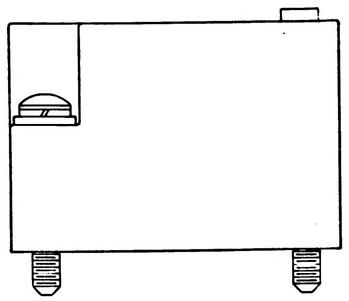
MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

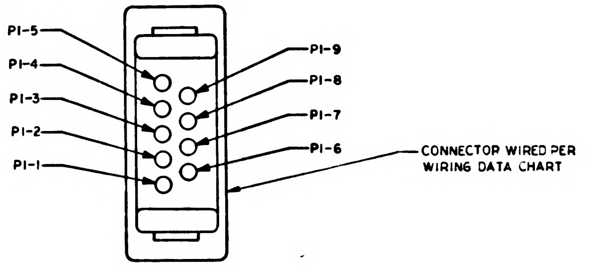
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00375

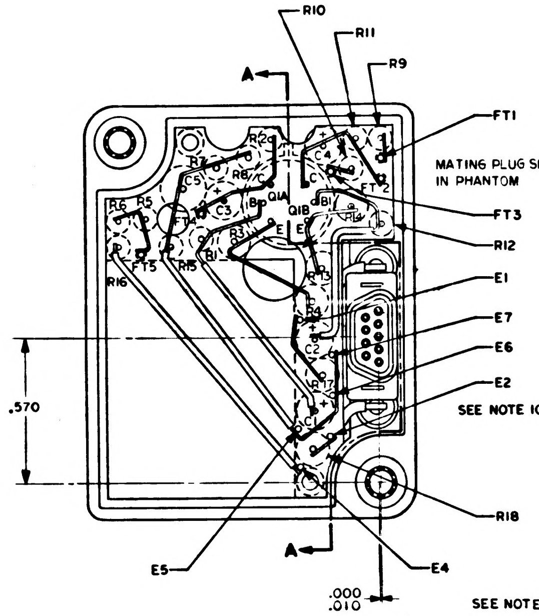
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00619	5-13-63	WK
B	REVISED PER TDRR 01311	5-22-63	WK
C	REVISED PER TDRR 05057	[illegible]	WK
D	REVISED PER TDRR 10359	29 6	[illegible]

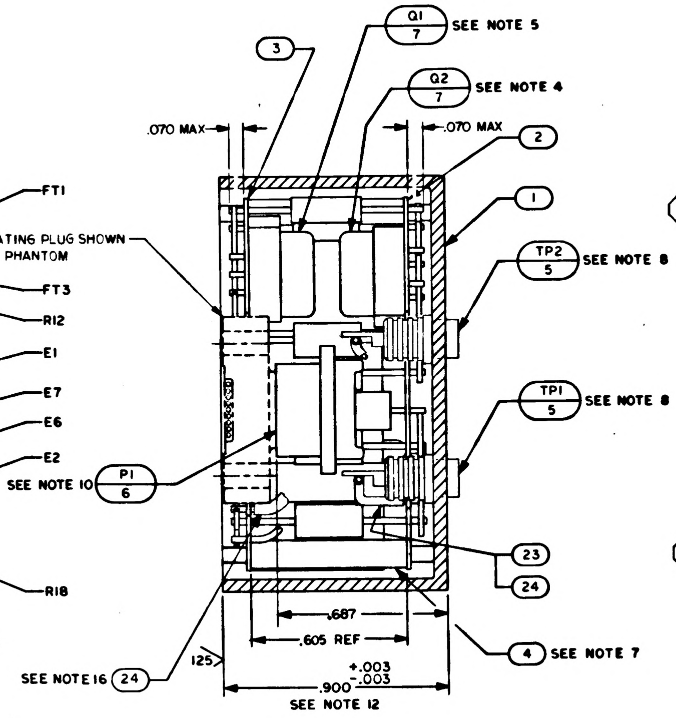


WIRING DATA		
IDENTIFICATION	FROM CIRCUIT POINT	TO CIRCUIT POINT
GRD	P6	E5
28 VDC	P7	E4
INPUT HI	P8	E1
OUTPUT NO.1	P9	E3
INPUT LO	P1	E2
SHIELD	P2	E6
INPUT C.T.	P3	E7
SPARE	P4	SPARE
OUTPUT NO.2	P5	E8
HI	TP1	E9
LO	TP2	E10

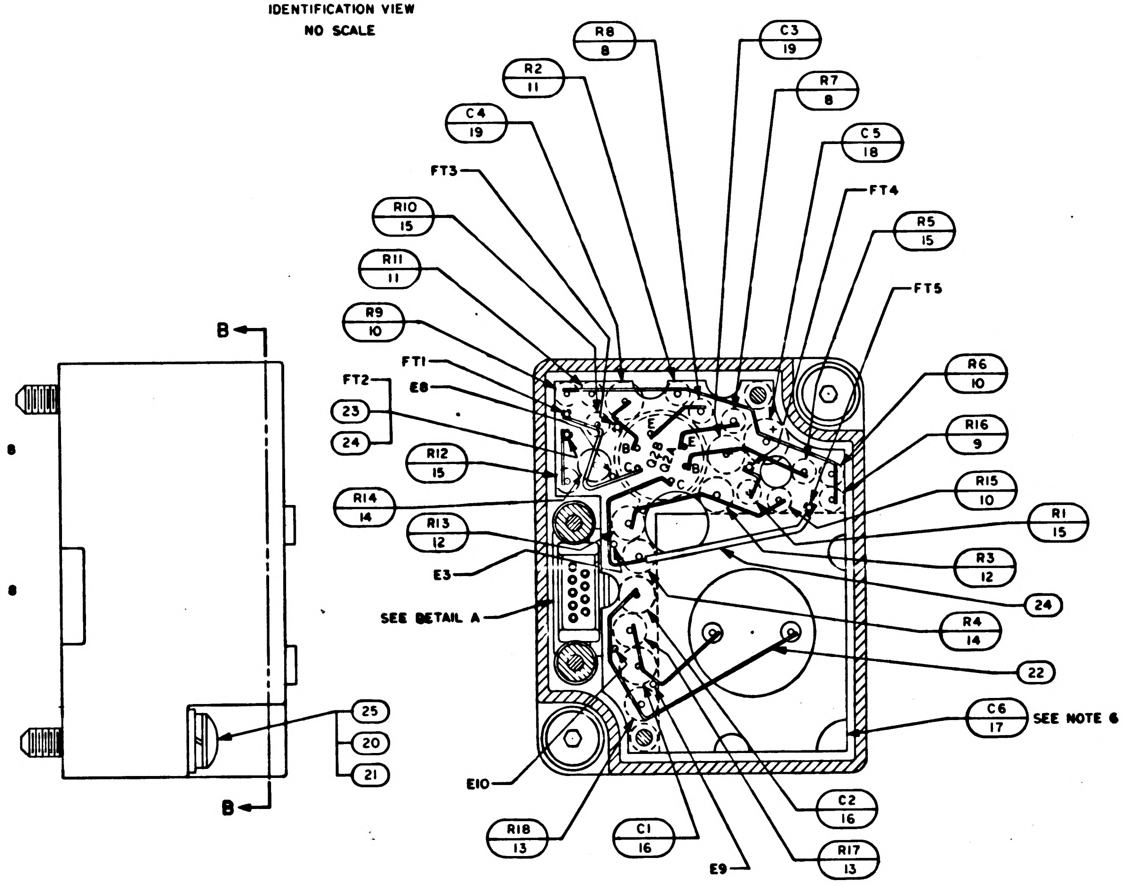

P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6
CONNECTOR WIRED PER WIRING DATA CHART

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE

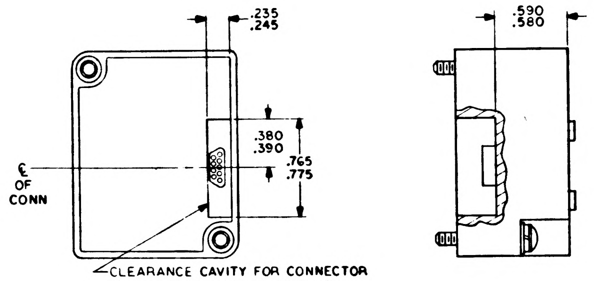

R10
R11
R9
A
FT1
FT3
R12
E1
E7
E6
E2
SEE NOTE 10
R18
E4
E5
A
.570
.000
.010
R16
R5
R6
R7
R8
C5
C3
C4
Q1A
Q1B
R15
R3
B1
E
B
C


3
Q1 7 SEE NOTE 5
Q2 7 SEE NOTE 4
.070 MAX
.070 MAX
2
1
MATING PLUG SHOWN IN PHANTOM
TP2 5 SEE NOTE 8
TP1 5 SEE NOTE 8
P1 6
SEE NOTE 10
23
24
.687
.605 REF
4 SEE NOTE 7
SEE NOTE 16 24
125
.900 +.003 -.003
SEE NOTE 12

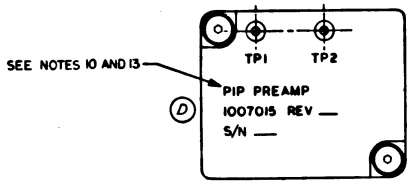
SECTION A-A


B
B
25
20
21
R8 8
R2 11
C3 19
C4 19
R7 8
C5 18
FT3
FT4
R10 15
R5 15
R11 11
FT5
R9 10
FT1
FT2
E8
23
24
R12 15
R14 14
R13 12
E3
SEE DETAIL A
R6 10
R16 9
R15 10
R1 15
R3 12
24
R4 14
22
C6 17 SEE NOTE 6
E10
R18 13
C1 16
E9
C2 16
R17 13

SECTION B-B


.235
.245
.380
.390
.765
.775
℄ OF CONN
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL
.590
.580

VIEW SHOWING MOLD CAVITY


SEE NOTES 10 AND 13
TP1
TP2
D
PIP PREAMP
1007015 REV __
S/N __

MARKING VIEW
SCALE: 2:1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND 1002003
3. ALL WELDS TO BE PER NASA DOCUMENT ND 1002005
4. BOND FIND NO.7 (Q2) TO FIND NO. 2 PER ND 1002004
5. BOND FIND NO.7 (Q1) TO FIND NO. 3 PER ND 1002004
6. BOND FIND NO.17 TO FIND NO. 3 PER ND 1002004
7. BOND FIND NO. 4 TO FIND NO. 2 AND 3 PER ND 1002004
8. BOND FIND NO. 5 TO FIND NO. 1 PER ND 1002004
9. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MINIMUM
10. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED

11. DIPCOAT PER ND 1002068 PRIOR TO ENCAPSULATION
12. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
13. MARK .060 TO .100 HIGH BLACK PER ND 1002019
14. ENCAPSULATE MODULE PER ND 1002106
15. AR DENOTES AS REQUIRED
16. APPLY FIND NO. 24 TO ALL CONNECTOR LEADS
17. INSPECT PER PS-1007015
18. TEST PER FTM-1007015

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010006	SCHEMATIC	REF
2	1008002-1	SCREW, EXTERNALLY RELIEVED BODY	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL	23
AR	1006757-1	WIRE, ELECTRICAL	22
2	MS35338-78	WASHER, LOCK	21
2	MS15795-303	WASHER, FLAT	20
2	1006755-45	CAPACITOR	19
1	1010393-037	CAPACITOR	18
1	1010317	CAPACITOR	17
2	1006755-69	CAPACITOR	16
4	1010369-95	RESISTOR	15
2	1010311-097	RESISTOR	14
2	1010311-023	RESISTOR	13
2	1010311-001	RESISTOR	12
2	1006750-50	RESISTOR	11
3	1006750-48	RESISTOR	10
1	1006750-49	RESISTOR	9
2	1006750-1	RESISTOR	8
2	1010376-1	TRANSISTOR	7
1	1010318-2	CONNECTOR, RECP., ELECTRICAL	6
2	1010292-1	TERMINAL, FEEDTHRU	5
2	1008026	SPACER	4
1	1008034	WIRING BOARD, BOTTOM	3
1	1008033	WIRING BOARD, TOP	2
1	1008012	HOUSING, MODULE	1

LIST OF MATERIALS

NEXT ASSY	USED ON
	DL1000001
1000005	DL1000201

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± .03 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO   CONTRACT
DRAWN Wm Healy DATE 1-28-63
CHECKED
APPROVAL 2-9-63
APPROVAL 2-9-63
NASA APPROVAL 2-13-63
MIT APPROVAL 13 Feb 63

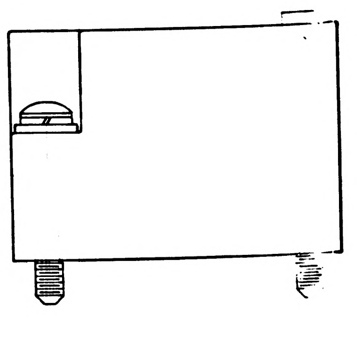
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIP PREAMP ASSY

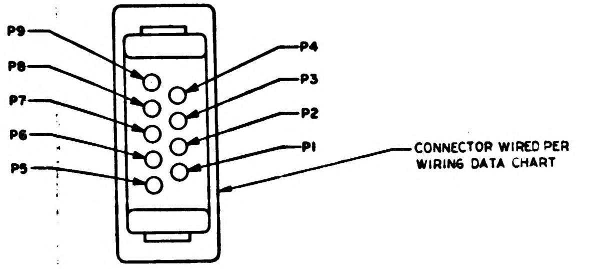
CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007015
SCALE 4:1
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

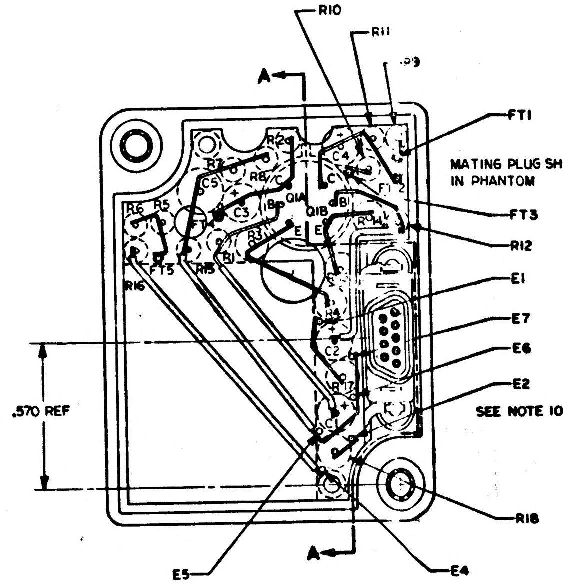
REVISIONS TDRR 00375			
SYM	DESCRIPTION	DATE	APPROVAL

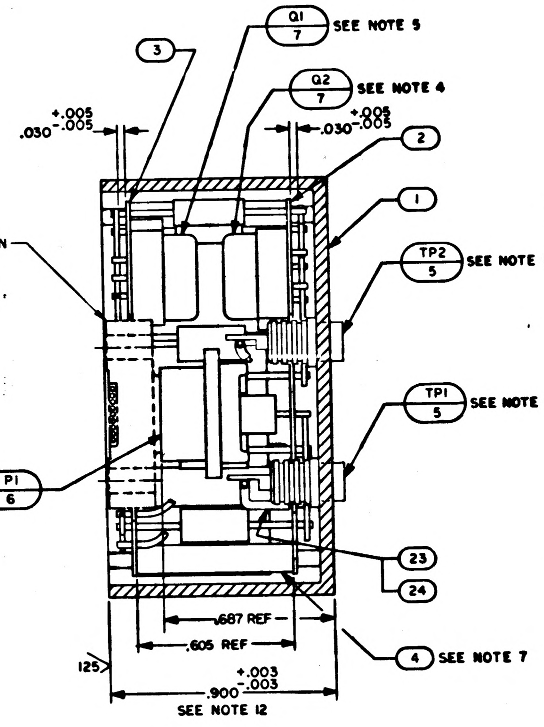


WIRING DATA		
IDENTIFICATION	FROM CIRCUIT POINT	TO CIRCUIT POINT
GRD	P1	E5
28 VDC	P2	E4
INPUT HI	P3	E1
OUTPUT NO.1	P4	E3
INPUT LO	P5	E2
SHIELD	P6	E6
INPUT C.T.	P7	E7
SPARE	P8	SPARE
OUTPUT NO.2	P9	E8
HI	TP1	E9
LO	TP2	E10

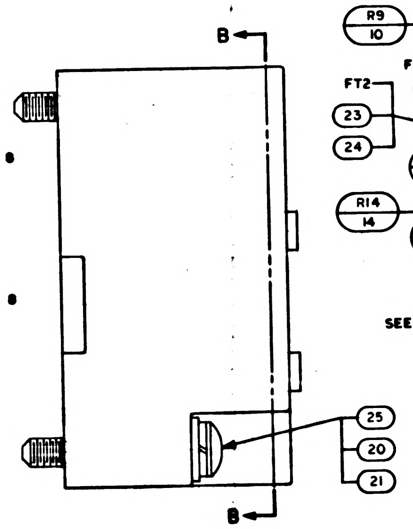

P9
P8
P7
P6
P5
P4
P3
P2
P1
CONNECTOR WIRED PER
WIRING DATA CHART

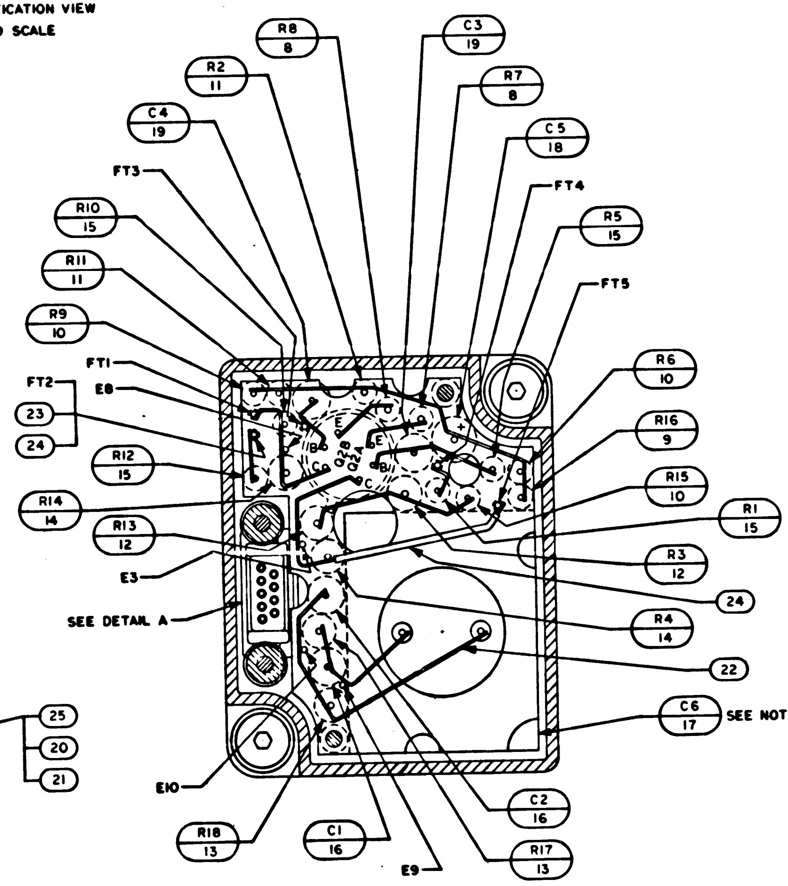
DETAIL A
CONNECTOR TERMINAL
IDENTIFICATION VIEW
NO SCALE


R10
R11
P9
A
FT1
FT3
R12
E1
E7
E6
E2
SEE NOTE 10
R16
FT5
R15
.570 REF
R18
E5
A
E4

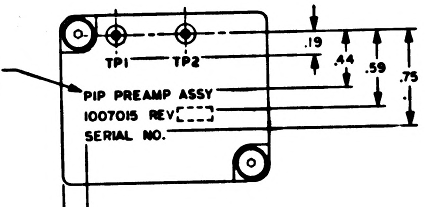

3
Q1 7 SEE NOTE 5
Q2 7 SEE NOTE 4
+.005 -.005
.030
+.005 -.005
.030
2
1
MATING PLUG SHOWN IN PHANTOM
TP2 5 SEE NOTE 8
TP1 5 SEE NOTE 8
P1 6
23
24
.687 REF
.605 REF
4 SEE NOTE 7
125
+.003 -.003
.900
SEE NOTE 12

SECTION A-A




R8 8
C3 19
R2 11
R7 8
C4 19
C5 18
FT3
FT4
R10 15
R5 15
R11 11
FT5
R9 10
FT1
FT2
E8
23
24
R6 10
R16 9
R12 15
R15 10
R14 14
R13 12
R1 15
E3
R3 12
SEE DETAIL A
24
R4 14
22
C6 17 SEE NOTE 6
E10
C2 16
R18 13
C1 16
E9
R17 13

SECTION B-B


SEE NOTE 13
TP1
TP2
PIP PREAMP ASSY
1007015 REV
SERIAL NO.
.19
.44
.59
.75
.19

MARKING VIEW
SCALE: 2:1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND 1002003
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4. BOND FIND NO. 7 (Q2) TO FIND NO. 2 PER ND 1002004
5. BOND FIND NO. 7 (Q1) TO FIND NO. 3 PER ND 1002004
6. BOND FIND NO. 17 TO FIND NO. 3 PER ND 1002004
7. BOND FIND NO. 4 TO FIND NO. 2 AND 3 PER ND 1002004
8. BOND FIND NO. 5 TO FIND NO. 1 PER ND 1002004
9. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
10. FOR LOCATION OF CONNECTOR IN MODULE USE ENCAPSULATION FIXTURE NO.
11. DIPCOAT PER ND PRIOR TO ENCAPSULATION
12. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
13. MARK .060 TO .100 HIGH BLACK PER ND 1002019
14. ENCAPSULATE MODULE PER ND

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010006	SCHEMATIC	REF
2	1008002-1	SCREW. EXTERNALLY RELIEVED BODY	25
AR	1006776-21	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL	23
AR	1006757-1	WIRE, ELECTRICAL	22
2	MS35338-78	WASHER, LOCK	21
2	MS15795-303	WASHER, FLAT	20
2	1006755-45	CAPACITOR	19
1	1010393-	CAPACITOR	18
1	1010317-	CAPACITOR	17
2	1006755-69	CAPACITOR	16
4	1010369-95	RESISTOR	15
2	1010311-	RESISTOR	14
2	1010311-	RESISTOR	13
2	1010311-	RESISTOR	12
2	1006750-50	RESISTOR	11
3	1006750-48	RESISTOR	10
1	1006750-62	RESISTOR	9
2	1006750-1	RESISTOR	8
2	1010376-	TRANSISTOR	7
1	1010318-	CONNECTOR, PLUG, ELECTRICAL	6
2	1010292-1	TERMINAL, FEEDTHRU	5
2	1008026	SPACER	4
1	1008034	WIRING BOARD, BOTTOM	3
1	1008033	WIRING BOARD, TOP	2
1	1008012	HOUSING, MODULE	1

LIST OF MATERIALS

1007015

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ±.03 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN Ken Healy DATE 1-28-63
CHECKED [illegible]
APPROVAL [illegible] 2-9-63
APPROVAL [illegible] 2-9-63
NASA APPROVAL [illegible] 2-13-63
MIT APPROVAL [illegible] 13 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PIP PREAMP ASSY

CODE IDENT NO. SIZE E NASA DRAWING NO. 1007015
SCALE 4:1 WT SHEET OF

APOLLO G&N Specification
PS-1007015
31 January 1964
Class A Release
TDRR 06057

PROCUREMENT SPECIFICATION

PIP PREAMPLIFIER ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to [illegible] inclusive.

PROCUREMENT SPECIFICATION

PIP PREAMPLIFIER ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the PIP Preamplifier Assembly for use in the APOLLO Guidance and Navigation Equipment.

31 Jan 64
MIT/IL DATE

1/31/64
NASA/MSC APPROVAL DATE

PROCUREMENT SPECIFICATION

PIP PREAMPLIFIER ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the PIP Preamplifier Assembly, Drawing 1015136, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specifications for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies.
FTM 1007015	Final Test Method for PIP Preamplifier Assembly

STANDARDS

Military

[illegible]

DRAWINGS

APOLLO G&N

1007015	PIP Preamplifier Assembly
1010006	Schematic, PIP Preamplifier (For Reference Only)

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007015
31 January 1964
Class A Release
TDRR 06057

PROCUREMENT SPECIFICATION

PIP PREAMPLIFIER ASSEMBLY

Record of Revisions

M

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 4 inclusive.

APOLLO G&N Specification
PS-1007015
31 January 1964

PROCUREMENT SPECIFICATION

PIP PREAMPLIFIER ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the PIP Preamplifier Assembly for use in the APOLLO Guidance and Navigation Equipment.

WA Kupfer 31 Jan 64
MIT/IL DATE

1/31/64
NASA/MSC APPROVAL DATE

PREPARED BY	TITLE	DATE
H J Ferguson	Spec Engr Writer	11-22-63
AC Spark Plug		

EXAMINED BY	TITLE	DATE
L S Ferris	Sr Proj Engr	12-12-63
AC Spark Plug		

APPROVED BY	TITLE	DATE
	Asst Dir	1/30/64
MIT/IL		

APPROVED BY	TITLE	DATE
MIT/IL		

APPROVED BY	TITLE	DATE
MIT/IL		

APOLLO G&N Specification
PS-1007015
31 January 1964

PROCUREMENT SPECIFICATION

PIP PREAMPLIFIER ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the PIP Preamplifier Assembly, Drawing 1015136, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specifications for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies.
FTM 1007015	Final Test Method for PIP Preamplifier Assembly

DRAWINGS

APOLLO G&N

1007015	PIP Preamplifier Assembly
1010006	Schematic, PIP Preamplifier (For Reference Only)

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly, part of the Gimbal Mounted Electronics, amplifies the signal from the PIP Signal Generator and applies the amplified signal to the AC Differential Amplifier.

3.3 FUNCTIONAL REQUIREMENTS

3.3.1 Electrical Input. The assembly shall perform as specified herein with electrical inputs as follows:

a. DC Supply Voltage: 28 vdc ±2% Nominal, 30.8 vdc Enhanced, 25.2 vdc Degraded.
b. Input Signal:

  (1) 0 to 2.2V pp sine wave, frequency variable from 100 cps to 100 kc ±2%, total harmonic distortion <1%.

3.3.2 Insulation Resistance. The resistance between the assembly pins and the assembly mounting screws shall be equal to or greater than 100 megohms.

3.3.3 Signal Output. The signal output shall be as shown in Table 1.

TABLE I - SIGNAL OUTPUT

SUPPLY VOLTAGE	FREQ	INPUT LEVEL	OVERALL GAIN	FILTER GAIN	OVERALL PHASE	FILTER PHASE	DISTORTION	AMPLIFIER GAIN
		mv p-p						
28 VDC	100	100	10±30%	-	-	-	-	-
↕	320	↕	10±20%	-	-	-	-	-
	1K		9.5±10%	-	-	-	-	-
	3.2K		6.9±5%	0.69±3%	-47±3°	-47±1°	≤5%	10.2±3%
	10K	100	2.9±10%	-	-	-	-	-
	32K	500	0.95±20%	-	-	-	-	-
28 VDC	100K	500	0.30±30%	-	-	-	-	-
30.8 VDC	3.2K	100	6.9±5%	-	-	-	-	-
25.2 VDC	3.2K	100	6.9±5%	-	-	-	-	-

3.3.4 Transient Response. The assembly shall recover from phase shift effects of turn-on transients within 200 msec.

3.3.5 Common Mode Rejection. The common mode gain shall be ≤ 0.0020 at 3.2kc and ≤ 0.0028 at 1.0kc and 10kc.

3.3.6 Noise. The output noise shall be $\leq 500\ \mu v$ pp from 0.06 cps to 10 kc.

3.4 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.4.1 Service Life

3.4.1.1 Operating Life. The assembly shall meet performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.4.1.2 Shelf Life. The assembly shall have a shelf life of at least 5 years without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.4.2 Reliability. Design objectives require maximum reliability of the assembly during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 1.5 failures per million hours.

4. QUALITY ASSURANCE PROVISIONS

4.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all the quality assurance provisions of Specification ND-1002210 shall form a part of this specification.

4.2 NASA ACCEPTANCE INSPECTION. The NASA acceptance inspection will be in accordance with Specification FTM 1007015.

5. PREPARATION FOR DELIVERY.

5.1 GENERAL. Preparation for delivery shall be in accordance with Specification ND-1002210.

6. NOTES. None.

Notice: When APOLLO G&N drawings, specifications, or other data are used for any purpose other than in connection with a definitely related NASA procurement operation, NASA thereby incurs no responsibility nor any obligation whatsoever, and the fact that NASA may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

APOLLO G&N Specification
FTM-1007015
31 January 1964
Class A Release
TDRR 06056

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 4 inclusive.

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

This document has been prepared to provide the Final Test Method which must be met by the PIP Preamplifier Assembly prior to acceptance for use on APOLLO G&N Equipment.

W H Kupfer 31 Jan 64
MIT/IL DATE

W S Swingle 1/31/64
NASA/MSC APPROVAL DATE

FINAL TEST METHOD

FOR

PIP PREAMPLIFIER ASSEMBLY

1. GENERAL REQUIREMENTS. Unless otherwise specified, the supplier is responsible for the performance of all inspections to the satisfaction of the National Aeronautics and Space Administration (NASA) representative. Except as otherwise specified, the supplier may utilize his facilities or any commercial laboratory acceptable to NASA. Inspection records of the examination and tests shall be kept complete and available to NASA as specified in the contract on order.

1.1 SCOPE. This specification lists the inspections for the PIP Preamplifier Assembly hereafter called the assembly, which must be conducted prior to acceptance. The procedures herein shall be followed in detail in order to ascertain whether the item merits acceptance or warrants rejection.

1.2 APPLICABLE DOCUMENTS. This specification shall be used in conjunction with Drawing 1007015. When the requirements of Drawing 1007015 and this specification are in conflict, resolution must be obtained from the MIT APOLLO Management Office via the purchaser.

1.2.1 Drawings. Drawings for the assembly are listed on Drawing 1007015.

1.2.2 Supplementary Documents. The following documents supplement the instructions herein.

DRAWINGS

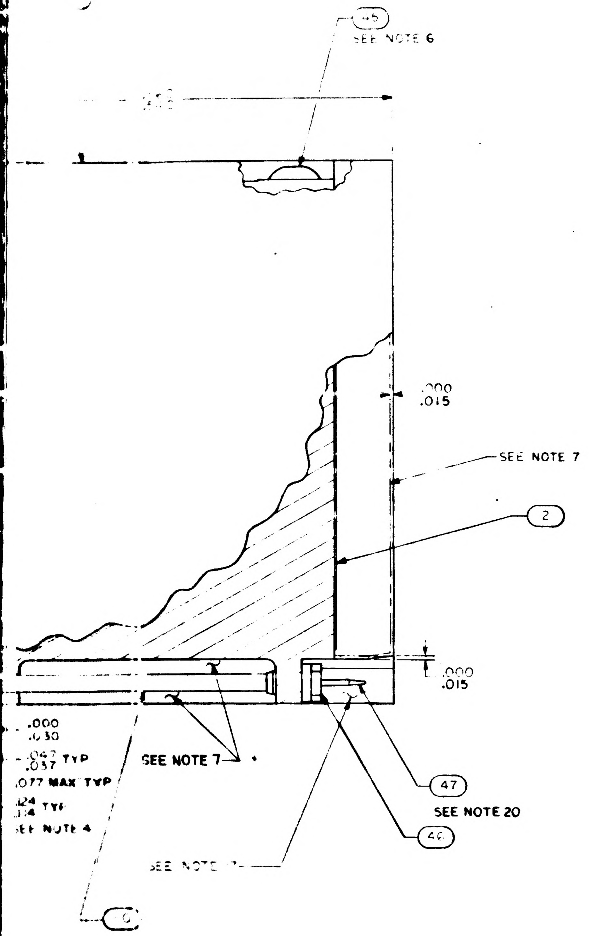
APOLLO G&N

1007015	PIP Preamplifier Assembly
1010006	Schematic, PIP Preamplifier (For Reference Only)

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007016 AA

SYM	REVISIONS TDRR 00411 DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00717	4-3-63	DT WK
B	REVISED PER TDRR 01013	4-25-63	DT WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	DT WK
E	REVISED PER TDRR 01355	5-20-63	DT WK
F	REVISED PER TDRR 01616	6-6-63	EPK WK
G	REVISED PER TDRR 01716	6-26-63	EPK WK
H	REVISED PER TDRR 01668	7-2-63	JJM WK
J	REVISED PER TDPR 02167	7-31-63	JJM WK
K	REVISED PER TDRR 05276	17 OCT 63	JJW EPK WK
L	REVISED PER TDRR 05409	27 DEC 63	EPK WK
M	REVISED PER TDRR 05876	21 JAN 64	EPC WK
N	REVISED PER TDRR 06639	25 FEB 64	EPK WK
P	REVISED PER TDRR 07011	30 MAR 64	JJ AU
R	REVISED PER TDRR 07285	9 APR 64	JWF
S	REVISED PER TDRR 0911	28 JUL 64	JJ
T	REVISED PER TDRR 6853	3 MAR 65	JWP
U	REVISED PER TDRR 16850	5 MAR 65	ZJJ AU
V	REVISED PER TDRR 17353	MAR 65	
W	REVISED PER TDRR 19408	1 JUNE 65	EM
Y	REVISED PER TDRR 19544	3 JUN 65	
Z	REVISED PER TDRR 21279	30 JUL 65	RLP
AA	REVISED PER TDRR 24384	6 65	RP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SEE NOTE 4
SEE NOTE 7
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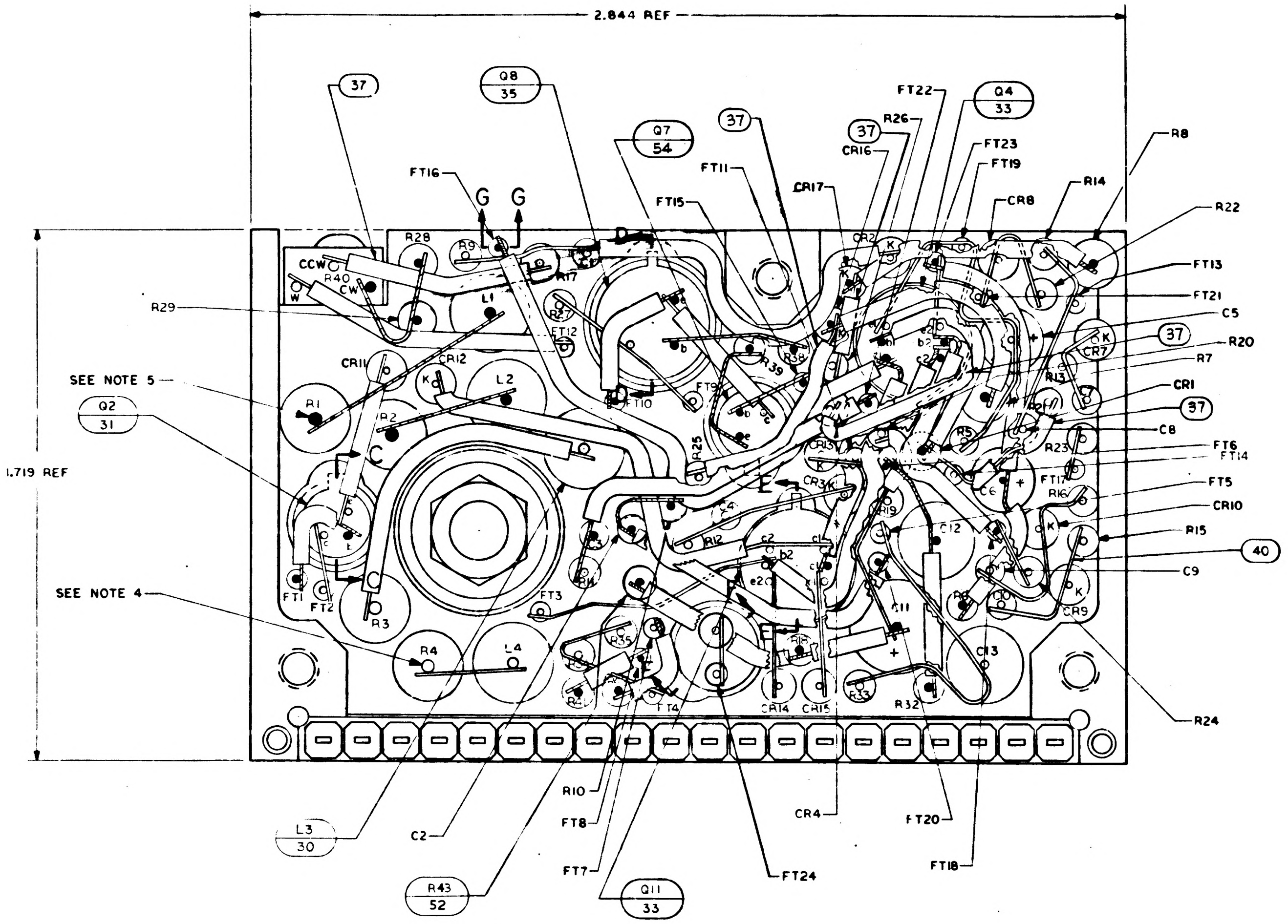
SEE NOTE 20
46
SEE NOTE 17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CR7
CR1
SEE NOTE 5
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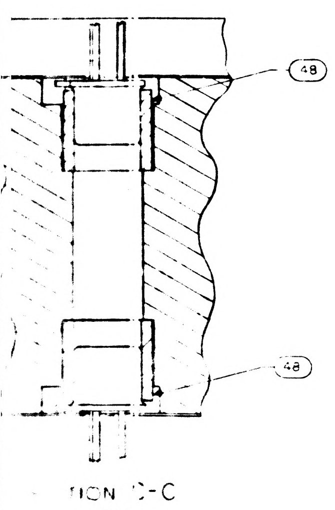

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PLACES
INSTALLATION FOR
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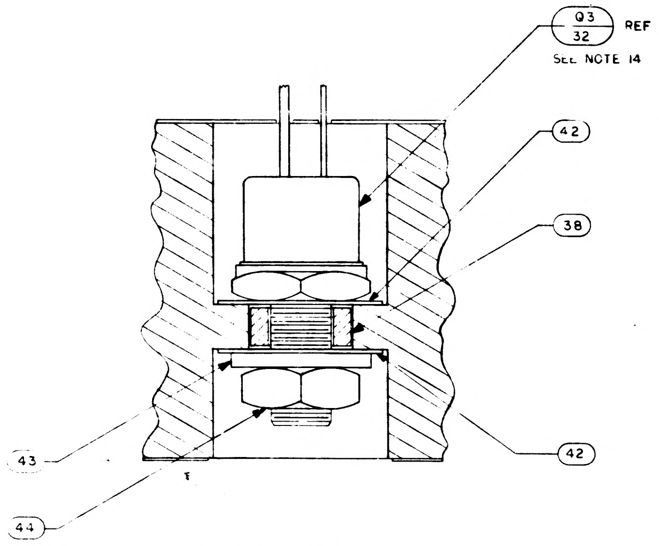
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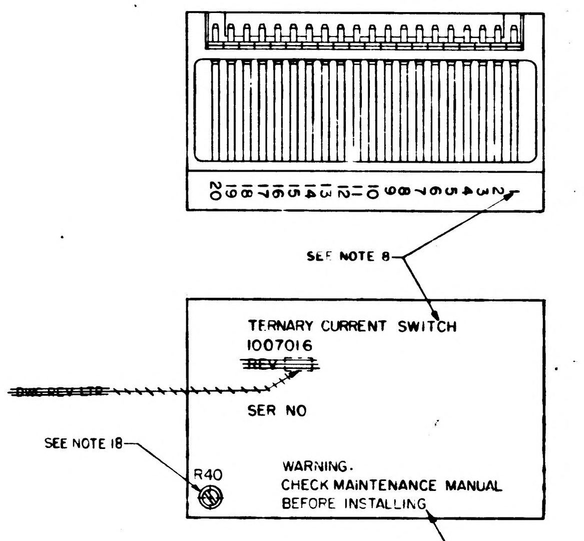
SECTION A-A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1007016
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SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010016	SCHEMATIC	REF
2	1010966-1	TRANSISTOR	54
1	1010372-6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR, FIXED MF 7.5K 1/4W ±2%	49
4	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
~~2~~	~~1006752~~	~~TRANSISTOR~~	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010833-1	DIODE	25
1	1010393-39	CAP, FIXED TANT, 6.3UF 50V ±10%	24
2	1006777-33	CAP, FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP, FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
~~2~~	~~1006750-81~~	~~RESISTOR, FIXED MF, 110K 1/4W ±2%~~	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
6	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M.I.T.
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS9-497
DRAWN L. F. Alvarez DATE 29 JAN 63
CHECKED F. P. Pansky 15 FEB 63
APPROVAL R. B. Test 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL E. J. Nielsen

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

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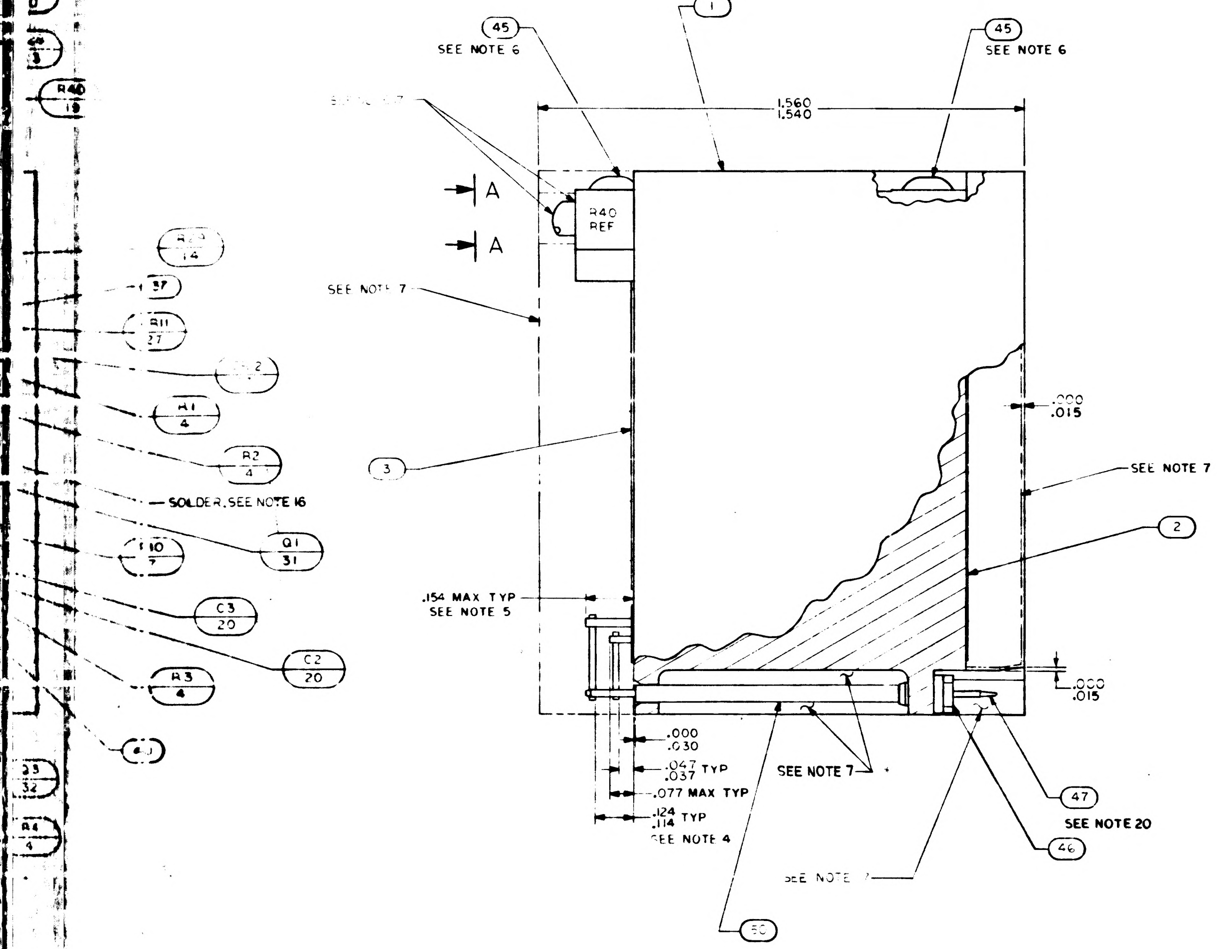
WT
SHEET 1 OF 1

1007016 AA

37/1007016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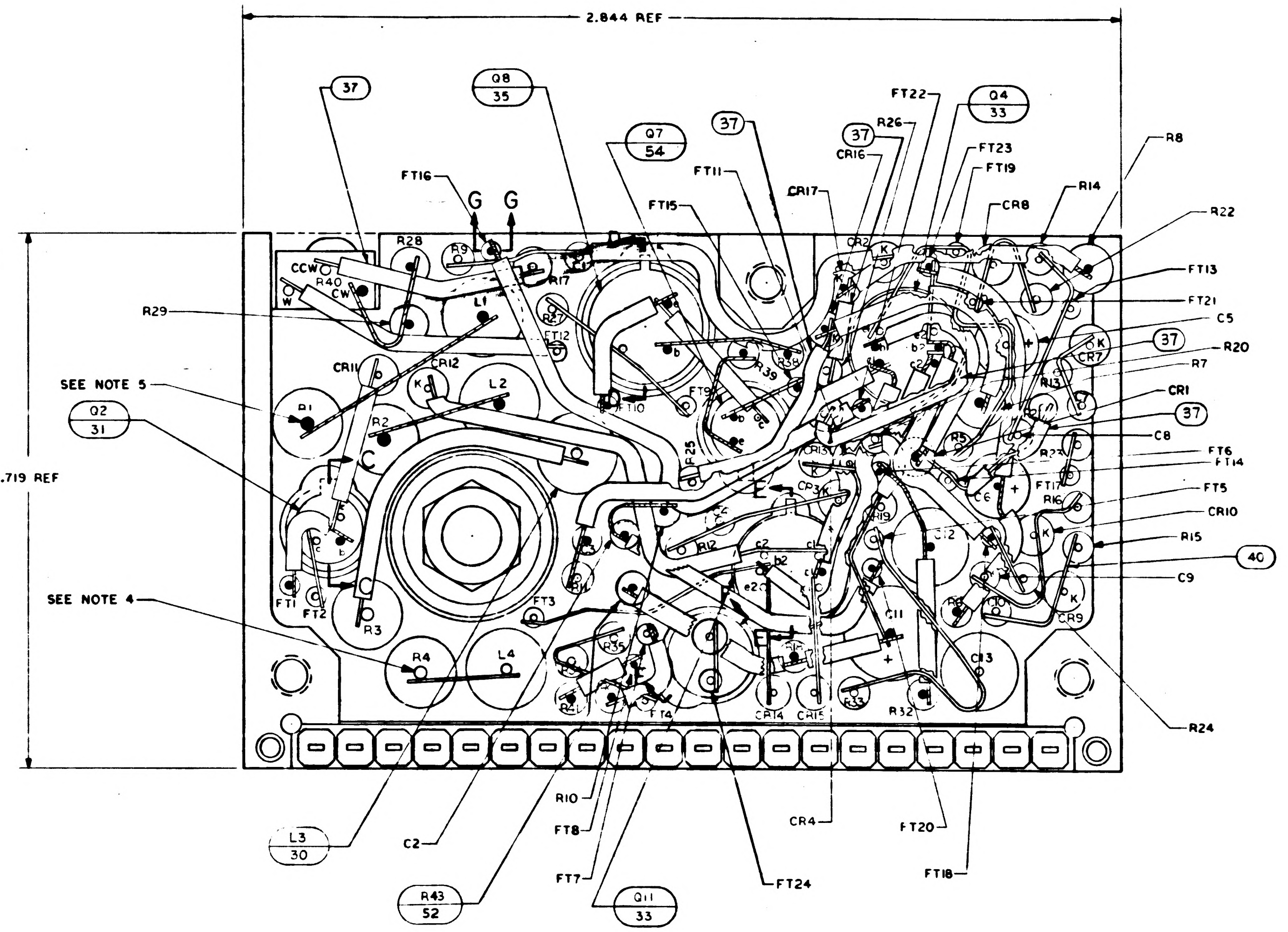
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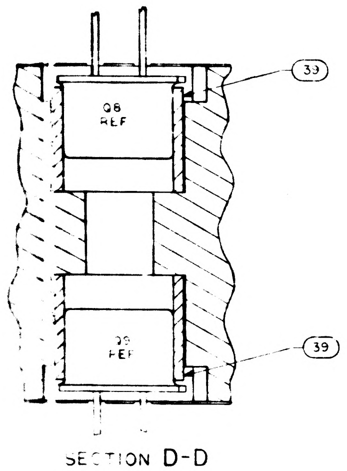
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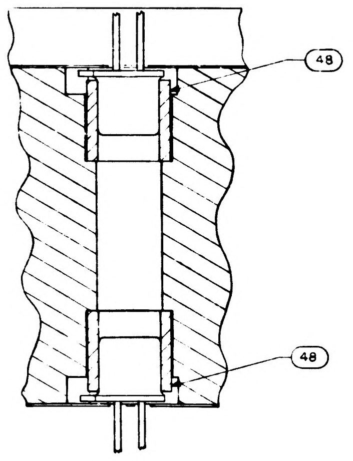
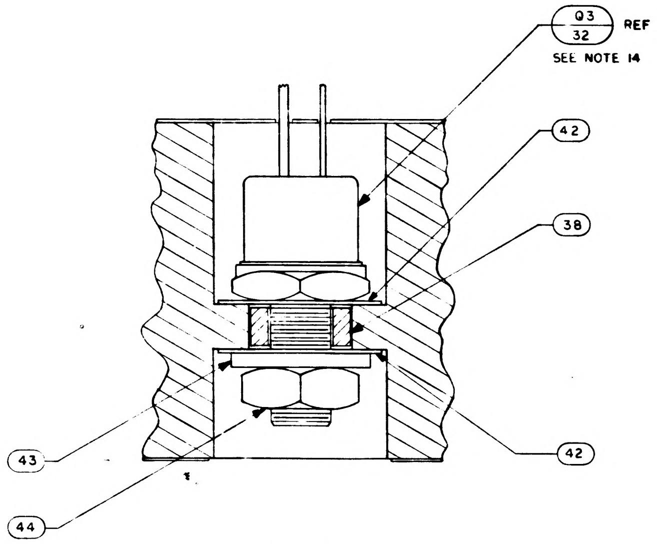
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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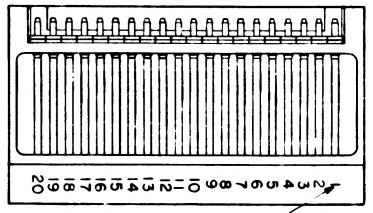
SECTION A-A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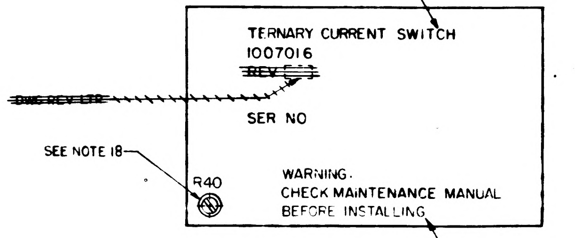
SEE NOTE 8


DWG REV LTR
SEE NOTE 18
R40

TERNARY CURRENT SWITCH
1007016
~~REV~~
SER NO
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

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AR	1006776
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UNLESS OTHERWISE SPECIFIED
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MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

1007154
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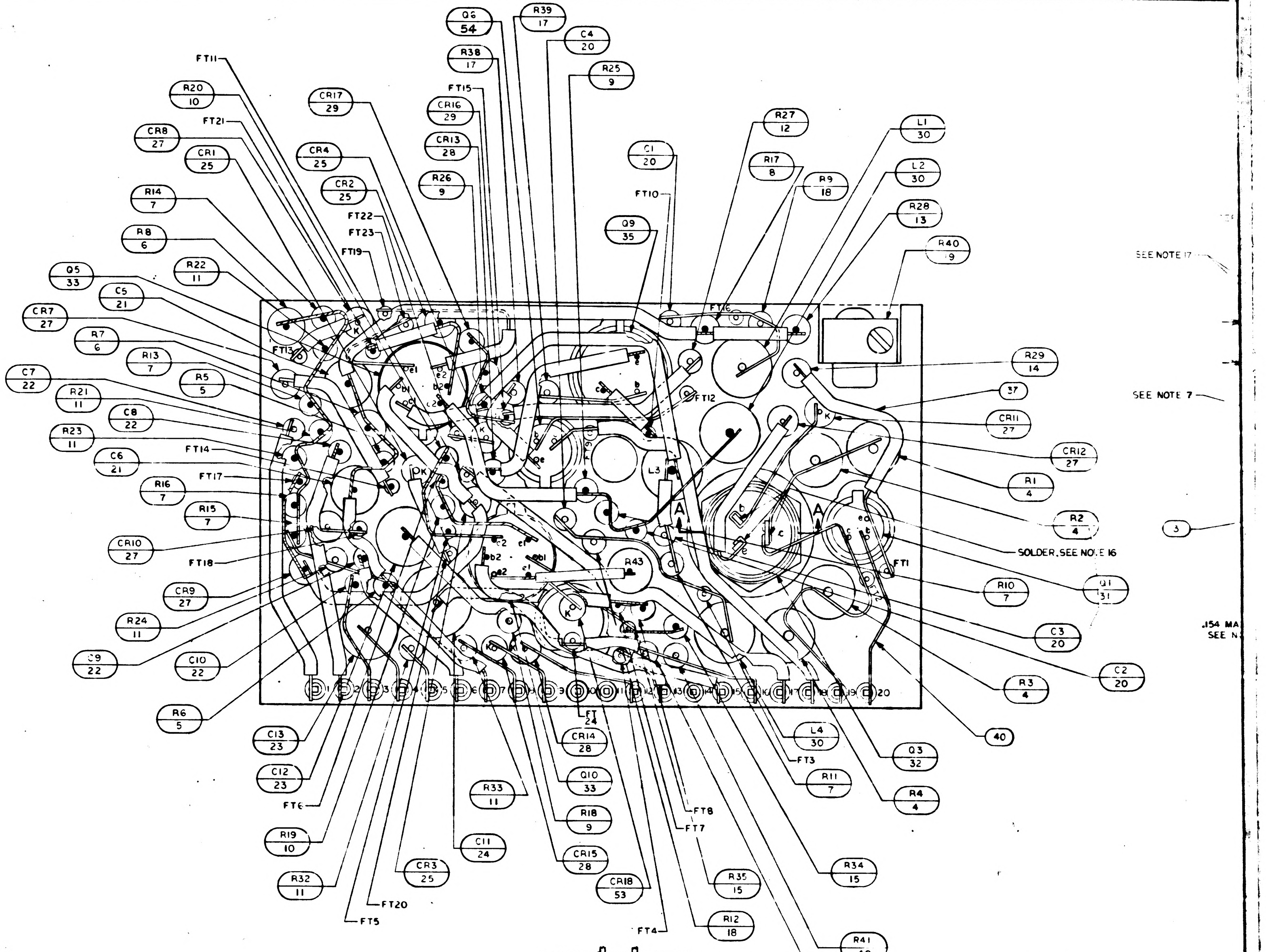
NASA APPROVAL
MIT APPROVAL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CR1 25
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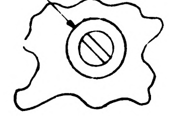
CR18 53
R32 11
FT20
FT5
FT4
R12 18
R41 49
R42 49
SEE NOTE 17
SEE NOTE 7
.154 MA
SEE N

TABLE I

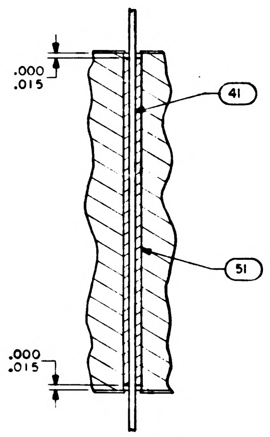
CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE.	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 80% OF PERIMETER TO WITHIN .03 ± .03 OF EXTERNAL EDGE



VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) ~~AND SERIALIZE~~ AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002019. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE. SERIALIZE PER ND1002023.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 48 AND FIND NO.49 PER ND 1002001 METHOD J.
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
~~15. MARK .060/.100 RED PER ND1002019~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND 1002009 METHOD J.
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136
21. PROCURE PER PS 1007016.
22. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM~~ INSULATORS TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE ~~OUTSIDE SURFACE OF THE~~ INSULATORS PER ND1002187 TYPE I.
~~23. CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~
24. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION
25. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND 1002279, USING 1010992 PRIMER AND 1008809-4 PAINT. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.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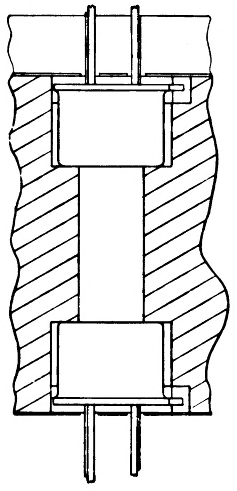
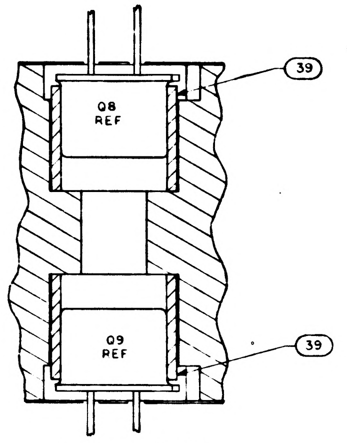
SECTION G-G

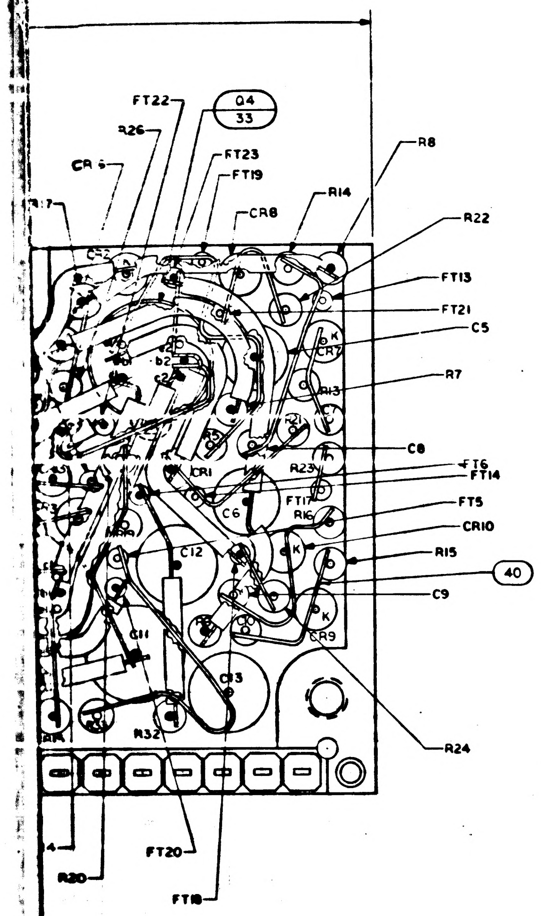


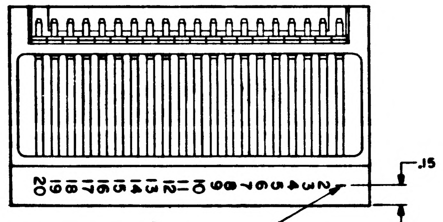
SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33

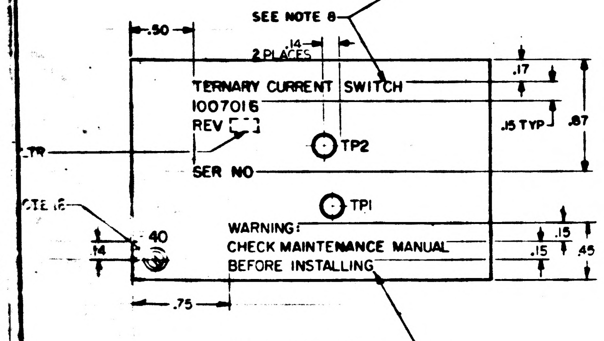

39
Q8
REF
Q9
REF
39

SECTION D-D

1007016	Ⓐ			
		REVISIONS TDRR00411		
SYM		DESCRIPTION	DATE	APPROVAL
A		CHANGED PER TDRR00717	4-3-63	01


FT22
Q4
33
R26
CR6
FT23
FT19
CR8
R14
R8
R22
FT13
FT21
C5
R7
C8
FT6
FT14
FT5
CR10
R15
40
C9
R24
CR1
C6
C12
C11
C13
R32
R23
R16
FT17
R13
CR7
CR9
FT20
R20
FT18


20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
.15


SEE NOTE 8
.50
.14
2 PLACES
TERNARY CURRENT SWITCH
1007016
REV
SER NO
TP2
TP1
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.17
.15 TYP
.87
.15
.65
40
.14
.75
SEE NOTE 15

MARKING VIEW
SCALE 2/1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010016	SCHEMATIC	REF
2	1006750-1	RESISTOR, FIXED MF 51, 1/4W ±5%	49
6	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010292-2	TEST POINT	36
2	1010386	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-1	TRANSISTOR	33
1	1010269	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388	COIL .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
2	1010390	DIODE	26
4	1010255	DIODE	25
1	1010393	CAP., FIXED TANT, 6.8UF 50V ±20%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1006750-80	RESISTOR, FIXED MF, 100K 1/4W ±5%	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±5%	17
2	1010369-92	RESISTOR, FIXED COMP, 300K 1/4W ±5%	16
2	1006750-58	RESISTOR, FIXED MF, 7.5K 1/4W ±5%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±5%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±5%	11
2	1006750-44	RESISTOR, FIXED MF, 3.3K 1/4W ±5%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±5%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
8	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±5%	7
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±5%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±5%	5
4	1010389	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN J. F. Sayer DATE 29 JAN 63
CHECKED 15 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

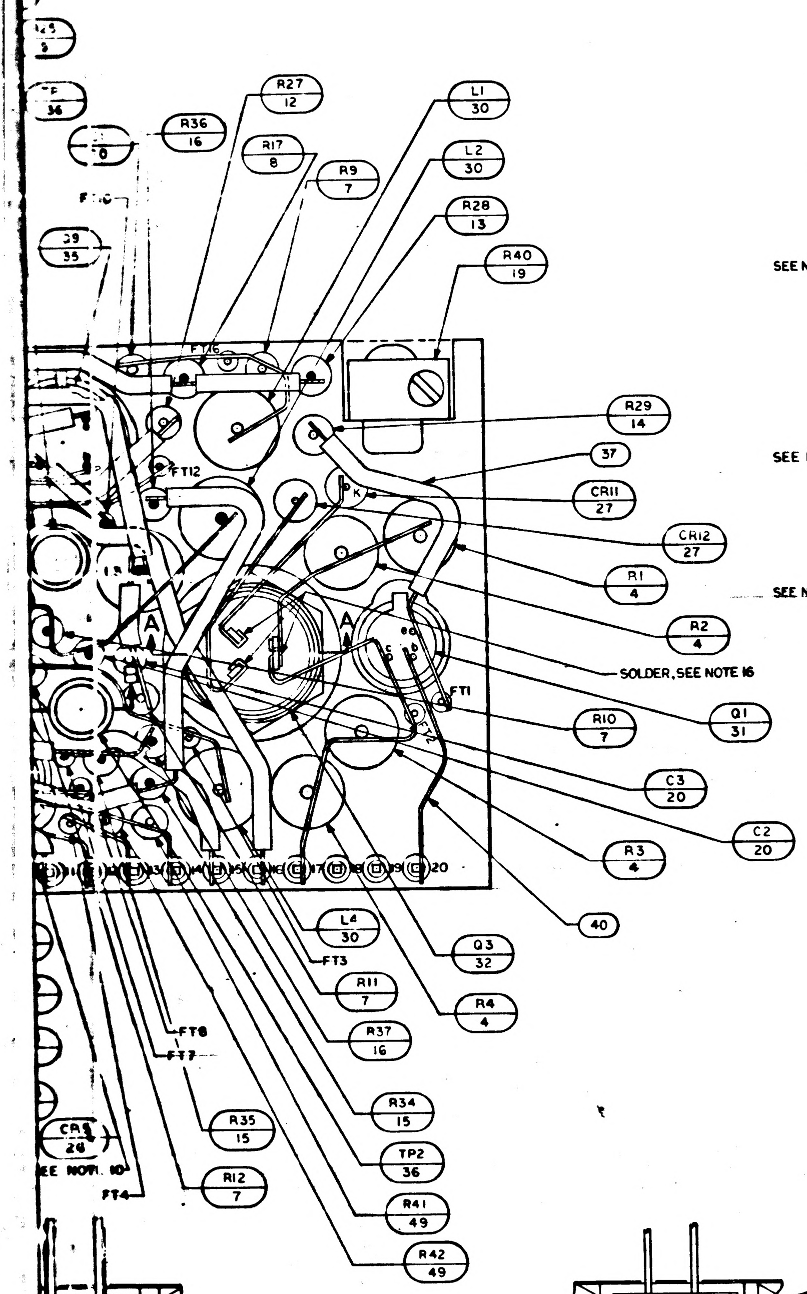
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

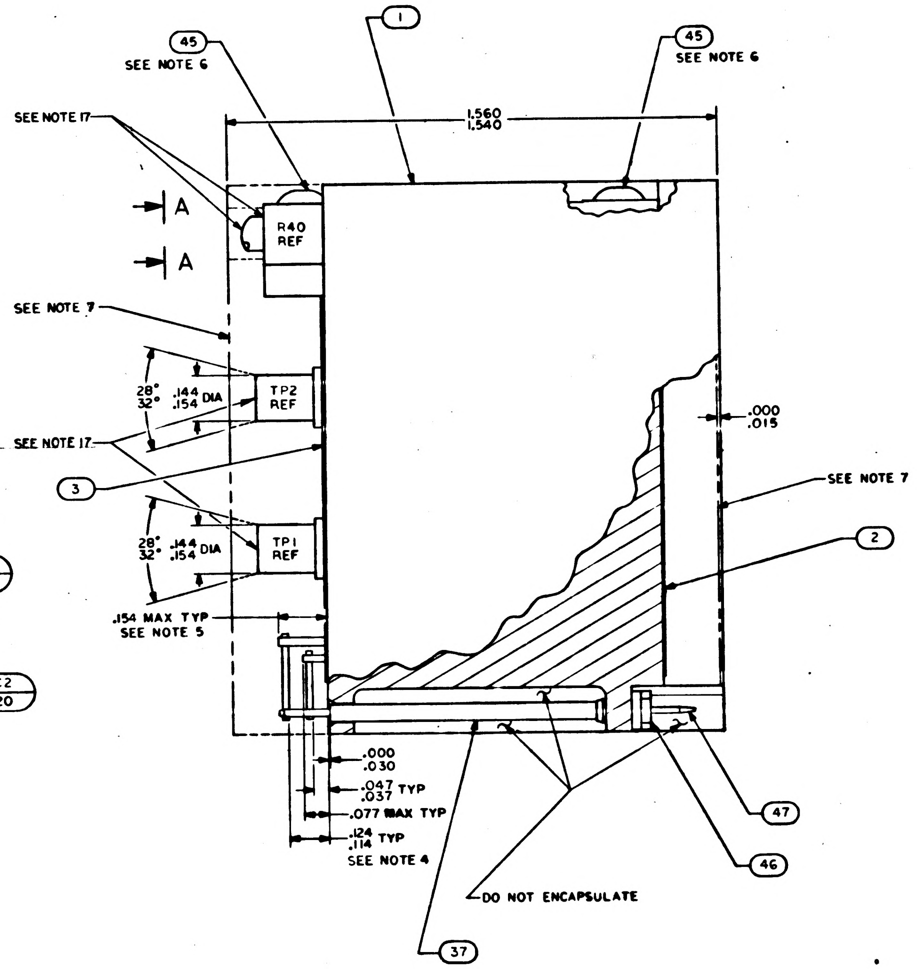
TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

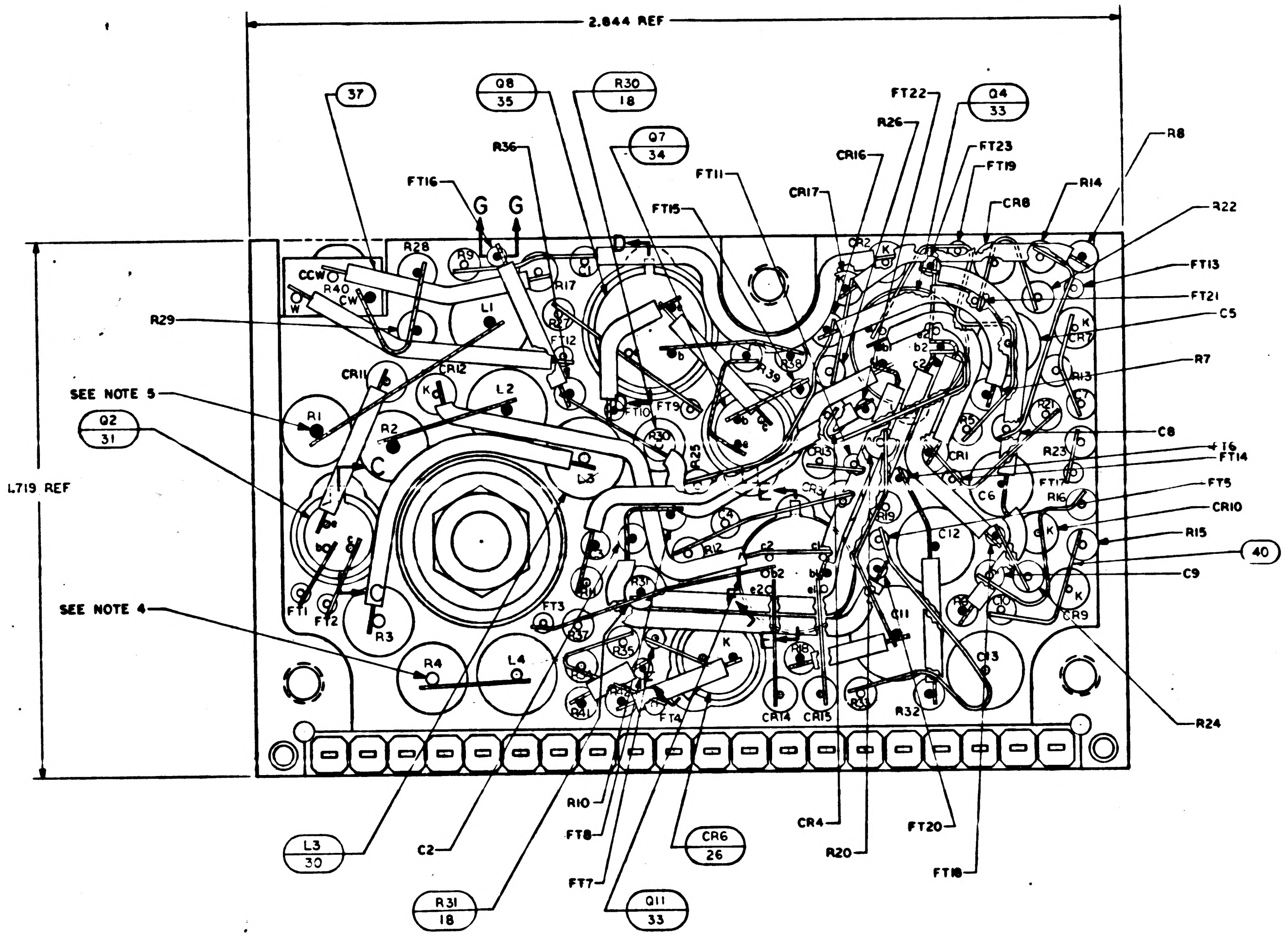
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007016
SCALE 5/1
WT
SHEET 1 OF 1

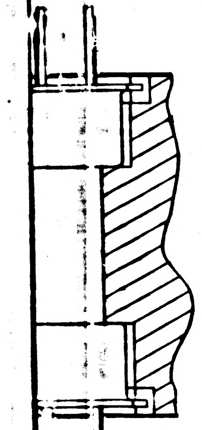
J 1007016

INCHES
PHOTOGRAPHIC SCALE ONLY


R27 12
R36 16
R17 8
R9 7
L1 30
L2 30
R28 13
R40 19
Q9 35
R29 14
37
CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
Q1 31
R10 7
C3 20
C2 20
R3 4
40
Q3 32
R4 4
L4 30
R11 7
R37 16
R34 15
TP2 36
R41 49
R42 49
R35 15
R12 7
CR5 26
SEE NOTE 10
FT1
FT3
FT4
FT6
FT7
FT12
FT16


45
SEE NOTE 6
1
SEE NOTE 17
1.560
1.540
R40 REF
A
A
SEE NOTE 7
28°
32°
.144
.154 DIA
TP2 REF
TP1 REF
SEE NOTE 17
3
.154 MAX TYP
SEE NOTE 5
.000
.015
SEE NOTE 7
2
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
SEE NOTE 4
DO NOT ENCAPSULATE
37
47
46

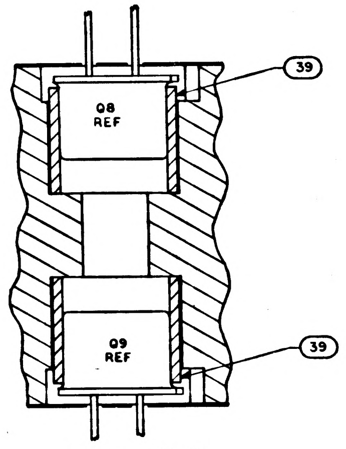

2.844 REF
1.719 REF
37
Q8 35
R30 18
Q7 34
R36
FT16
G G
FT11
FT15
CR17
CR16
R26
FT22
Q4 33
FT23
FT19
CR8
R14
R8
R22
FT13
FT21
C5
R7
R13
C8
FT14
FT5
CR10
R15
40
C9
R24
R29
SEE NOTE 5
Q2 31
SEE NOTE 4
CCW
CW
R40
R28
L1
L2
R1
R2
R3
R4
L4
CR11
CR12
C12
Q11
Q13
R32
CR14
CR15
R23
R16
C6
CR1
R10
FT8
FT7
FT4
FT3
FT1
FT2
CR6 26
CR4
R20
FT20
FT18
L3 30
C2
R31 18
Q11 33



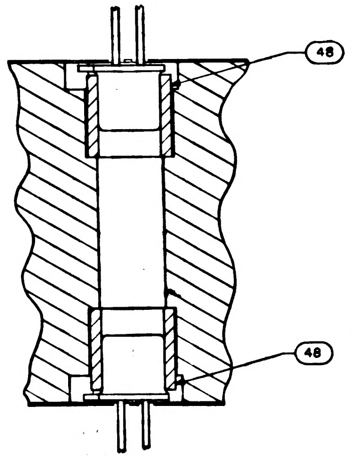
ION E-E

PLACES

INSTALLATION FOR
NO. 13 33


39
Q8 REF
Q9 REF
39

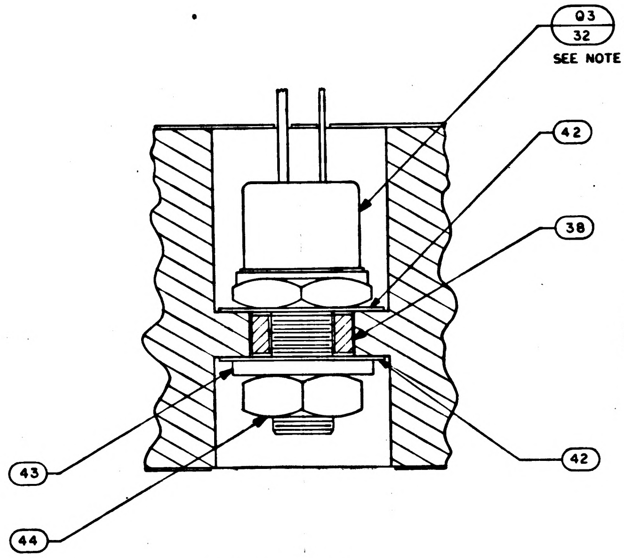
SECTION D-D



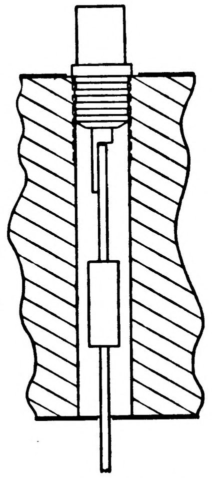
SECTION C-C

2 PLACES

TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34


Q3 32 REF
SEE NOTE 14
42
38
42
43
44

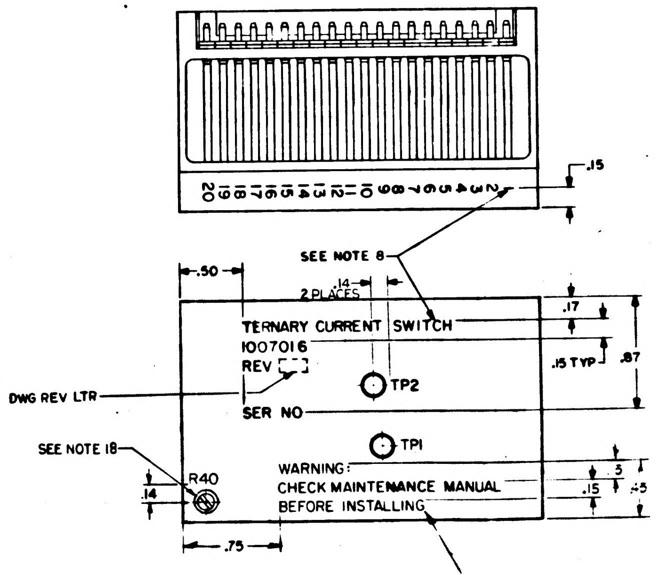
SECTION A-A



SECTION B-B

2 PLACES

TYPICAL INSTALLATION
FOR FIND NO. 36 AND 18


.15
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
SEE NOTE 8
.50
.14
2 PLACES
.17
.15 TYP
.87
TERNARY CURRENT SWITCH
1007016
REV
TP2
DWG REV LTR
SER NO
TP1
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.5
.15
.75

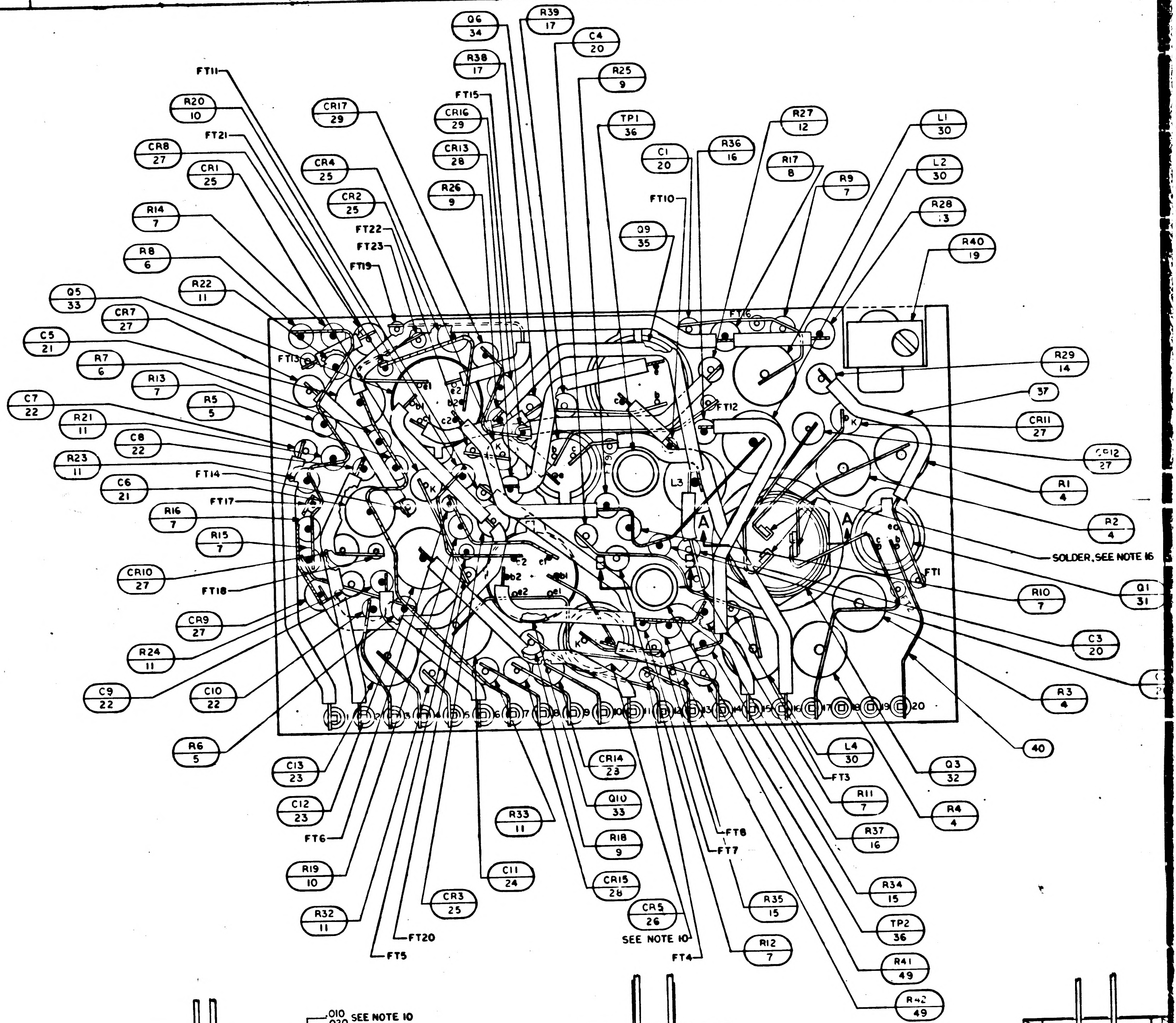
MARKING VIEW

SCALE 2/1

SEE NOTE 15

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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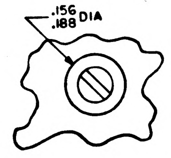
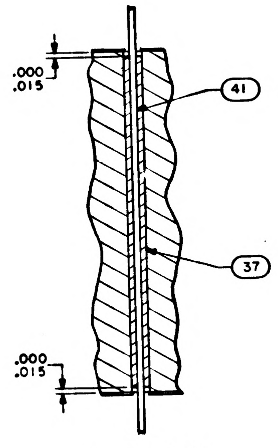
R39 17
C4 20
R38 17
R25 9
FT11
FT15
CR16 29
R20 10
CR17 29
TP1 36
R27 12
L1 30
FT21
CR13 28
C1 20
R36 16
R17 8
CR8 27
CR4 25
L2 30
CR1 25
R26 9
R9 7
FT10
R28 13
R14 7
CR2 25
FT22
FT23
Q9 35
R40 19
R8 6
FT19
R22 11
Q5 33
CR7 27
FT16
C5 21
R7 6
FT13
R29 14
R13 7
37
C7 22
R5 5
CR11 27
FT12
R21 11
C8 22
CR12 27
R23 11
L3
R1 4
FT14
C6 21
FT17
R2 4
R16 7
SOLDER, SEE NOTE 16
R15 7
Q1 31
FT1
CR10 27
R10 7
FT18
CR9 27
C3 20
R24 11
R3 4
C9 22
C10 22
40
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
R6 5
L4 30
C13 23
CR14 23
Q3 32
FT3
Q10 33
R11 7
C12 23
R33 11
R4 4
FT6
R18 9
FT8
FT7
R37 16
R19 10
C11 24
CR15 28
R34 15
CR3 25
CR5 26
R35 15
TP2 36
R32 11
SEE NOTE 10
FT20
R12 7
FT5
FT4
R41 49
R42 49
K
A

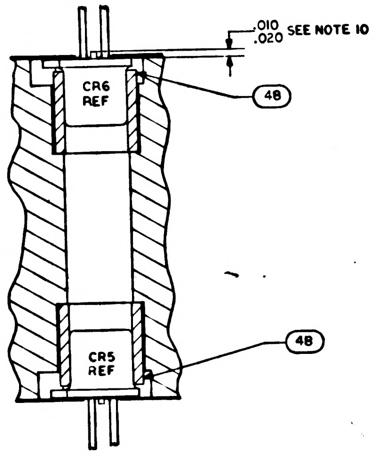


VIEW A-A

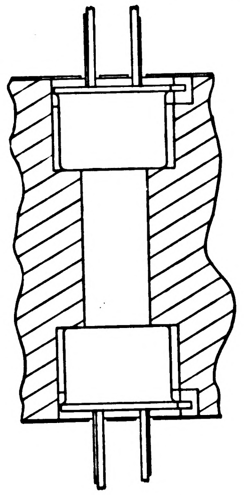
NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31
TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO. 39, FIND NO. 48 AND FIND NO. 49 PER ND 1002009
10. ON CR5 AND CR6 CUT PIN NO. 2, .010/.020 ABOVE CASE
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS
OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MSFC PROC 158 A
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND


.000
.015
41
37
.000
.015

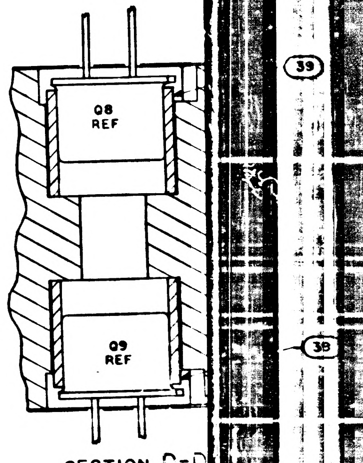
SECTION G-G


.010
.020 SEE NOTE 10
CR6 REF
48
CR5 REF
48

SECTION F-F



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 33


39
Q8 REF
Q9 REF
38

SECTION D-D

INCHES
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007016
4 February 1964

Class A Release
TDRR 00083

PROCUREMENT SPECIFICATION

FOR

TERNARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

Record of Revisions

(M)

Revision Letter	TDRR No.	Pages Revised	Approvals		Date
			MIT	NASA	
A	13049	3	WK KOG/[illegible]	WJR	9/29/64

This specification consists of page i to iii and 1 to 6 inclusive.

(3.) Data Pulse

	Nominal	Enhanced	Degraded
(a) Amplitude	3.2 ± 0.1V	3.5 ± 0.1 V	2.9 ± 0.1V
(b) PRF	3.2 kc	3.2 kc	3.2 kc
(c) Risetime	0.5 ± 0.1 µsec	0.5 ± 0.1 µsec	0.5 ± 0.1 µsec
(d) Falltime	5.5 ± 0.5 µsec	5.5 ± 0.5 µsec	5.5 ± 0.5 µsec
(e) Pulse Width	3.1 ± 0.5 µsec	3.1 ± 0.5 µsec	3.1 ± 0.5 µsec

(f) Timing: Data Pulses occur 6.2±0.5 µsec after TM ± Reset pulses except as specified herein.

3.3.2 Insulation Resistance. The resistance between the assembly pins and the assembly mounting screws shall be equal to or greater than 100 megohms.

3.3.3 Dummy Adjustability. With the voltage at pin 20 adjusted to produce 6.000±0.010V at the simulated scale-factor resistor with TM + current only, adjustment of R40 shall produce a scale-factor voltage of 5.5 to 6.5V with DUMMY current only. R40 shall be preset to produce a scale-factor voltage of 6.000±010V.

3.3.4 Output Leakage Current. The TM+ and TM- output leakage currents shall be equal to or less than 10 mµa at 125°F ± 5°F heatsink temperature. The dummy leakage current shall be equal or less than 150 mµa at 125°F ±5°F heatsink temperature.

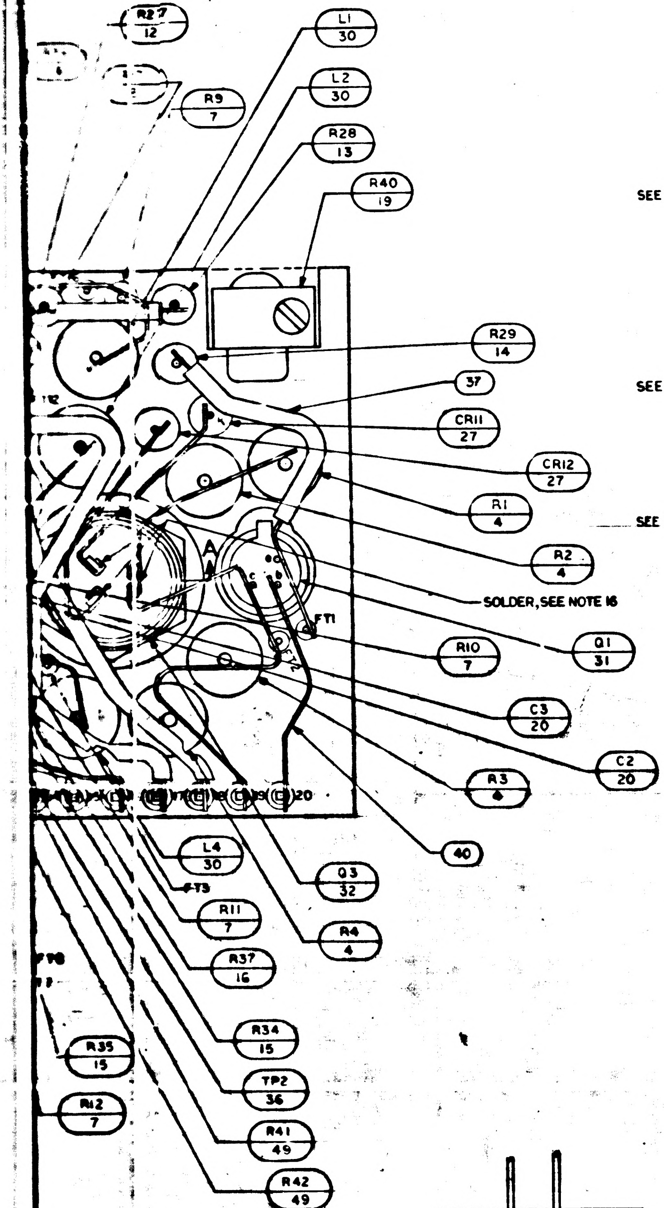
3.3.5 Torque Pulse Characteristics

a. The T+ and T- pulse characteristics shall be as follows at pin 9:

(1) Pulse risetime: ≤1.35 µsec
(2) Pulse falltime: ≤300 nsec
(3) Delay of pulse risetime: ≤650 nsec
(4) Delay of pulse falltime: ≤750 nsec

b. The dummy pulse characteristics shall be as follows at pin 17:

(1) Pulse risetime: ≤200 nsec
(2) Pulse falltime: ≤250 nsec
(3) Delay of risetime: ≤120 nsec
(4) Delay of falltime: ≤600 nsec


R27
12
L1
30
R9
7
L2
30
R28
13
R40
19
R29
14
37
CR11
27
CR12
27
R1
4
R2
4
SOLDER, SEE NOTE 16
Q1
31
R10
7
FT1
C3
20
C2
20
R3
6
40
L4
30
FT3
Q3
32
R11
7
R4
4
R37
16
R34
15
TP2
36
R35
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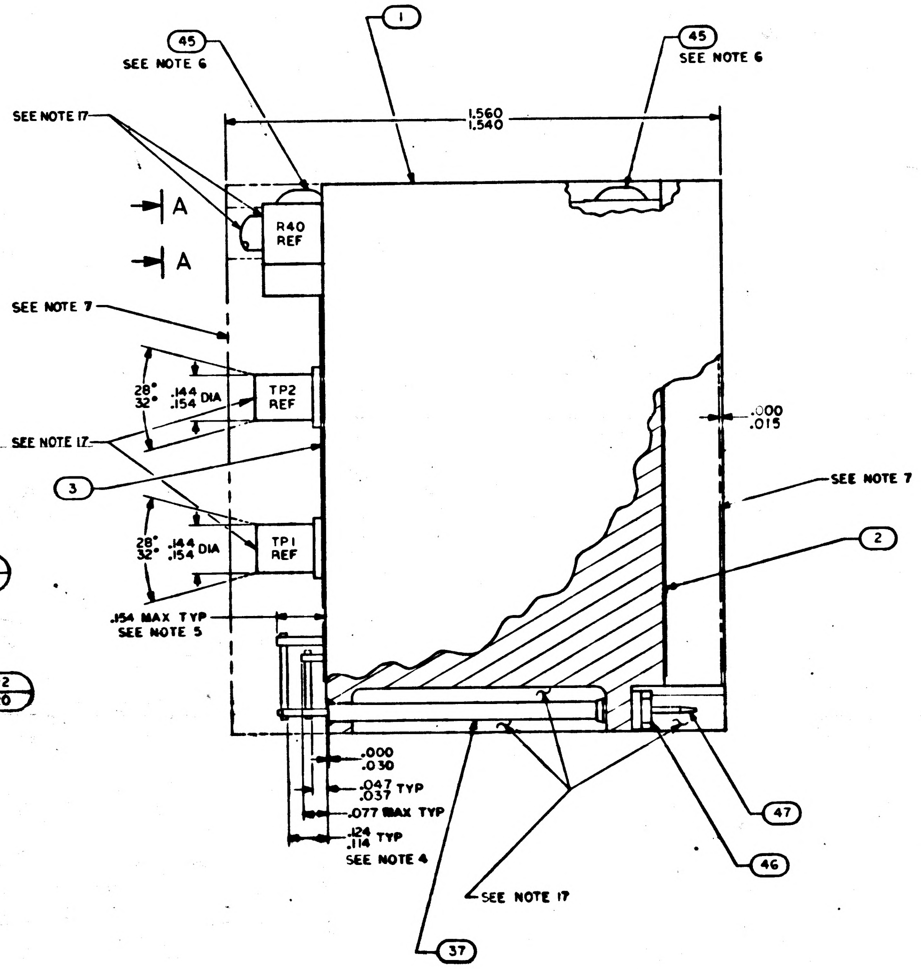
R12
7
R41
49
R42
49
20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SEE NOTE 6
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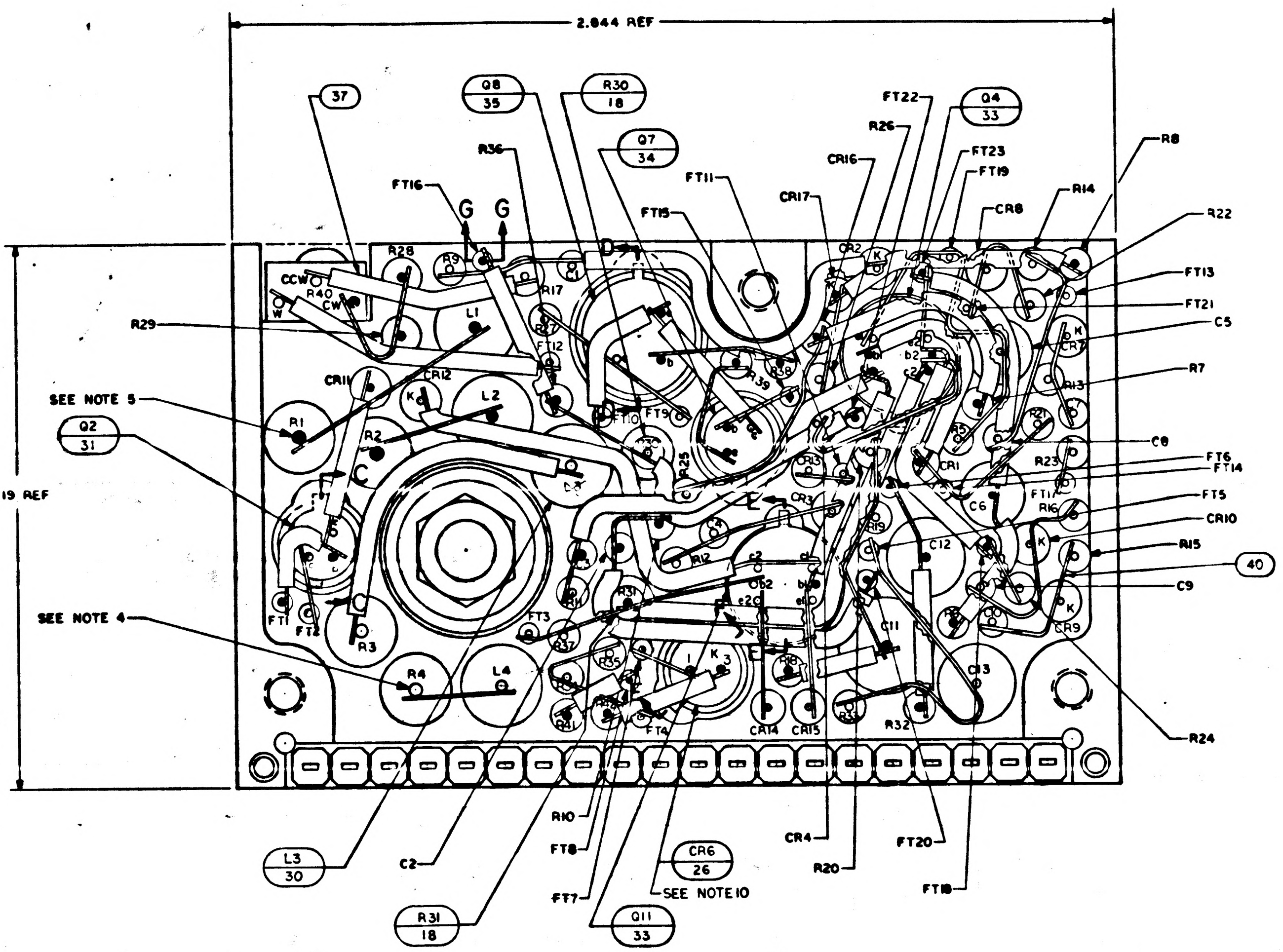
45
SEE NOTE 6
1.560
1.540
SEE NOTE 17
A
A
R40
REF
SEE NOTE 7
28°
32°
.144
.154 DIA
TP2
REF
SEE NOTE 17
3
28°
32°
.144
.154 DIA
TP1
REF
.154 MAX TYP
SEE NOTE 5
.000
.015
SEE NOTE 7
2
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
SEE NOTE 4
SEE NOTE 17
37
47
46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G
FT11
CR16
FT23
FT19
FT15
CR17
CR8
R14
R22
CCW
R40
CW
W
R28
R9
R17
FT13
FT21
C5
R29
L1
CR11
CR12
L2
R7
SEE NOTE 5
R1
Q2
31
R2
C8
FT6
FT14
FT5
CR10
R15
40
C9
1.719 REF
C
R12
C12
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FT3
R3
R4
L4
C11
C13
CR9
R24
CR14
CR15
R32
R10
FT8
FT7
CR6
26
SEE NOTE 10
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CR4
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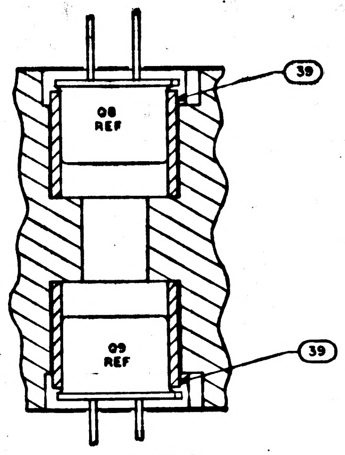
FT18
L3
30
C2
R31
18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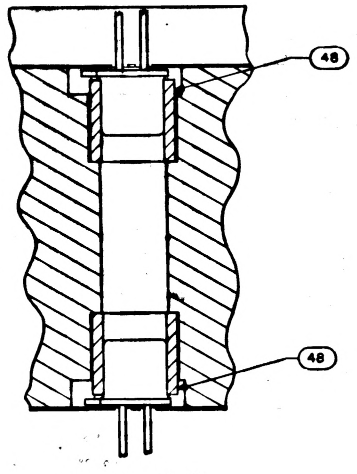
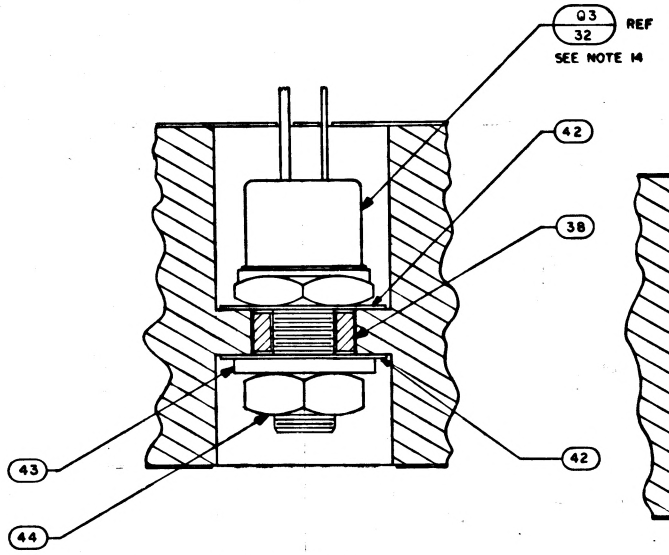
Q9
REF
39

SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 31 AND 34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REF
SEE NOTE 14
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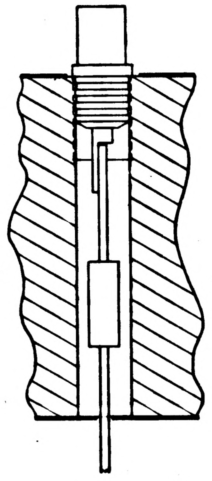
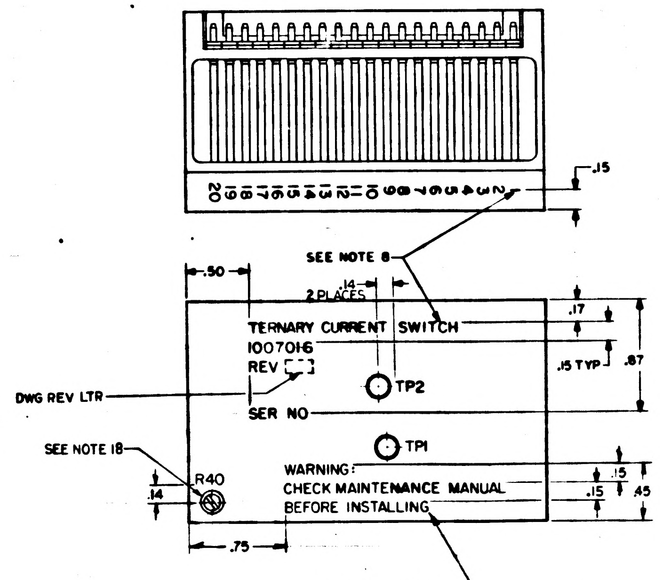
38
43
42
44

SECTION A-A



SECTION B-B
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 36 AND 18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SEE NOTE 8
.50
.14
2 PLACES
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
TP2
SER NO
TP1
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.17
.15 TYP
.87
.15
.15
.45
.75
SEE NOTE 15

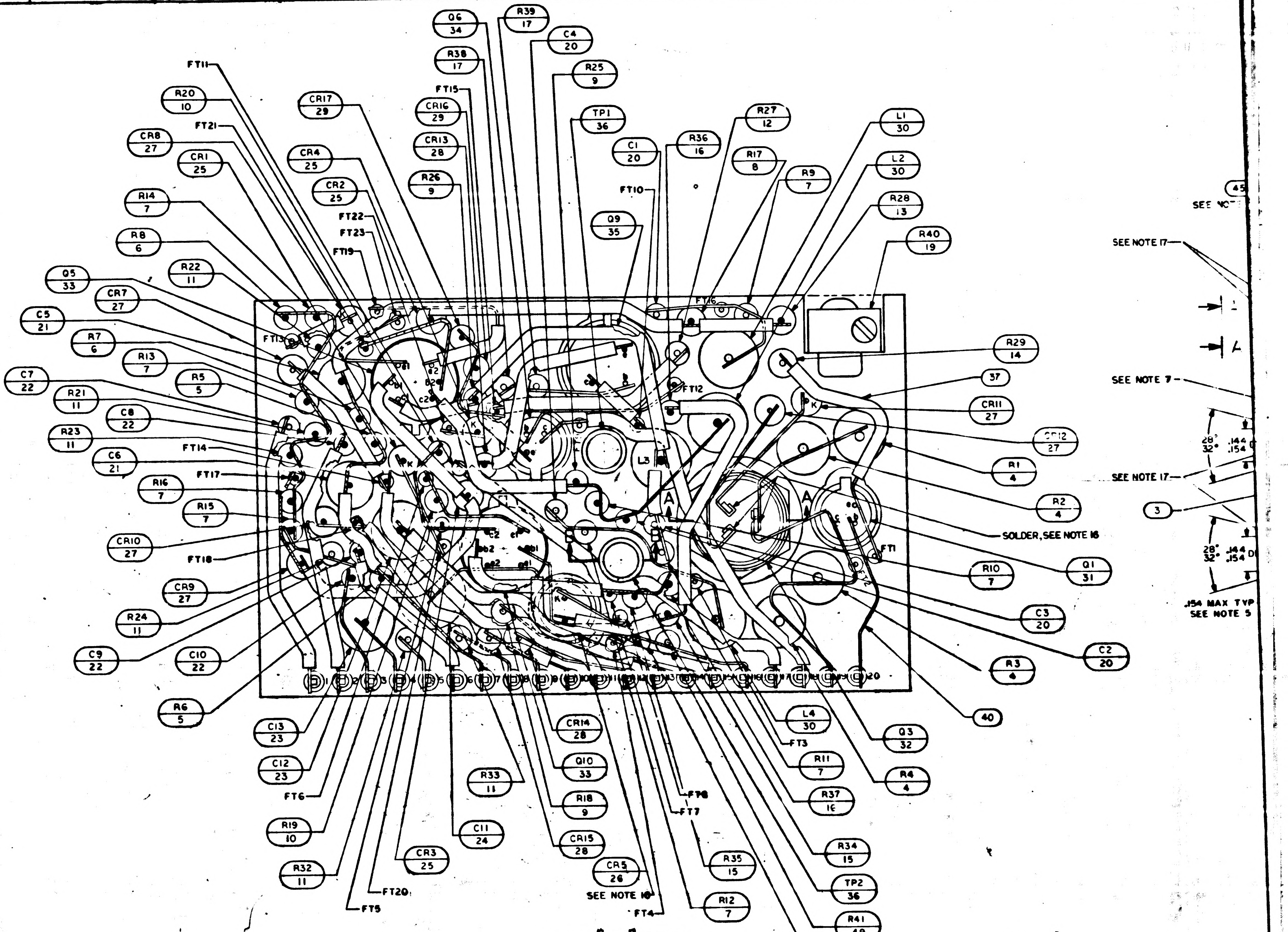
MARKING VIEW
SCALE 2/1

MASTE

1007102	
1007101	
NEXT ASSY	USED ON
APPL'D TO	

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — [illegible]



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FT15
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C1 20
R36 16
R17 8
R9 7
L2 30
FT21
CR8 27
CR1 25
CR4 25
R26 9
FT10
CR2 25
R28 13
R14 7
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FT23
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R40 19
R8 6
FT19
R22 11
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R7 6
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C7 22
FT12
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R21 11
CR11 27
C8 22
R23 11
CR12 27
FT14
R1 4
C6 21
FT17
R16 7
L3
A
R2 4
R15 7
SOLDER, SEE NOTE 16
CR10 27
FT1
Q1 31
FT18
R10 7
CR9 27
C3 20
R24 11
C9 22
C10 22
C2 20
R3 4
R6 5
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C13 23
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R4 4
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R18 9
FT8
FT7
R37 16
R19 10
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CR5 26
R35 15
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SEE NOTE 10
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FT4
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FT5
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R42 49
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SEE NOTE 7
SEE NOTE 17
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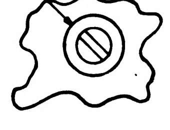
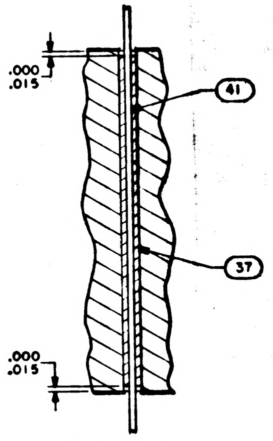
.154 MAX TYP SEE NOTE 5



VIEW A-A

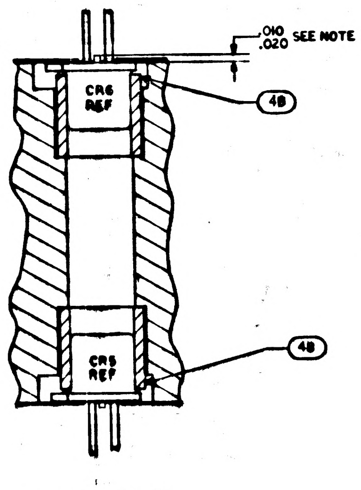
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO. 39, FIND NO. 48 AND FIND NO. 49 PER ND 1002009
10. ON CR5 AND CR6 CUT PIN NO. 2, .010/.020 ABOVE CASE
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MSFC PROC 158 A
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND



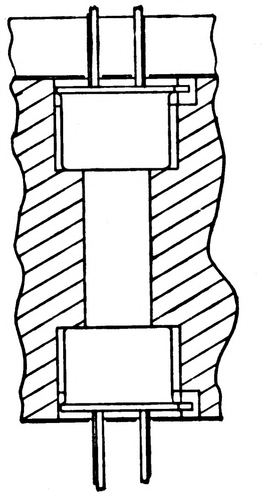
.000 .015
41
37
.000 .015

SECTION G-G

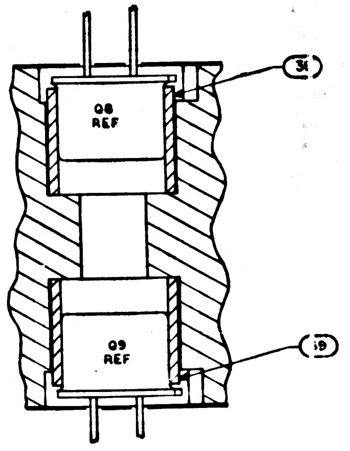


.010 .020 SEE NOTE 10 TYP 2 PLACES
CR6 REF
48
CR5 REF
48

SECTION F-F



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33



Q8 REF
31
Q9 REF
19

SECTION D-D

36

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007016 B
4 February 1964

Class A Release
TDRR 06083

PROCUREMENT SPECIFICATION

FOR

TERNARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

Record of Revisions

Revision Letter	TDRR No.	Pages Revised	Approvals		Date
			MIT	NASA	
A	13049	3	WK	WJR	9/29/64
B	14028	2, 3, 4, 5, 6	WK	WJR	11-4-64

This specification consists of page i to iii and 1 to 5 inclusive.

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly provides pulse-torque current switching control in the stabilization control loops.

3.3 FUNCTIONAL REQUIREMENTS

3.3.1 Electrical Inputs. The assembly shall perform as specified herein with the following electrical inputs:

a. DC Supply Voltage:

	Nominal	Enhanced	Degraded
(1)	+123 vdc ±2%	+138 vdc ±2%	+108 vdc ±2%
(2)	+12 vdc ±2%	+12 vdc ±2%	+12 vdc ±2%

b. Input Signals:

(1) TM±Set, TM±Reset Pulses

	Nominal	Enhanced	Degraded
(a)	Amplitude: -5.50±0.25V	-7.00±0.25V	-4.00±0.25V
(b)	PRF: 3.2 kc	3.2 kc	3.2 kc
(c)	Risetime: 0.20±0.05 μsec	0.1±0.05 μs	0.4±0.1 μs
(d)	Falltime: 0.6±0.2 μsec	0.6±0.2 μs	1±0.2
(e)	Pulse Width: 3.0±0.3 μsec	3.0±0.3 μs	3.0±0.3 μs

(f) Timing: TM±Set pulses occur 5.0±0.5 μsec after TM±Reset pulses except as specified herein.

3.3.2 Insulation Resistance. The resistance between the assembly pins and the assembly mounting screws shall be equal to or greater than 100 megohms.

3.3.3 Dummy Adjustability. With the voltage at pin 20 adjusted to produce 6.000±0.010V at the simulated scale-factor resistor with TM+ current only, adjustment of R40 shall produce a scale-factor voltage of 5.5 to 6.5V with DUMMY current only. R40 shall be preset to produce a scale-factor voltage of 6.000±010V.

3.3.4 Output Leakage Current. The TM+ and TM- output leakage currents shall be equal to or less than 10 mμa at 125°F ±5°F heatsink temperature. The dummy leakage current shall be equal or less than 150 mμa at 125°F ±5°F heatsink temperature.

3.3.5 Torque Pulse Characteristics

a. The T+ and T- pulse characteristics shall be as follows at pin 9 for nominal, enhanced and degraded conditions:

(1) Pulse risetime: $\leq 1.35\ \mu$sec
(2) Pulse falltime: ≤ 200 nsec
(3) Delay of pulse risetime: ≤ 650 nsec
(4) Delay of pulse falltime: ≤ 750 nsec

b. The dummy pulse characteristics shall be as follows at pin 17 for nominal, enhanced, and degraded conditions:

(1) Pulse risetime: ≤ 300 nsec
(2) Pulse falltime: ≤ 800 nsec
(3) Delay of pulse risetime: ≤ 250 nsec
(4) Delay of pulse of alltime: ≤ 600 nsec

3.3.6 Scale Factor Transient. With nominal inputs moded 1-1, the transients at the simulated scale-factor resistor shall be as follows:

a. Reset Transient - Over a time interval occuring from 1 μs before TM+ Reset and TM- Reset pulses to 1 μs before TM+ Set and TM- Set pulses respectively, the pulse shall be as follows:

(1) Pulse amplitude: ≤ 4.3
(2) Pulse width: $\leq 1\ \mu$s

b. Set Transient - Over a time interval occuring from 1 μs before to 4 μs after TM+ Set and TM- Set pulses respectively, the pulse shall be as follows:

(1) Pulse amplitude: ≤ 4.3V
(2) Pulse width: $\leq 1\ \mu$s

c. Flat-top transient - Over a time interval occuring from 4 μs after TM+ Set and TM- Set pulses to 1 μs before TM+ Reset or TM-Reset pulses respectively, output variations shall be less than 50 mv p-p.

3.3.7 Dynamic Pulse Logic. The dynamic pulse logic of the assembly shall be as follows: TM Sequence: T+ Pulses shall occur only in response to TM+ Set and TM+ Reset pulses, and T- pulses shall occur only in response to TM- Set and TM- Reset pulses under enhanced and degraded input conditions.

3.4 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.4.1 Service Life

3.4.1.1 Operating Life. The assembly shall meet performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.4.1.2 Shelf Life. The assembly shall have a shelf life of at least 5 years, without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.4.2 Reliability. Design objectives require maximum reliability of the assembly during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 3.5 failures per million hours.

4. QUALITY ASSURANCE PROVISIONS

4.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all the quality assurance provisions of Specification ND-1002210 shall form a part of this specification.

4.2 NASA ACCEPTANCE INSPECTION. The NASA acceptance inspection shall be in accordance with Specification FTM-1007016.

5. PREPARATION FOR DELIVERY

5.1 GENERAL. The assembly shall be prepared for delivery in accordance with the requirements of Specification ND-1002210.

6. NOTES. None.

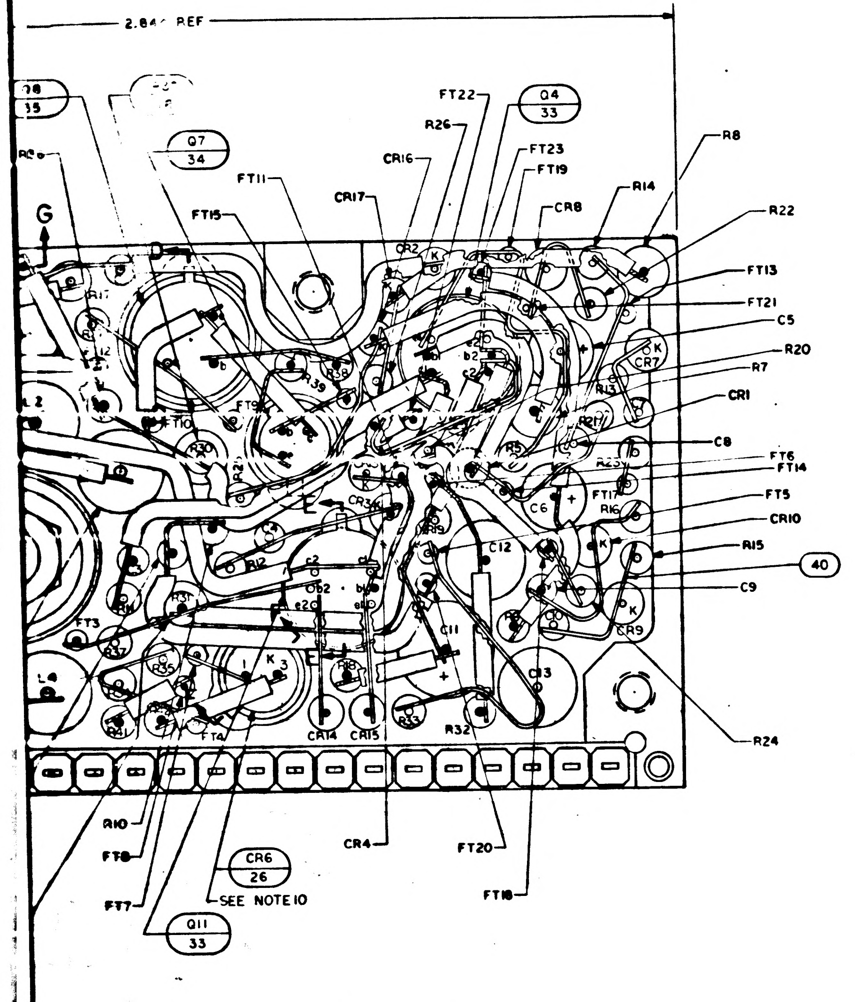
Notice: When APOLLO G&N drawings, specifications, or other data are used for any purpose other than in connection with a definitely related NASA procurement operation, NASA thereby incurs no responsibility nor any obligation whatsoever, and the fact that NASA may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

DAS/dmh

1007016 D

REVISIONS TDRR 00411

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00777	4-3-63	DT. WK
B	REVISED PER TDRR 01013	4-25-63	DT. WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	DT. WK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R26
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CR7
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40
C9
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FT3
C11
CR9
C13
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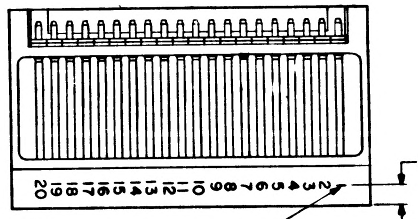
CR4
FT20
FT18
CR6
26
SEE NOTE 10
Q11
33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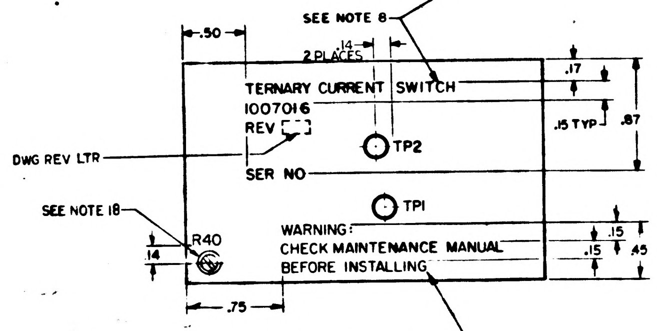
.15


SEE NOTE 8
.50
.14
2 PLACES
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
TP2
TP1
SEE NOTE 18
R40
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.17
.15 TYP
.87
.15
.15
.45
.14
.75
SEE NOTE 15

MARKING VIEW
SCALE 2/1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010016	SCHEMATIC	REF
2	1006750-1	RESISTOR,FIXED MF 51, 1/4W ±5%	49
6	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010292-2	TEST POINT	36
2	1010386	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-1	TRANSISTOR	33
1	1010269	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
2	1010390	DIODE	26
4	1010255	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1006750-80	RESISTOR, FIXED MF, 100K 1/4W ±2%	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1010369-92	RESISTOR, FIXED COMP, 300K 1/8W ±5%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-44	RESISTOR, FIXED MF, 3.3K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
8	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
FRACTIONS ± —
DECIMALS ± .03
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN DATE 29 JAN 63
CHECKED 18 FEB 63
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO.
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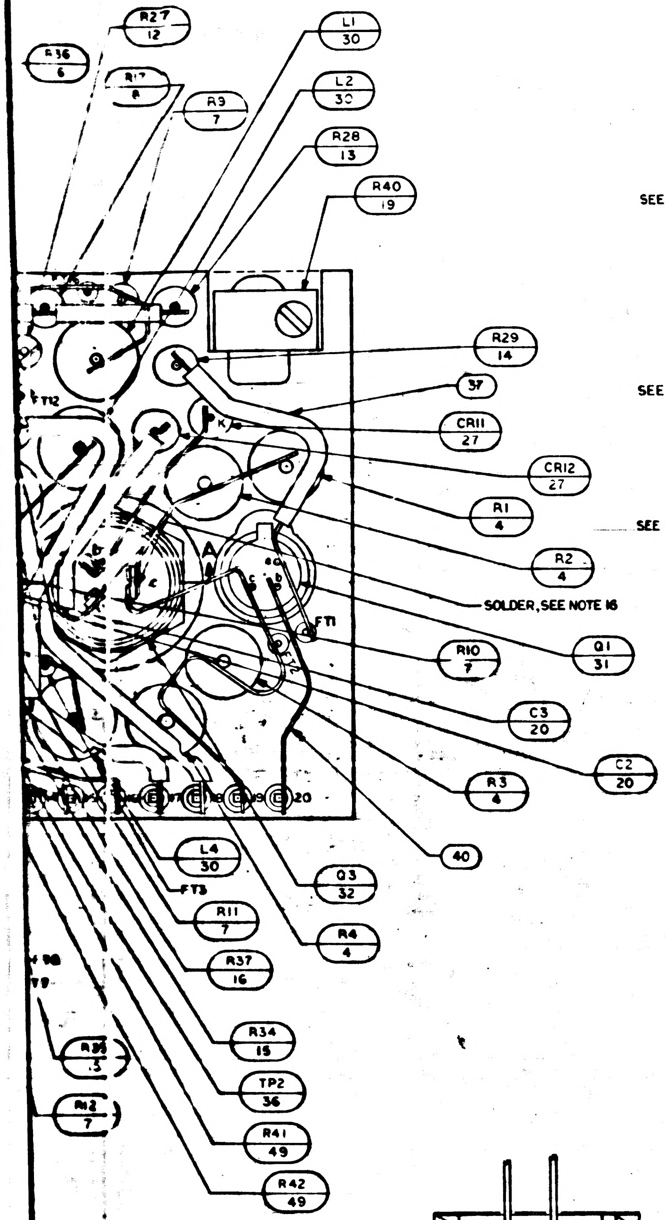
SCALE 5/1
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

J 1007016 D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CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
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C3 20
C2 20
R3 4
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R4 4
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FT1
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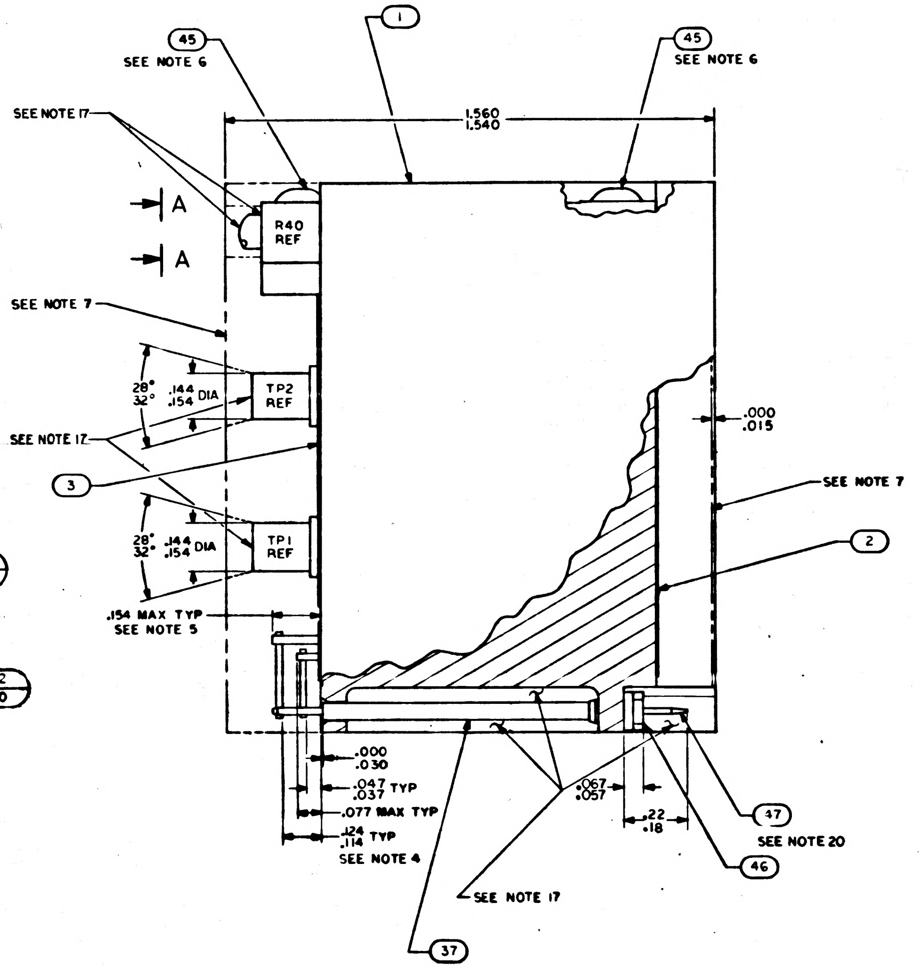
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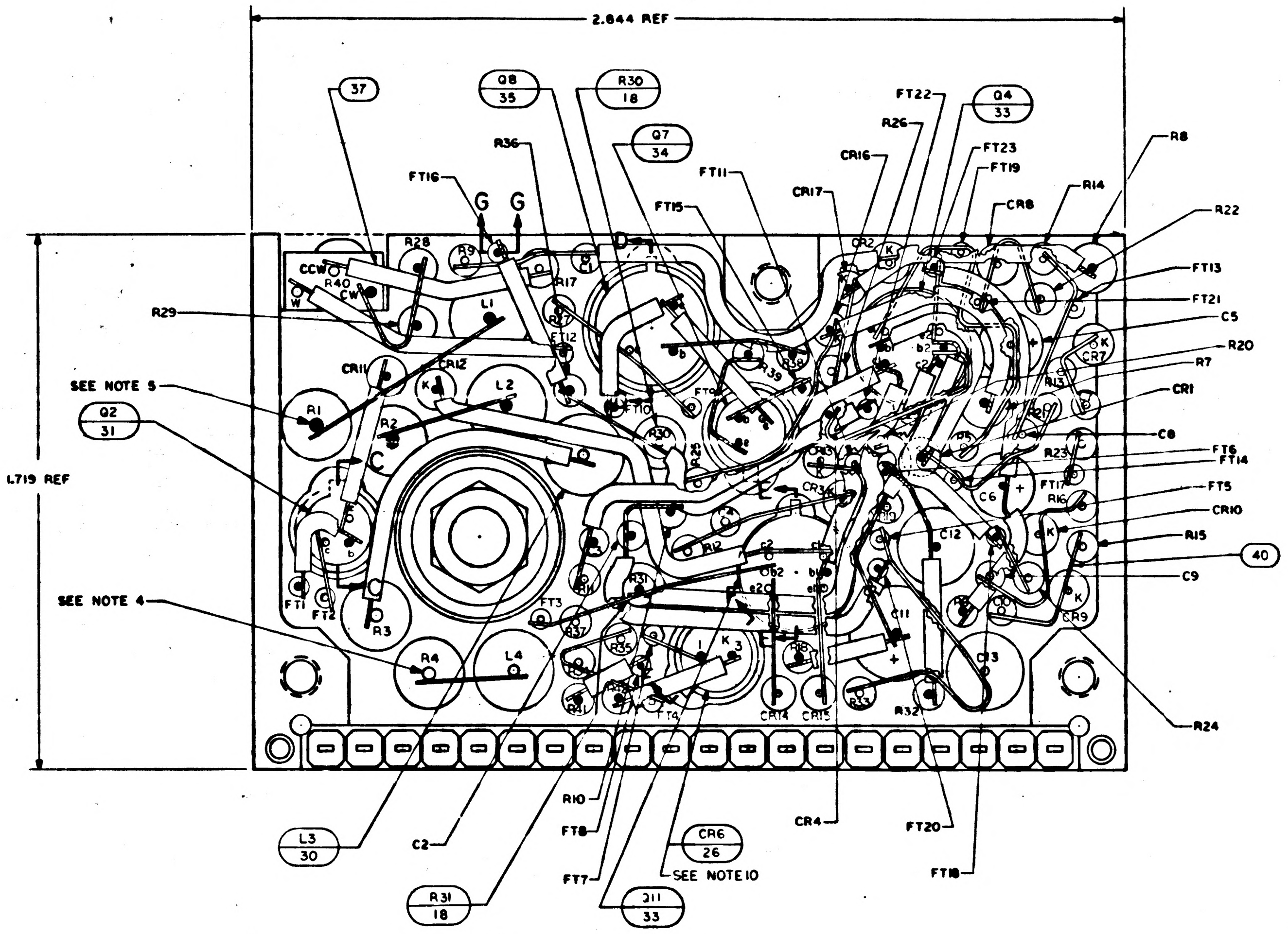
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CR8
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FT13
FT21
C5
R20
R7
CR1
C8
FT6
FT14
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C9
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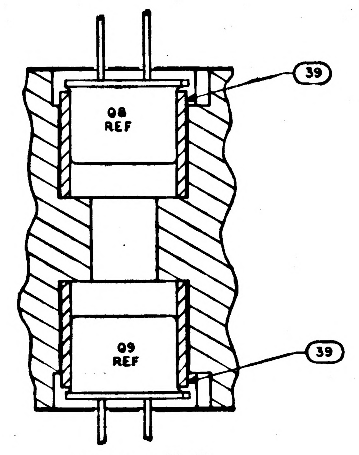
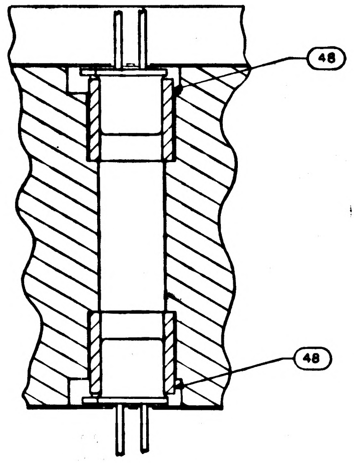
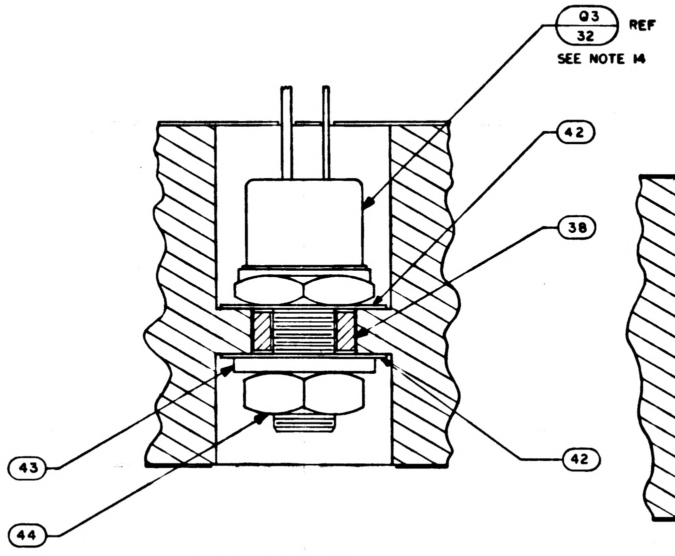
Q11 33


Q8 REF
Q9 REF
39
39

SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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SEE NOTE 14
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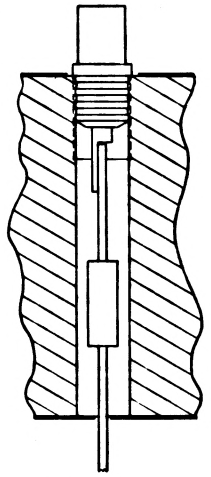
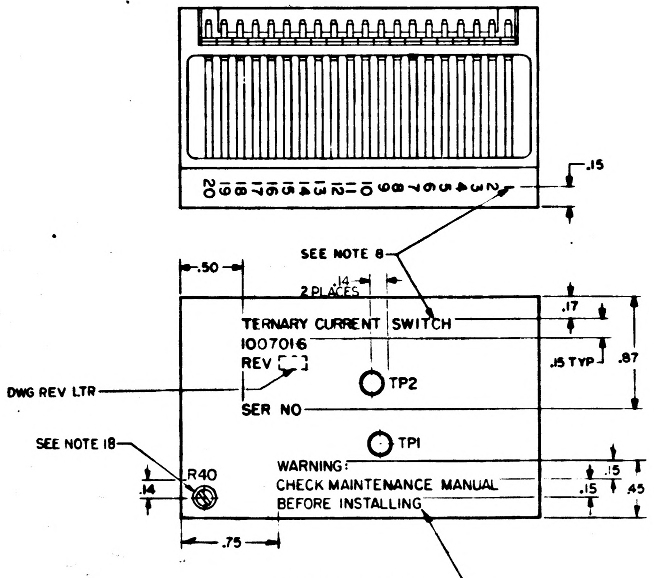
SECTION A-A



SECTION B-B
2 PLACES
TYPICAL INSTALLATION
FOR FIND NO. 36 AND 18


20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
.15
SEE NOTE 8
.50
.14 2 PLACES
TERNARY CURRENT SWITCH
1007016
REV
SER NO
TP2
TP1
DWG REV LTR
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.17
.15 TYP
.87
.15
.15
.45
.75
SEE NOTE 15

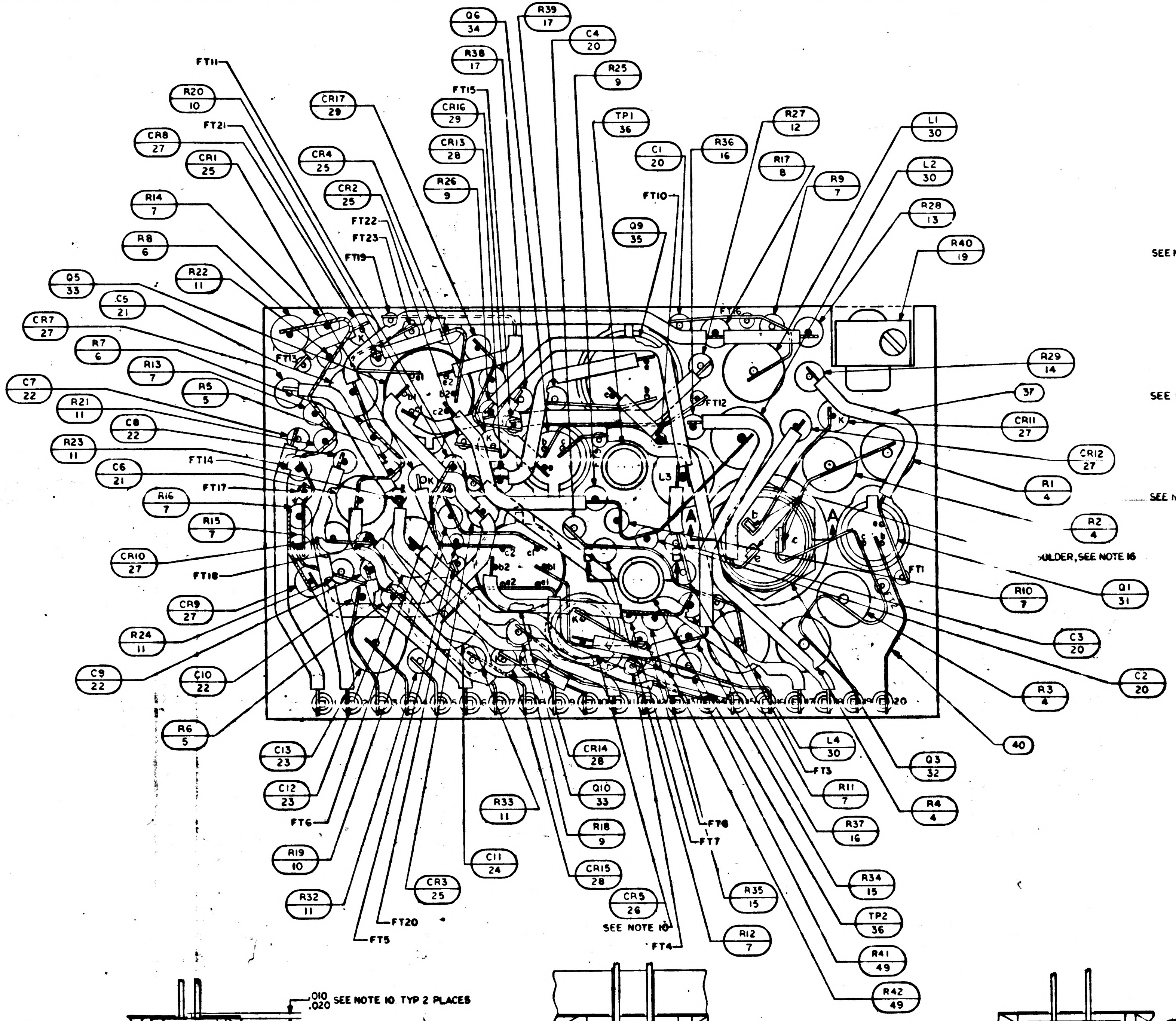
MARKING VIEW
SCALE 2/1

MRS

1007102	
1007101	
NEXT ASSY	USED ON
APPLICATION	

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.


Q6 34
R39 17
C4 20
R38 17
R25 9
FT11
FT15
R20 10
CR17 29
CR16 29
TP1 36
R27 12
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FT21
CR13 28
C1 20
R36 16
CR8 27
CR1 25
CR4 25
R17 8
L2 30
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R9 7
CR2 25
FT10
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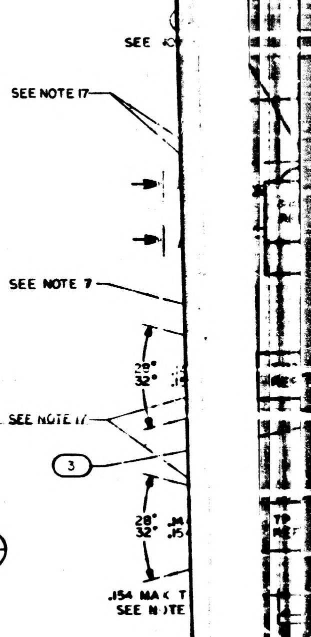
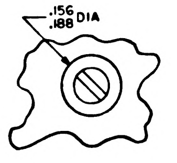
CR11 27
R21 11
C8 22
R23 11
CR12 27
FT14
C6 21
L3
R1 4
FT17
R16 7
A
R2 4
R15 7
SOLDER, SEE NOTE 16
CR10 27
FT1
Q1 31
FT18
R10 7
CR9 27
C3 20
R24 11
C9 22
C10 22
C2 20
R3 4
20
R6 5
40
CR14 28
L4 30
Q3 32
C13 23
FT3
C12 23
R11 7
Q10 33
R33 11
R4 4
FT6
FT8
R18 9
R37 16
FT7
R19 10
C11 24
CR15 28
R34 15
CR3 25
CR5 26
R35 15
R32 11
TP2 36
SEE NOTE 10
FT20
R12 7
FT5
FT4
R41 49
R42 49

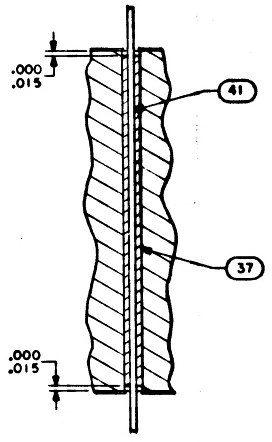

SEE
SEE NOTE 17
SEE NOTE 7
28° 32°
SEE NOTE 17
3
28° 32°
.154 MAX T
SEE NOTE



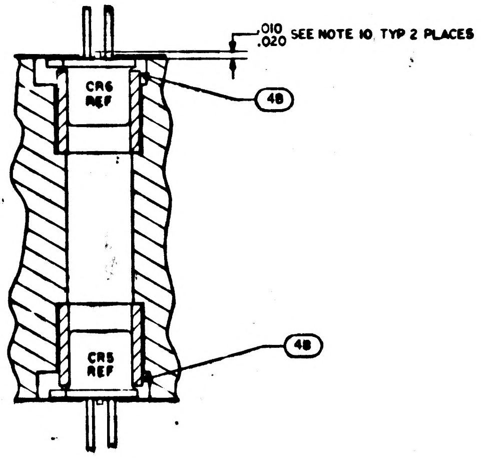
VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO. 39, FIND NO. 48 AND FIND NO. 49 PER ND 1002009
10. ON CR5 AND CR6 CUT PIN NO. 2, .010/.020 ABOVE CASE
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO. 46 AND FIND NO. 47 PER ND.____


.000 .015
41
37
.000 .015

SECTION G-G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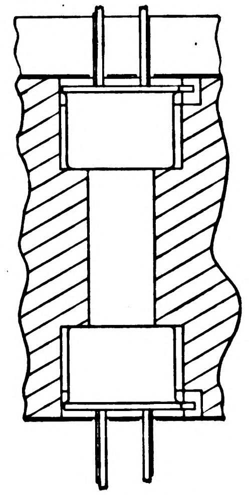
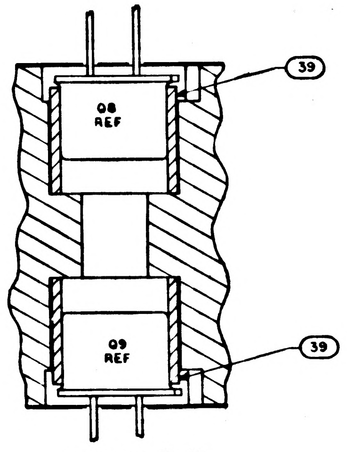
CR5 REF
48

SECTION F-F



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33


39
Q8 REF
Q9 REF
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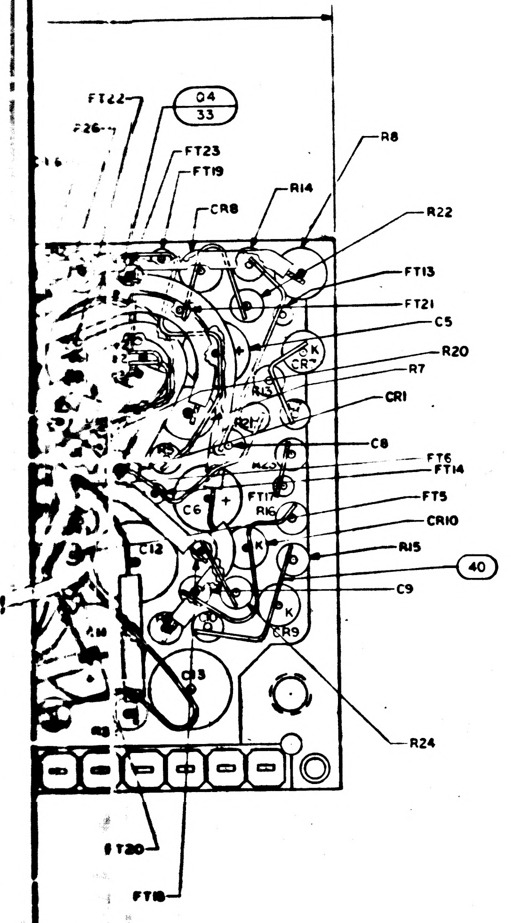
SECTION D-D

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007016 E

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00411		
A	CHANGED PER TDRR 00717	4-3-63	OT. WK
B	REVISED PER TDRR 01013	4-25-63	DT WK.
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	DT. WK
E	REVISED PER TDRR 01855	5 20 63	D.T. WK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F26
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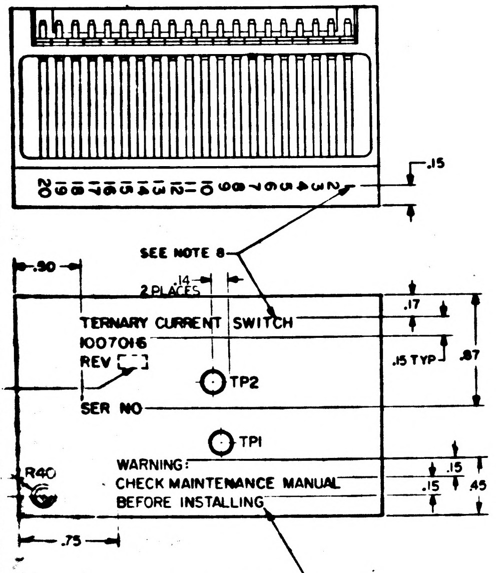
FT23
FT19
CR8
R14
R8
R22
FT13
FT21
C5
R20
R7
CR1
C8
FT6
FT14
FT5
CR10
R15
40
C9
R24
K
CR7
R13
R21
C6
FT17
R16
C12
C13
CR9
FT20
FT18


.15
SEE NOTE 8
.90
.14
2 PLACES
TERNARY CURRENT SWITCH
1007016
REV
SER NO
TP2
TP1
.17
.15 TYP
.87
R40
.18
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.15
.45
.75
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	F. ID No.
⨯	1010016	SCHEMATIC	REF
2	1006750-1	RESISTOR, FIXED MF 51, 1/4W ± 5%	49
6	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010292-2	TEST POINT	36
2	1010386	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-1	TRANSISTOR	33
1	1010269	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
2	1010390	DIODE	26
4	1010462	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1006750-80	RESISTOR, FIXED MF, 100K 1/4W ±2%	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1010369-92	RESISTOR, FIXED COMP, 300K 1/8W ±5%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-44	RESISTOR, FIXED MF, 3.3K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
8	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//— DECIMALS ± .03 ANGLES ± —//—
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN J. F. Sayer DATE 29 JAN 63
CHECKED E. P. Humphrey 15 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

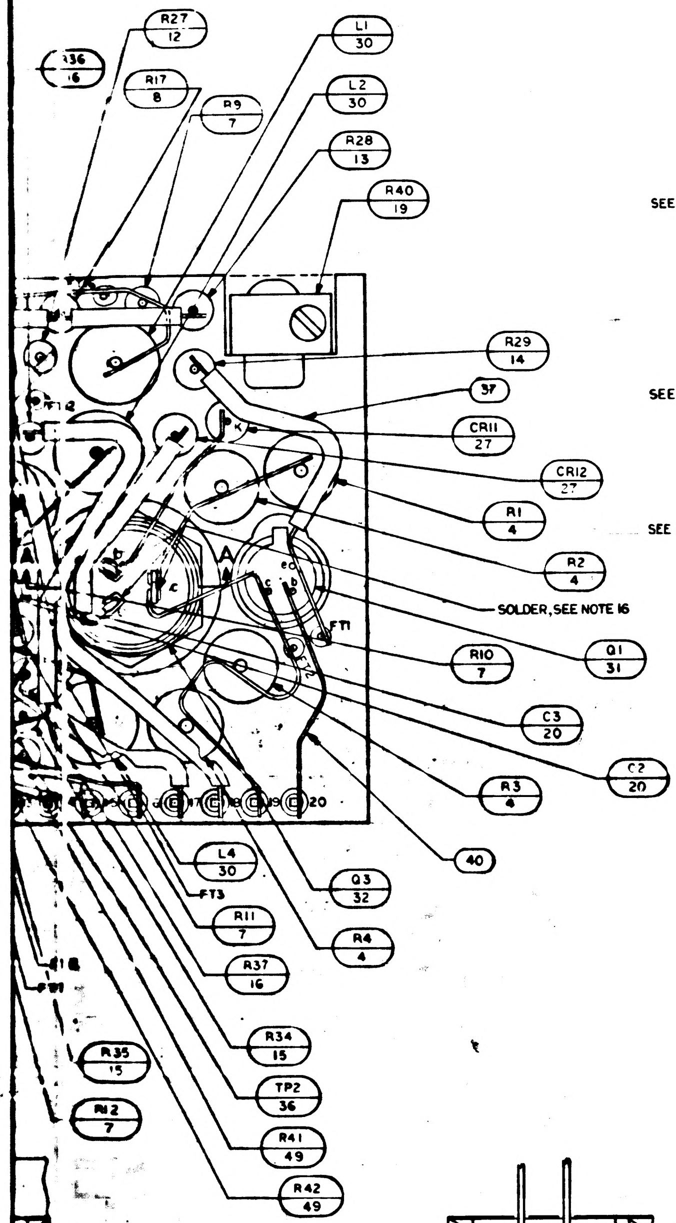
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH,
COMPUTER OUTPUT,
ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007016
SCALE 5/1 WT SHEET 1 OF 1

J 1007016 E

⑥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R9 7
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L2 30
R28 13
R40 19
R29 14
37
CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
Q1 31
R10 7
C3 20
C2 20
R3 4
40
Q3 32
R4 4
L4 30
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R42 49
R35 15
R12 7
FT1
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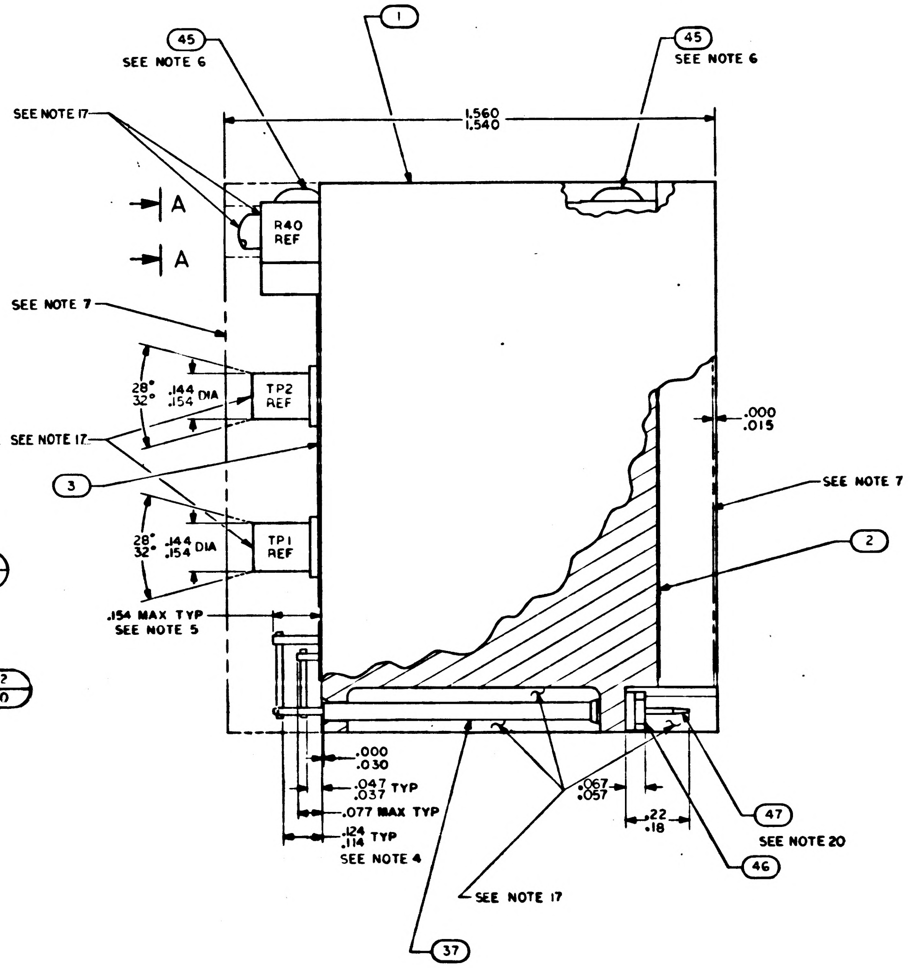
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SEE NOTE 6
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SEE NOTE 6
SEE NOTE 17
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SEE NOTE 7
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.154 DIA
TP2 REF
SEE NOTE 17
3
TP1 REF
.154 MAX TYP
SEE NOTE 5
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.015
SEE NOTE 7
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.000
.030
.047
.037 TYP
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.114 TYP
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SEE NOTE 20
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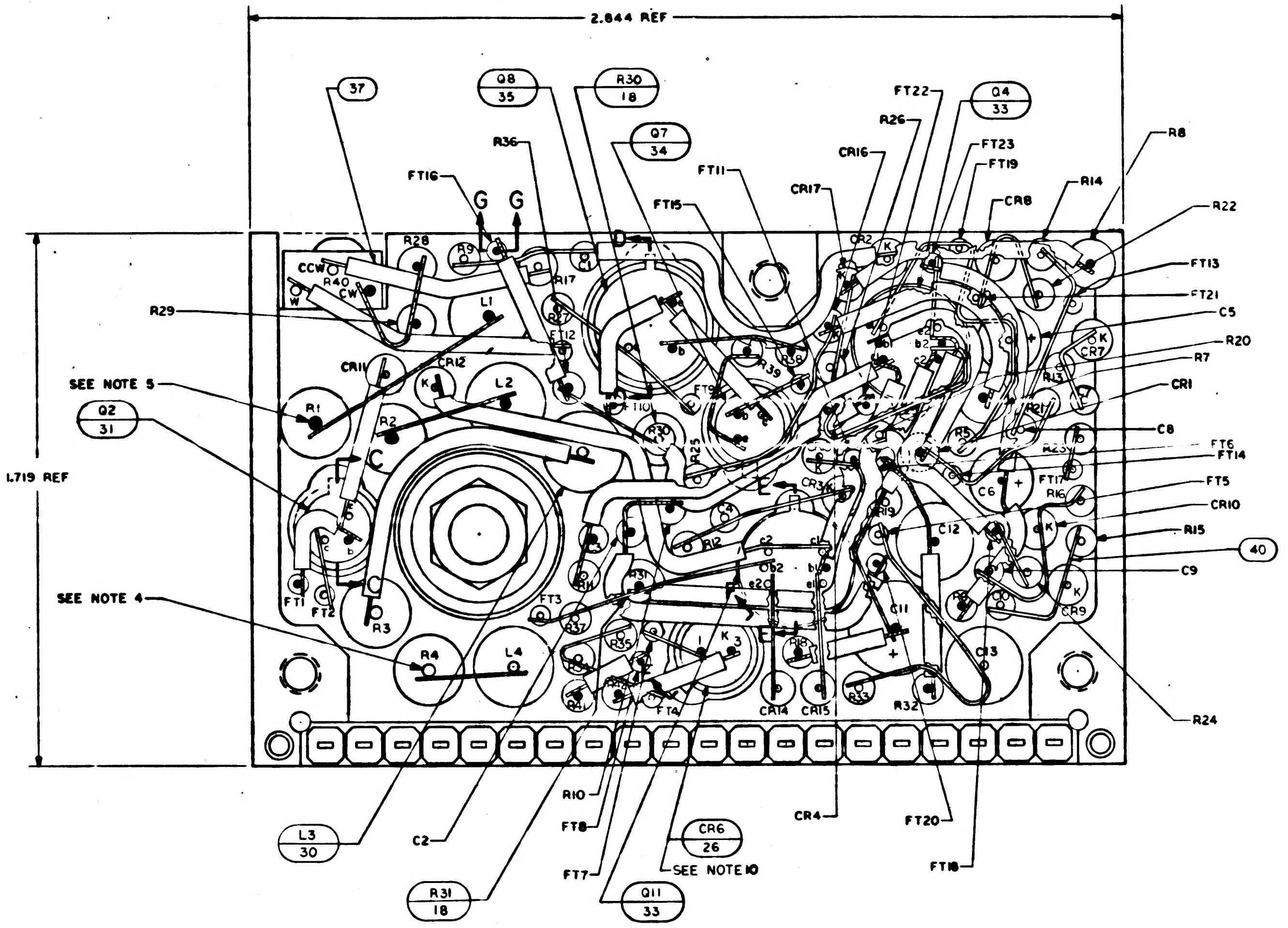
SEE NOTE 17
37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CR17
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CR8
R14
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R22
FT13
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C5
R20
R7
CR1
R29
CCW
CW
R40
R28
R9
R17
L1
CR11
CR12
L2
1.719 REF
SEE NOTE 5
Q2 31
R1
R2
C
D
E
C8
FT6
FT14
FT5
CR10
R15
40
C9
SEE NOTE 4
R3
FT1
FT2
FT3
R4
L4
C12
C11
C13
CR9
R24
R32
CR14
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C2
R10
FT8
FT7
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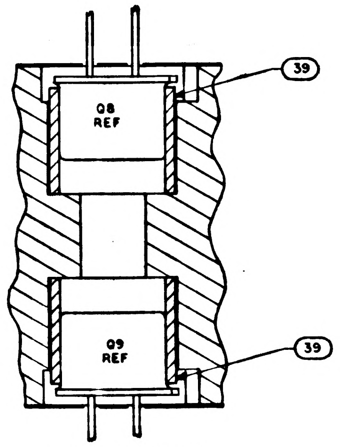
CR6 26
SEE NOTE 10
Q11 33
CR4
FT20
FT18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Q8 REF
Q9 REF
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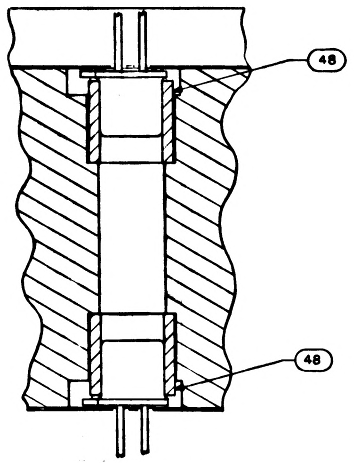
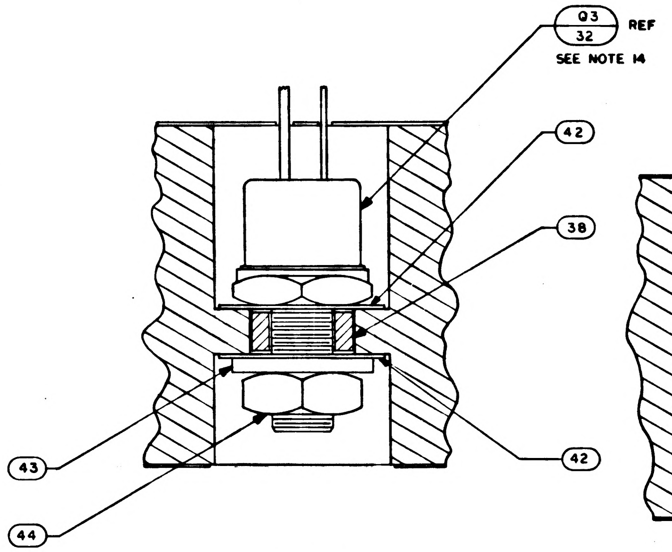
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 31 AND 34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SEE NOTE 14
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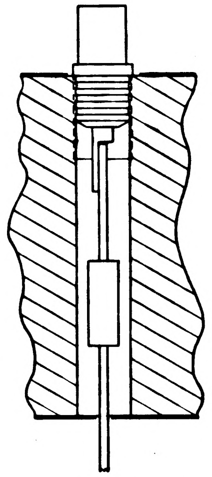
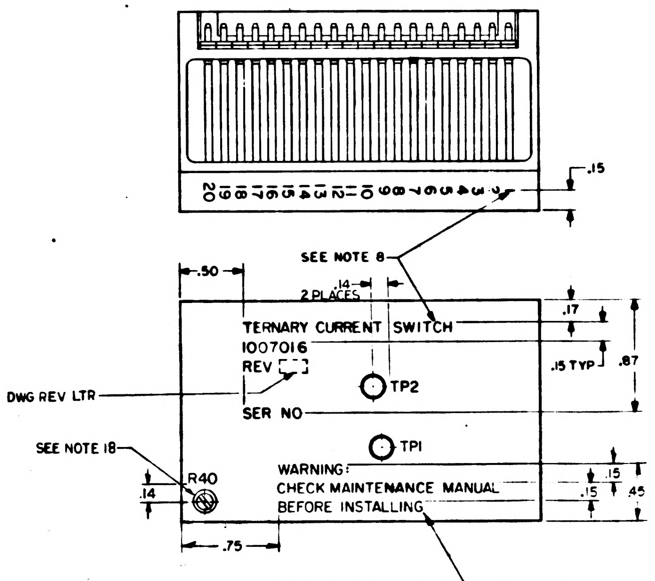
38
43
44
42

SECTION A-A



SECTION B-B
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 36 AND 18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SEE NOTE 8
.50
.14
2 PLACES
TERNARY CURRENT SWITCH
1007016
REV
SER NO
TP2
TP1
DWG REV LTR
.17
.15 TYP
.87
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.15
.45
.75
SEE NOTE 15

MARKING VIEW
SCALE 2/1

1007102
1007101
NEXT ASSY
APPLICATION

INCHES
PHOTOGRAPHIC SCALE ONLY

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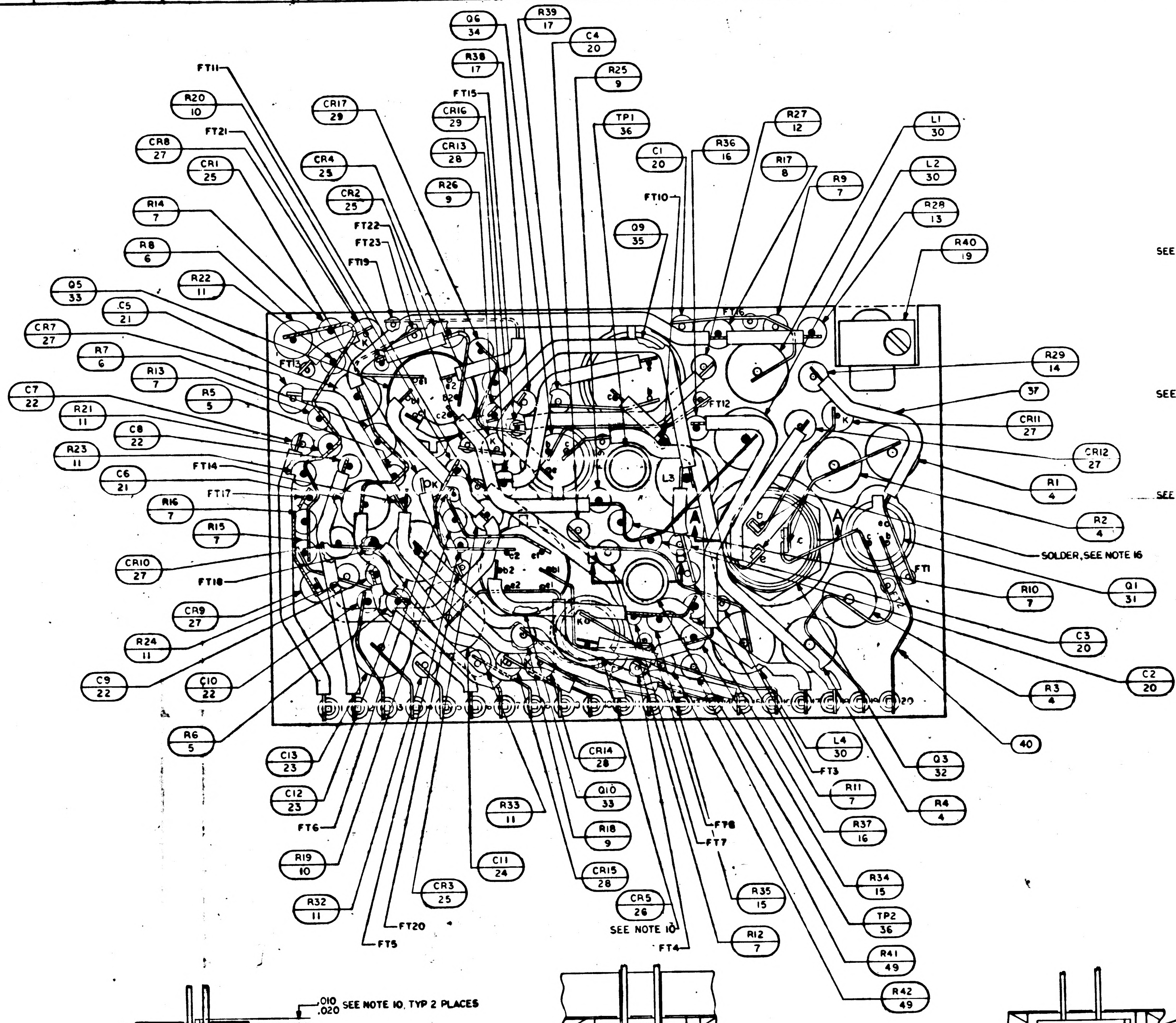
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C4 20
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FT11
FT15
R20 10
CR17 29
CR16 29
TP1 36
R27 12
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FT21
CR13 28
C1 20
R36 16
CR8 27
CR1 25
CR4 25
R17 8
L2 30
R26 9
R9 7
CR2 25
FT10
R14 7
FT22
R28 13
FT23
Q9 35
R8 6
FT19
R40 19
R22 11
Q5 33
C5 21
FT16
CR7 27
R7 6
FT13
R13 7
R29 14
37
C7 22
R5 5
FT12
R21 11
CR11 27
C8 22
K
R23 11
CR12 27
FT14
C6 21
L3
R1 4
FT17
R16 7
R2 4
A
R15 7
SOLDER, SEE NOTE 16
CR10 27
FT1
R10 7
Q1 31
FT18
CR9 27
C3 20
R24 11
C2 20
C9 22
C10 22
R3 4
20
R6 5
40
L4 30
C13 23
CR14 28
Q3 32
FT3
R11 7
C12 23
Q10 33
R33 11
R4 4
R18 9
FT8
FT7
R37 16
FT6
C11 24
R19 10
CR15 28
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FT4
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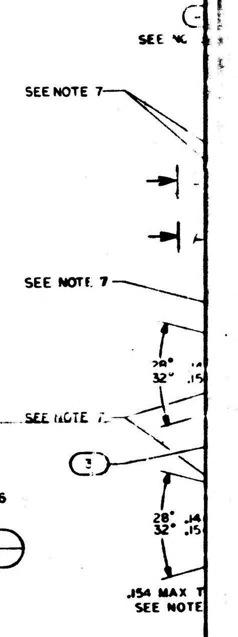
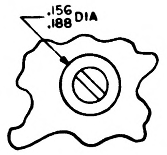
FT5
R42 49

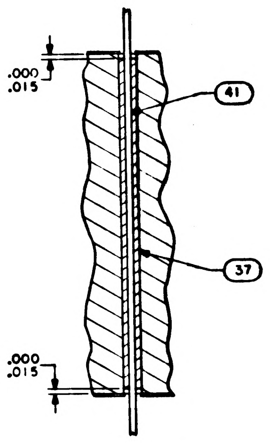

SEE NOTE 7
SEE NOTE 7
SEE NOTE 7
.154 MAX
SEE NOTE



VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND. MIL-S-40083 CLASS 31
   TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO.39, FIND NO.48 AND FIND NO.49 PER ND 1002009
10. ON CR5 AND CR6 CUT PIN NO. 2, .010/.020 ABOVE CASE
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS
    OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND.____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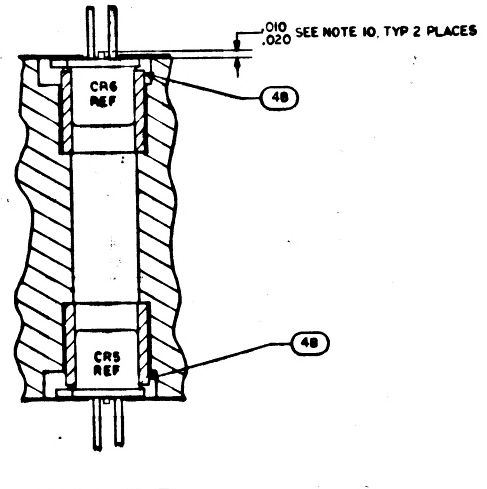
SECTION G-G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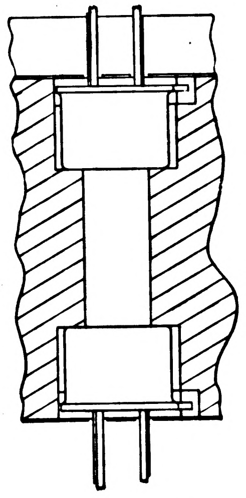
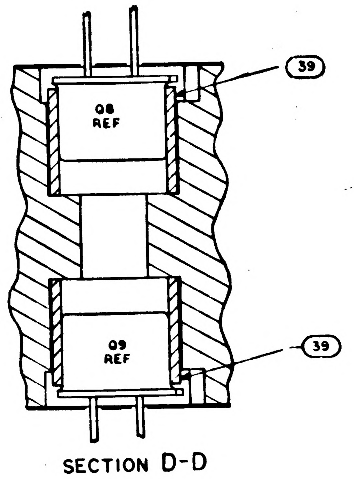
.020 SEE NOTE 10, TYP 2 PLACES
CR6 REF
48
CR5 REF
48

SECTION F-F



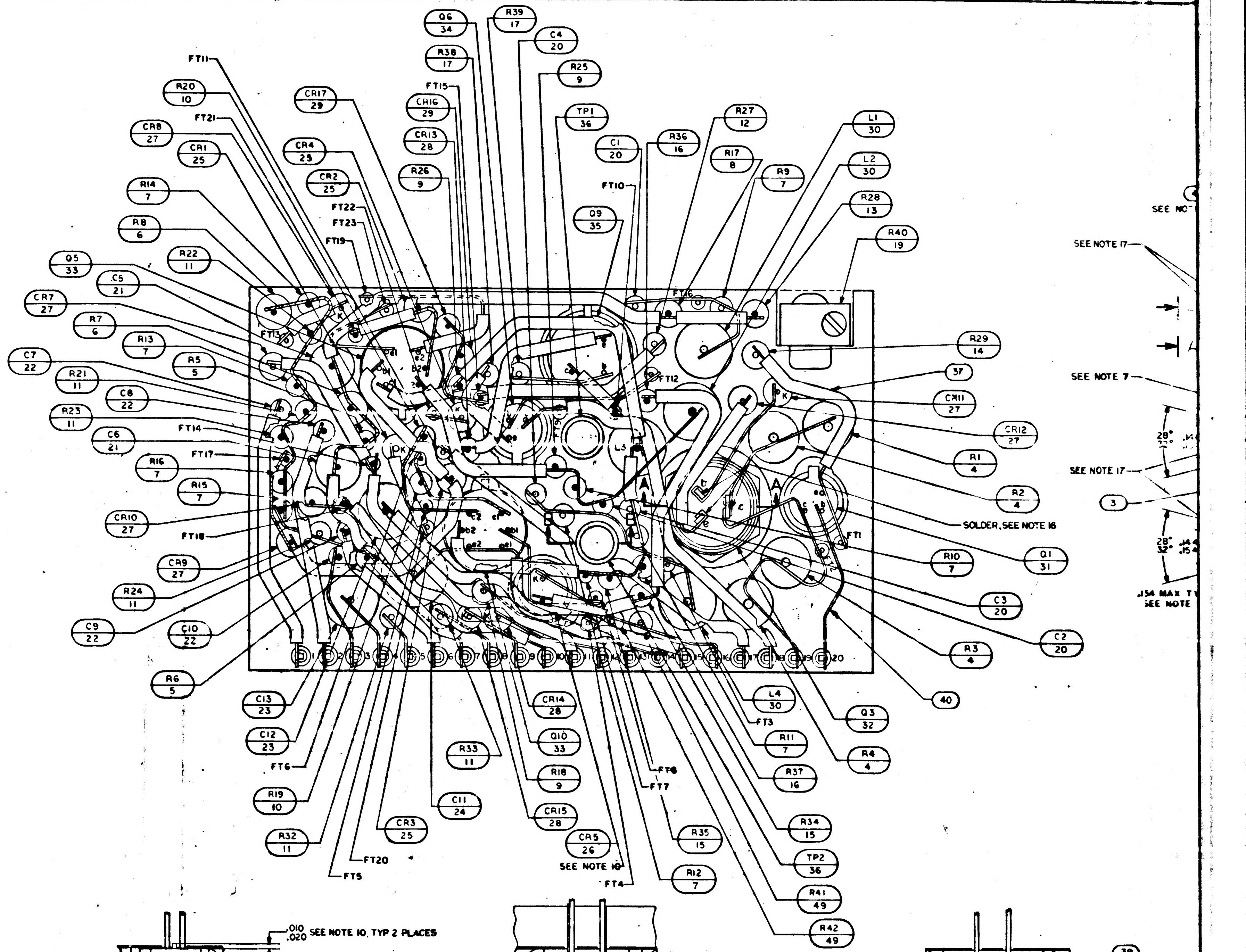
SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 33


39
Q8 REF
Q9 REF
39

SECTION D-D

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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R39 17
C4 20
R38 17
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FT11
FT15
R20 10
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CR16 29
TP1 36
R27 12
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FT21
CR13 28
C1 20
R36 16
CR8 27
CR1 25
CR4 25
R17 8
L2 30
R26 9
R9 7
CR2 25
FT10
R14 7
FT22
FT23
Q9 35
R28 13
R8 6
FT19
R40 19
Q5 33
R22 11
C5 21
CR7 27
FT16
R7 6
FT13
R13 7
R29 14
C7 22
R5 5
37
R21 11
FT12
CR11 27
C8 22
CR12 27
R23 11
FT14
C6 21
R1 4
FT17
R16 7
PK
A
R2 4
R15 7
SOLDER, SEE NOTE 18
CR10 27
FT18
FT1
R10 7
Q1 31
CR9 27
C3 20
R24 11
C9 22
C10 22
R3 4
C2 20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
R6 5
40
C13 23
CR14 28
L4 30
Q3 32
C12 23
Q10 33
FT3
R11 7
R4 4
FT6
R33 11
R18 9
FT8
R37 16
FT7
R19 10
C11 24
CR15 28
R34 15
CR3 25
R35 15
TP2 36
R32 11
CR5 26
FT20
SEE NOTE 10
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FT4
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FT5
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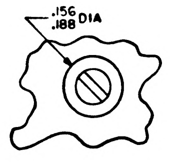
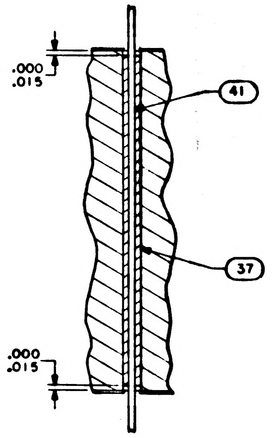
SEE NOTE 17
SEE NOTE 7
SEE NOTE 17
3
28° 32°
.134 MAX TYP SEE NOTE



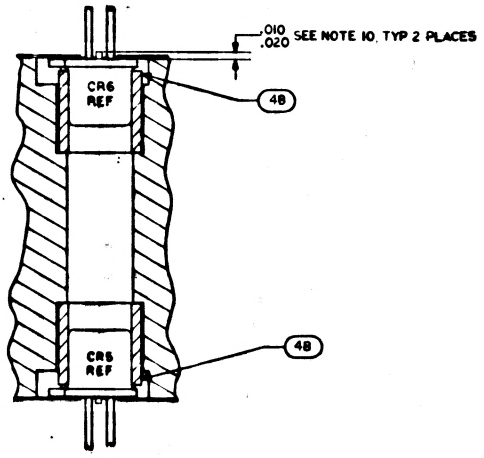
VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND. MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO.39, FIND NO.48 AND FIND NO.49 PER ND 1002009
10. ON CR5 AND CR6 CUT PIN NO. 2, .010/.020 ABOVE CASE
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND.____


.000 .015
41
37
.000 .015

SECTION G-G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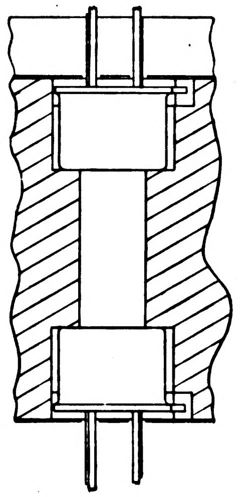
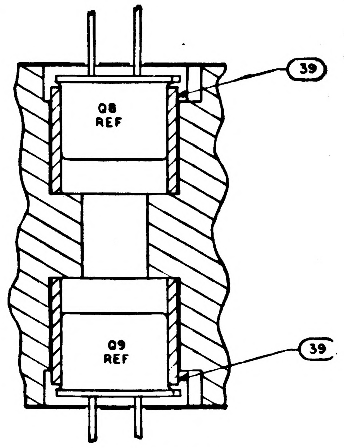
CR5 REF
48

SECTION F-F



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33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Q9 REF
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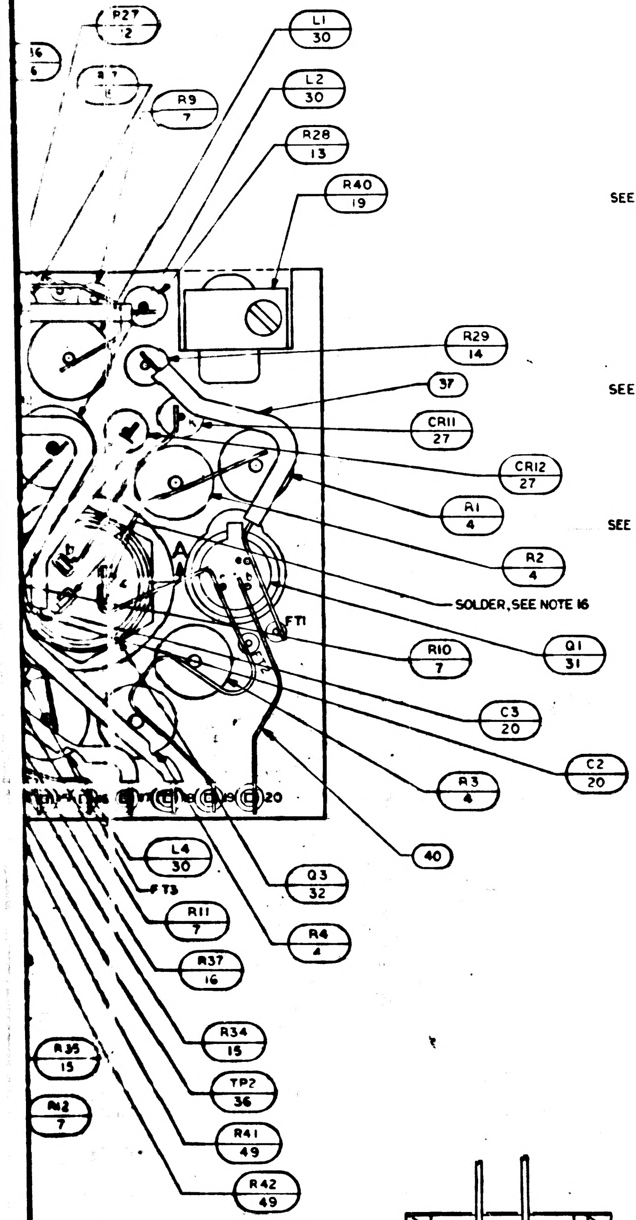
SECTION D-D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CR12
27
R1
4
R2
4
SOLDER, SEE NOTE 16
Q1
31
R10
7
C3
20
C2
20
R3
4
40
FT1
Q3
32
L4
30
FT3
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R42
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R35
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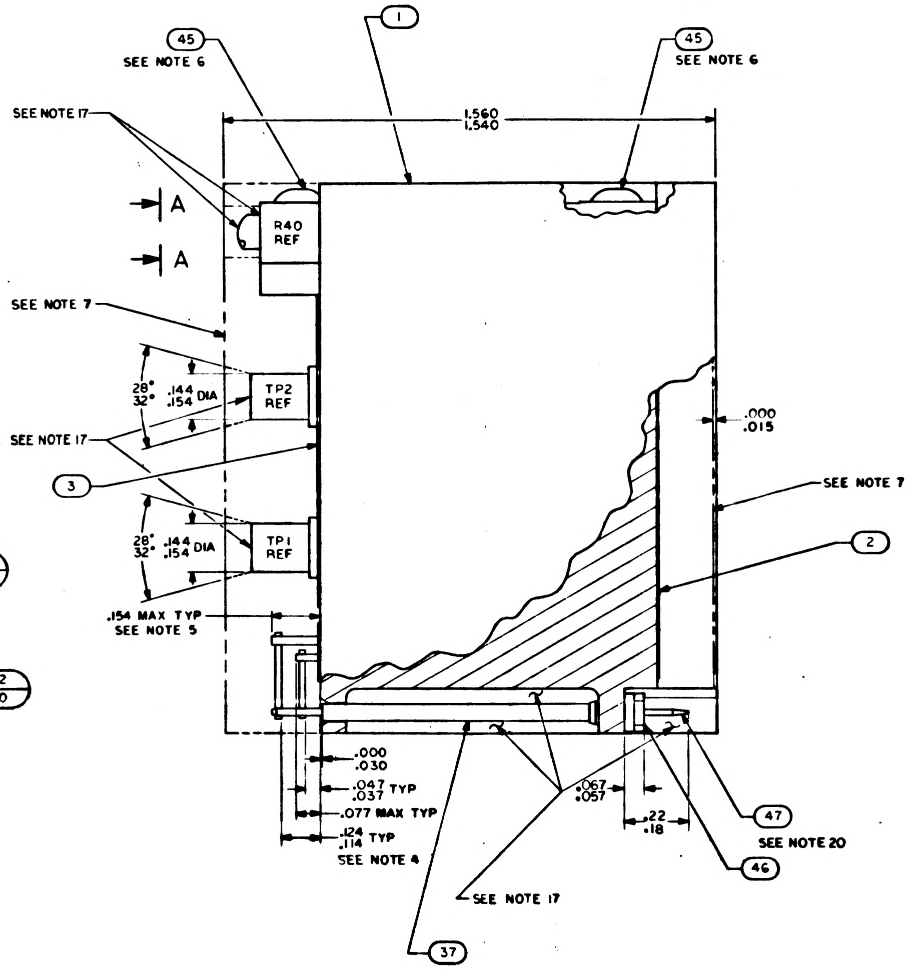
R12
7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SEE NOTE 6
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.154 DIA
TP2
REF
.000
.015
SEE NOTE 17
3
SEE NOTE 7
28°
32°
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TP1
REF
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SEE NOTE 5
.000
.030
.047
.037 TYP
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SEE NOTE 20
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SEE NOTE 17
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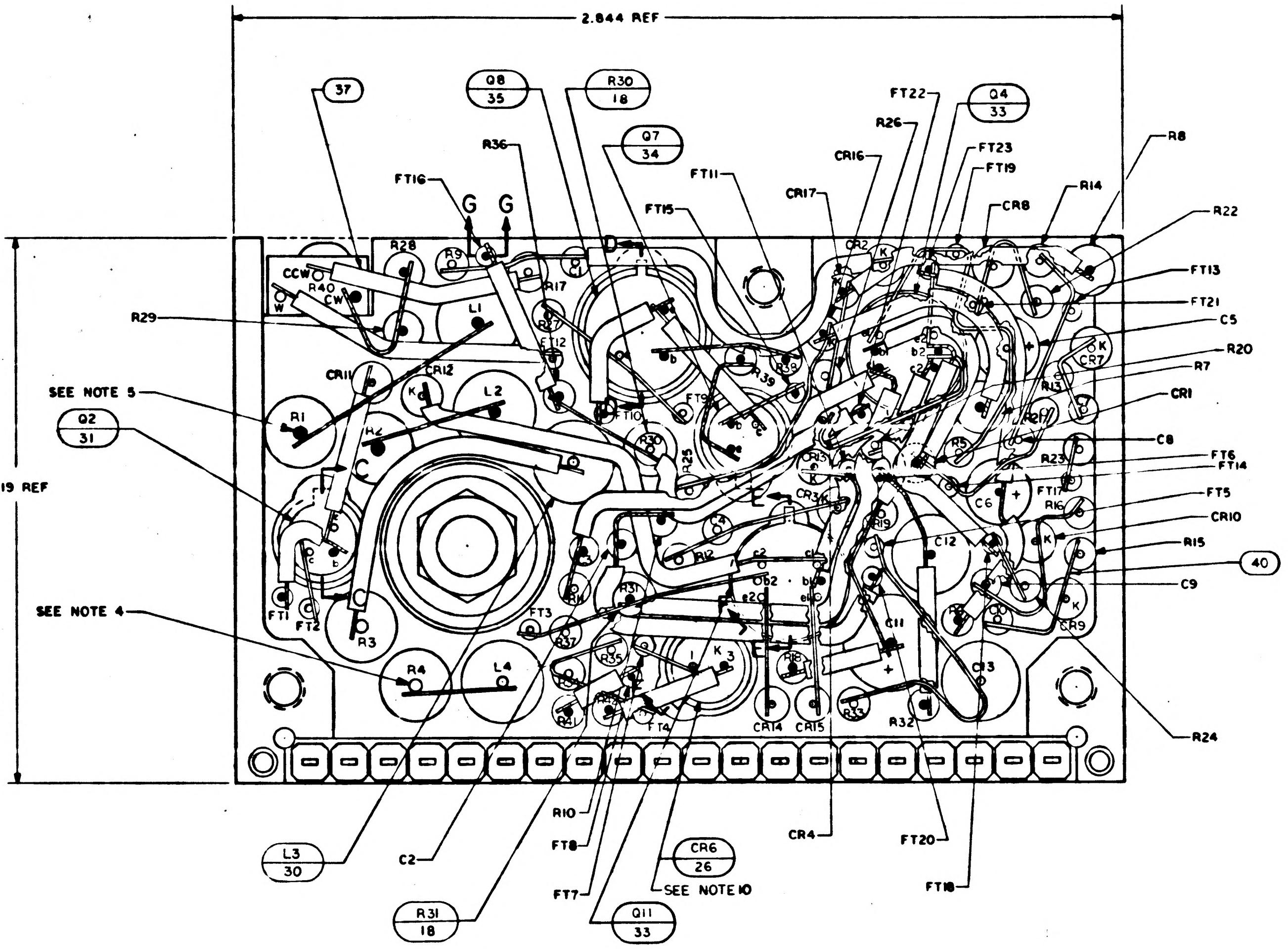
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Q7
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R36
FT16
G
G
FT15
FT11
CR17
CR16
R26
FT22
Q4
33
FT23
FT19
CR8
R14
R8
R22
R28
R9
R17
CCW
R40
CW
W
R29
L1
FT12
FT13
FT21
C5
R20
R7
CR1
C8
FT6
FT14
FT5
CR10
R15
40
C9
CR9
R24
SEE NOTE 5
Q2
31
1.719 REF
CR11
CR12
L2
R1
FT10
R39
FT9
R25
R13
R21
R23
FT17
R16
C6
C12
R19
SEE NOTE 4
R3
FT1
FT2
R4
L4
FT3
R37
R31
R35
R34
R33
C11
C13
CR14
CR15
R32
FT4
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CR6
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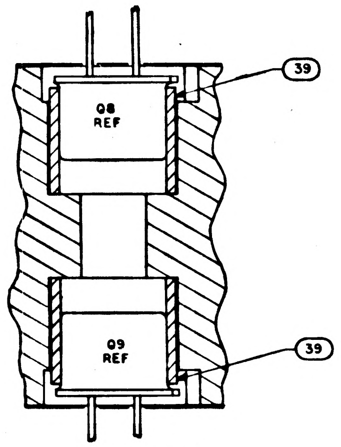
SEE NOTE 10
Q11
33
CR4
FT20
FT18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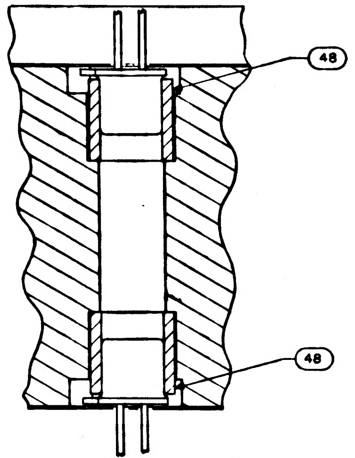
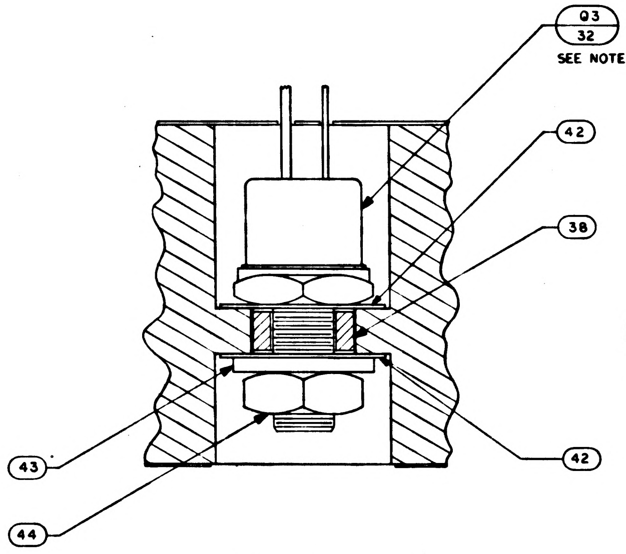
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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SEE NOTE 14
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44
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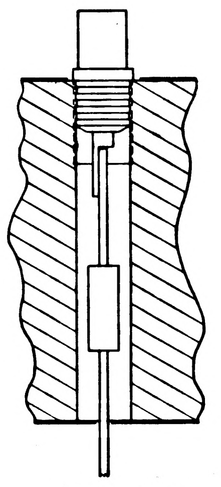
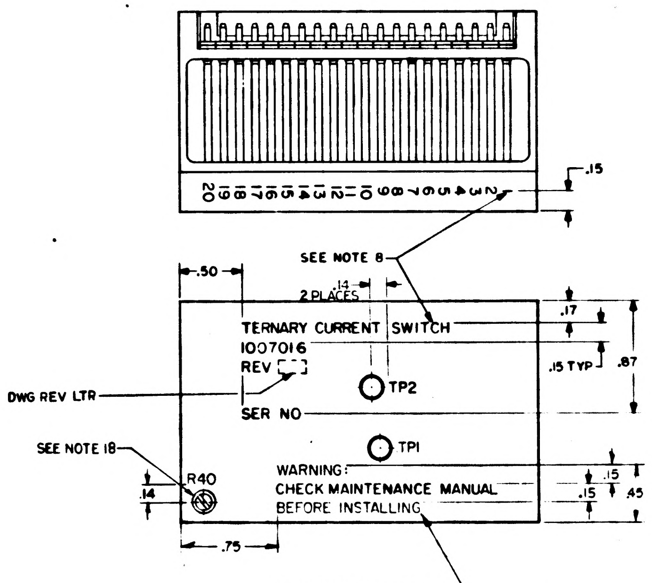
SECTION A-A



SECTION B-B
2 PLACES
TYPICAL INSTALLATION
FOR FIND NO. 36 AND 18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.15
SEE NOTE 8
.50
.14
2 PLACES
.17
.15 TYP
.87
DWG REV LTR
TP2
TP1
SEE NOTE 18
R40
.14
.15
.15
.45
.75
SEE NOTE 15

TERNARY CURRENT SWITCH
1007016
REV
SER NO
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

MARKING VIEW
SCALE 2/1

NEXT ASSY	USED ON
1007102	
1007101	

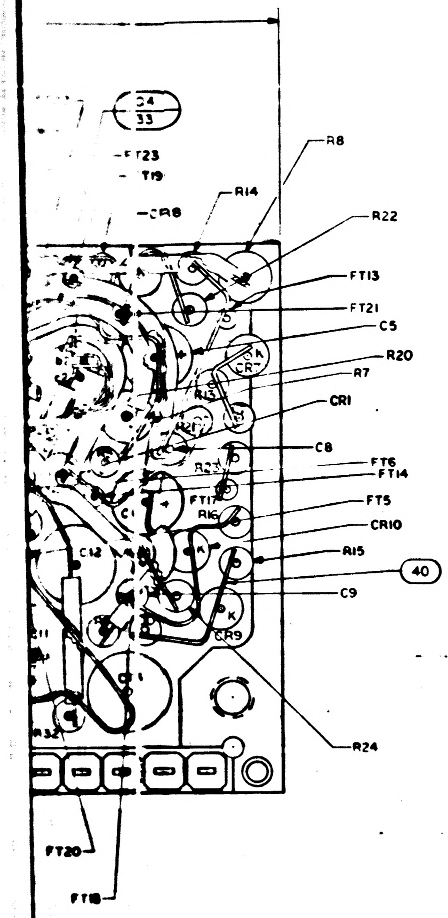
APPLICATION

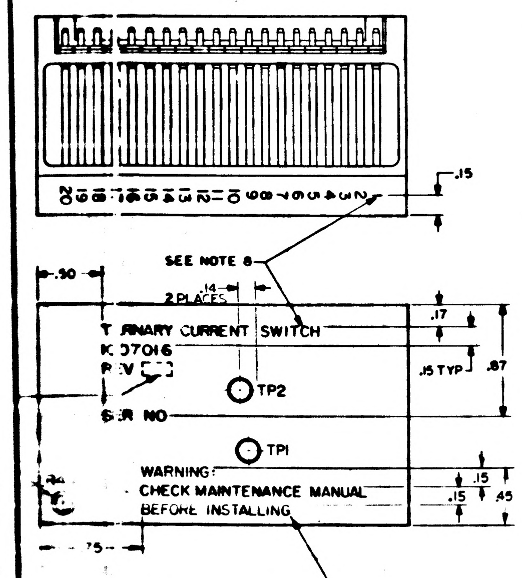
INCHES
PHOTOGRAPHIC SCALE ONLY

	1007016	F

REVISIONS TDRR00411

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00777	4-3-63	O.T. WK
B	REVISED PER TDRR 01013	4-25-63	O.T. WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	O.T. WK
E	REVISED PER TDRR 01355	5 20 63	O.T. WK
F	REVISED PER TDRR 01616	6-10-63	RPK WK





MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010016	SCHEMATIC	REF
2	1006750-1	RESISTOR, FIXED MF 51, 1/4W ± 5%	49
6	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010292-2	TEST POINT	36
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-1	TRANSISTOR	33
1	1010269	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
2	1010390	DIODE	26
4	1010462	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1006750-80	RESISTOR, FIXED MF, 100K 1/4W ±2%	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1010369-92	RESISTOR, FIXED COMP, 300K 1/8W ±5%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-44	RESISTOR, FIXED MF, 3.3K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
8	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//— DECIMALS ± .03 ANGLES ± —//—
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN J. F. Sayer DATE 29 JAN 63
CHECKED R. P. Kingsley 11 FEB 63
APPROVAL A. R. ... 11 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007016
SCALE 5/1 | WT | SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

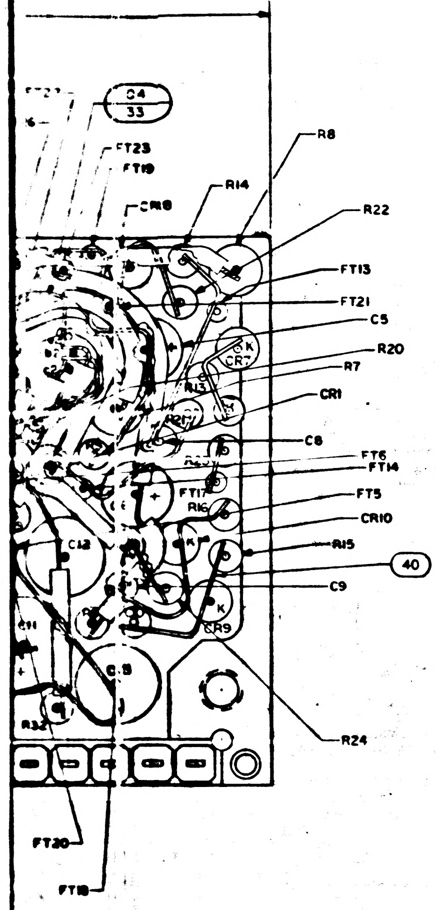
F3

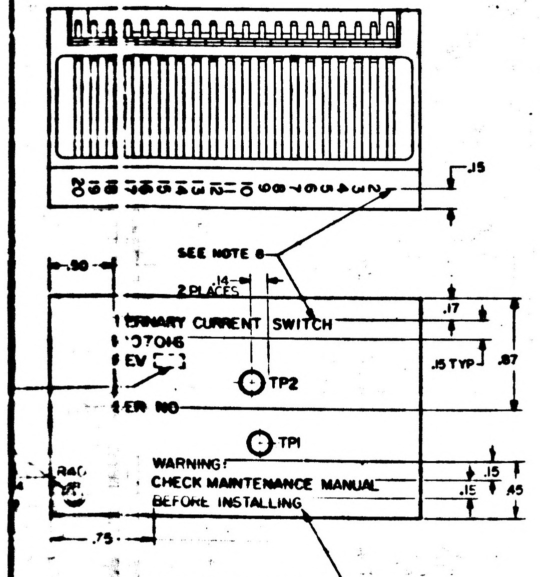
1007016

1007016 G

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00777	4-3-63	O.T. WK
B	REVISED PER TDRR 01013	[illegible]	O.T. WK.
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	O.T. WK
E	REVISED PER TDRR 01855	5-20-63	O.T. WK
F	REVISED PER TDRR 01616	6-6-63	R.P.K. WK.
G	REVISED PER TDRR 01716	6-26-63	R.P.K. WK

REVISIONS TDRR 00411





MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010016	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-1	RESISTOR, FIXED MF 51, 1/4W ±5%	49
6	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010292-2	TEST POINT	36
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-1	TRANSISTOR	33
1	1010269	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
2	1010390	DIODE	26
4	1010462	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-18	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1006750-80	RESISTOR, FIXED MF, 100K 1/4W ±2%	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1010369-92	RESISTOR, FIXED COMP, 300K 1/8W ±5%	16
2	1006750-58	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-44	RESISTOR, FIXED MF, 3.3K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
8	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

MASTER

1007102	
1007101	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN J. F. Sayer DATE 29 MAR 63
CHECKED R. P. Kingsbury 18 APR 63
APPROVAL D. G. Hoag 18 APR 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

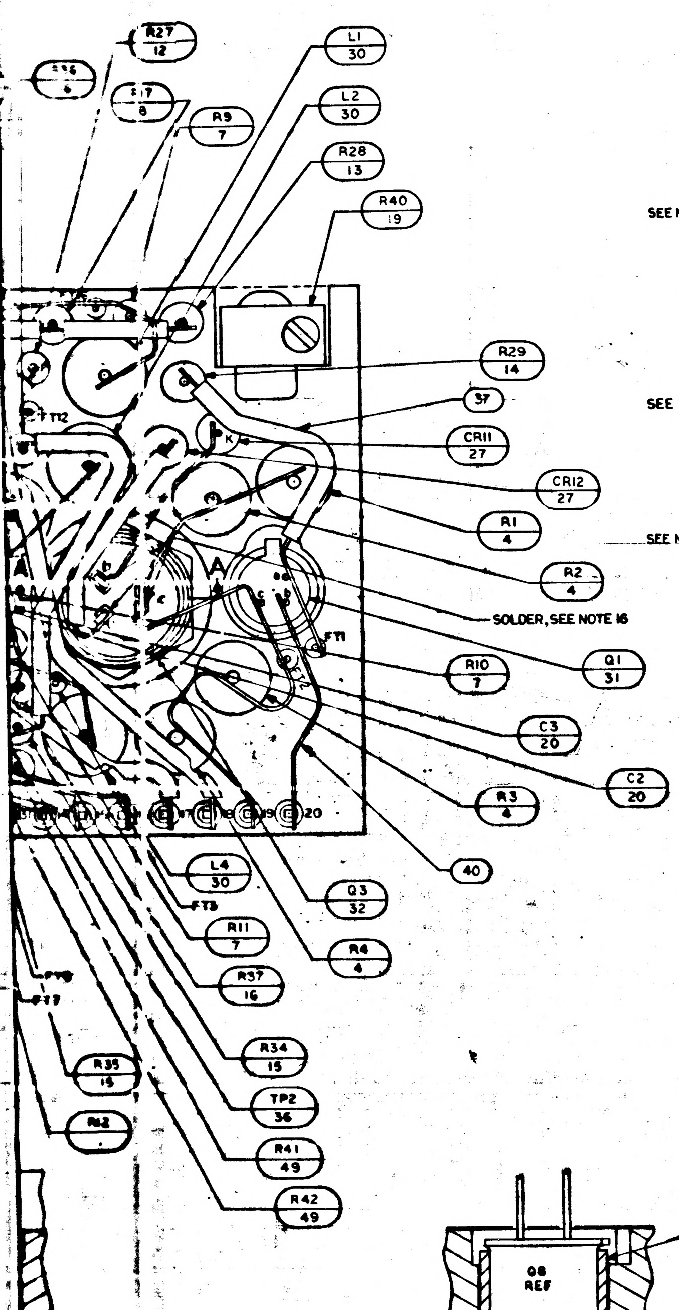
TERNARY CURRENT SWITCH,
COMPUTER OUTPUT,
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007016
SCALE 3/1
WT
SHEET 1 OF 1

J 1007016 G

INCHES
PHOTOGRAPHIC SCALE ONLY

E3 1007016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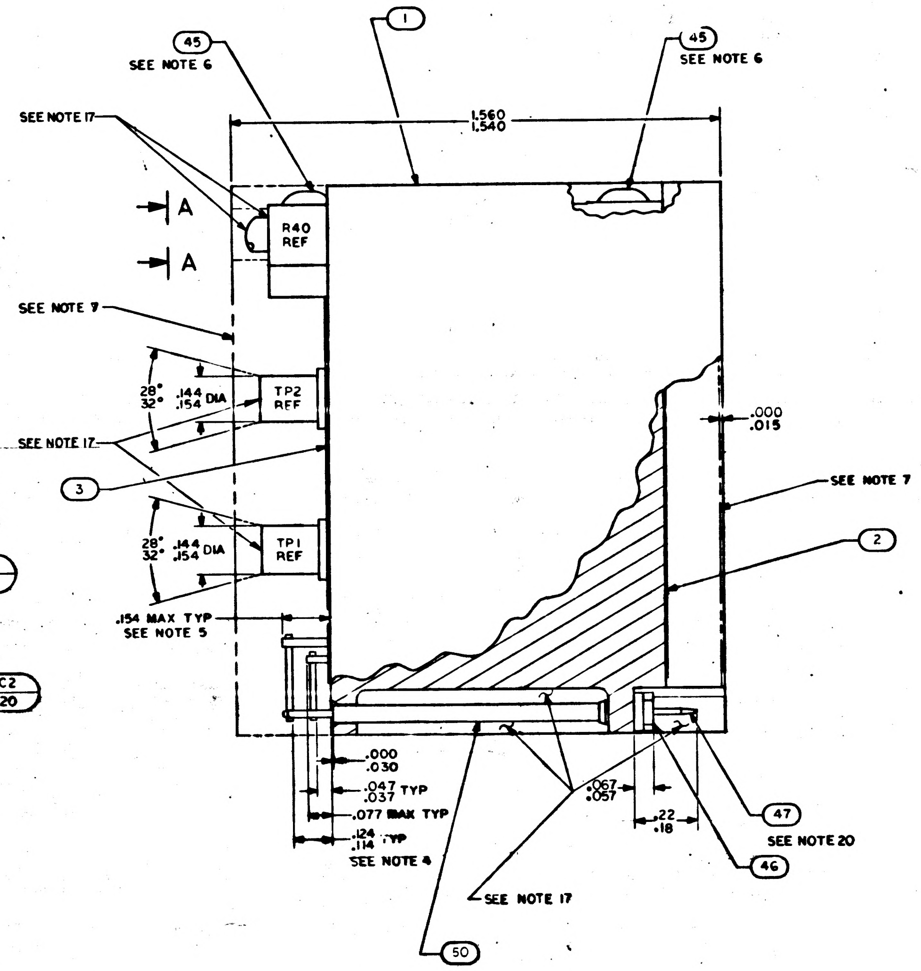
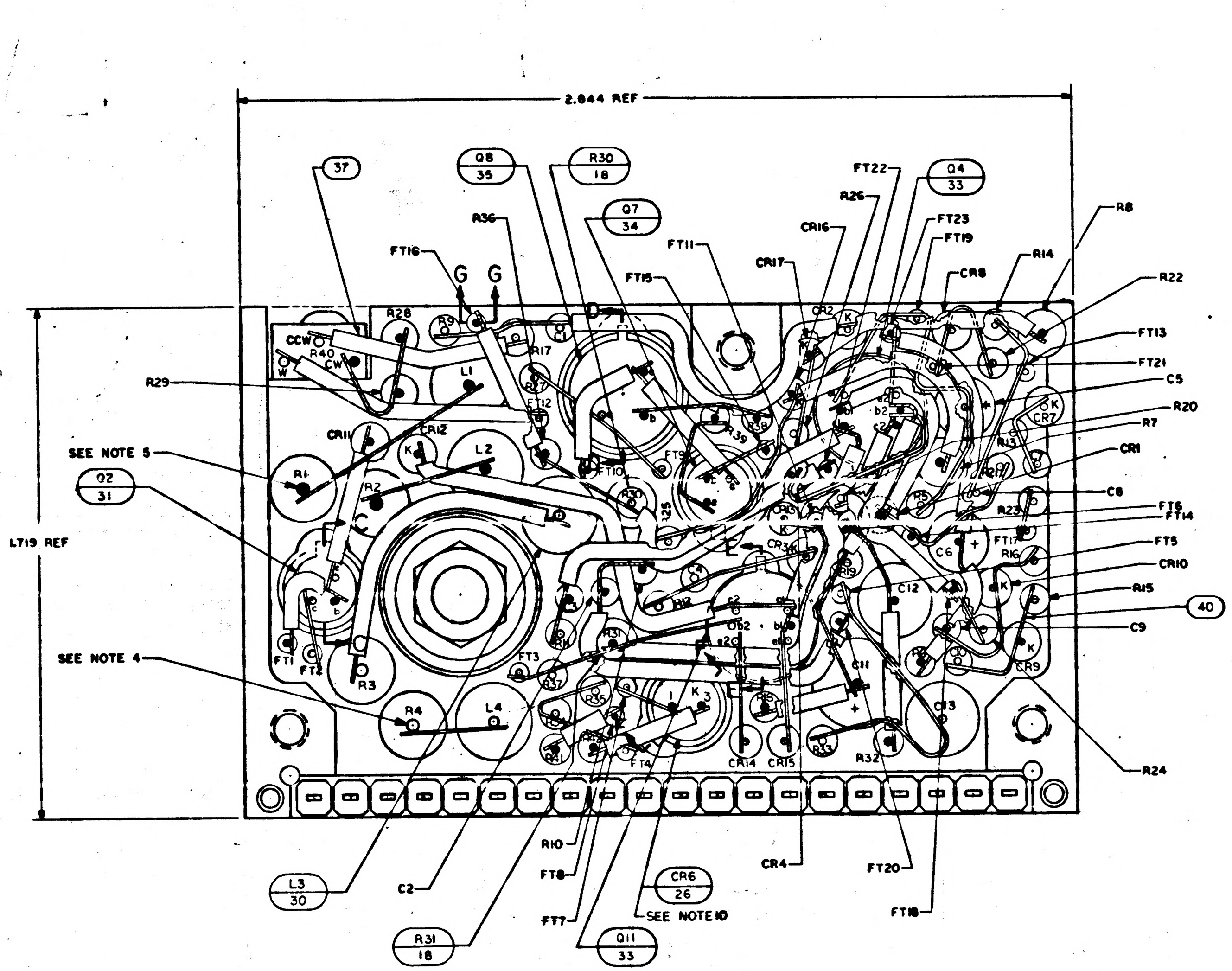
R9 7
L2 30
R28 13
R40 19
R29 14
37
CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
Q1 31
R10 7
C3 20
C2 20
R3 4
40
Q3 32
R6 4
L4 30
FT3
R11 7
R37 16
R34 15
TP2 36
R41 49
R42 49
R35 15
FT12
FT1
A
K


45
SEE NOTE 6
1
45
SEE NOTE 6
SEE NOTE 17
A
A
R40 REF
1.560
1.540
SEE NOTE 7
28°
32°
.144
.154 DIA
TP2 REF
SEE NOTE 17
3
TP1 REF
.154 MAX TYP
SEE NOTE 5
.000
.015
SEE NOTE 7
2
.000
.030
.047 TYP
.037
.077 MAX TYP
.124
.114 TYP
SEE NOTE 4
.067
.057
.22
.18
47
SEE NOTE 20
46
SEE NOTE 17
50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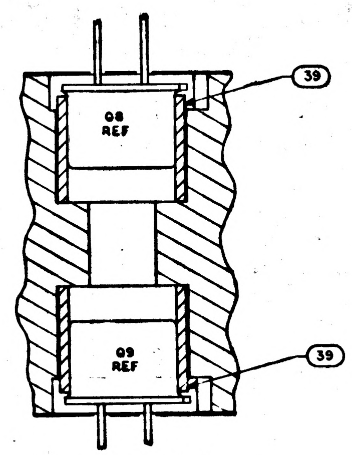
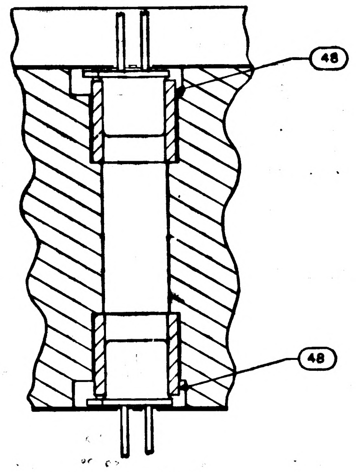
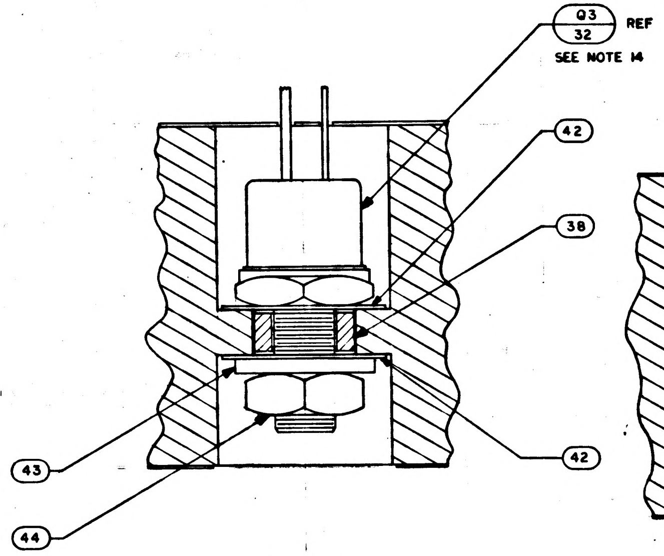
37
Q8 35
R30 18
Q7 34
Q4 33
FT22
R26
FT23
FT19
R8
R36
CR16
CR17
FT16
G
G
FT15
FT11
R14
R22
CCW
CW
R40
R28
R29
L1
FT13
FT21
C5
R20
R7
CR1
C8
FT6
FT14
FT5
CR10
R15
40
C9
SEE NOTE 5
Q2 31
R1
CR11
CR12
L2
R2
C12
C6
C11
C13
SEE NOTE 4
R4
L4
R3
FT1
FT12
FT3
FT10
FT9
FT14
CR14
CR15
R32
CR9
R24
L3 30
C2
R31 18
R10
FT8
FT7
Q11 33
CR6 26
SEE NOTE 10
CR4
FT20
FT18
R23
R16
FT17
CR8
CR7
R13
CR2
R27
R17
FT12
R35
R37
R31
R33
CR3
K
E
b
c
e


Q8 REF
39
Q9 REF
39

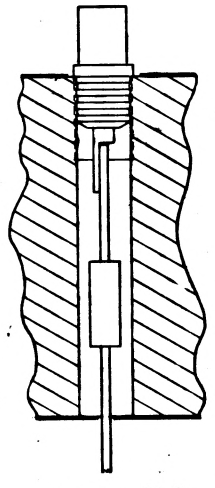
SECTION D-D



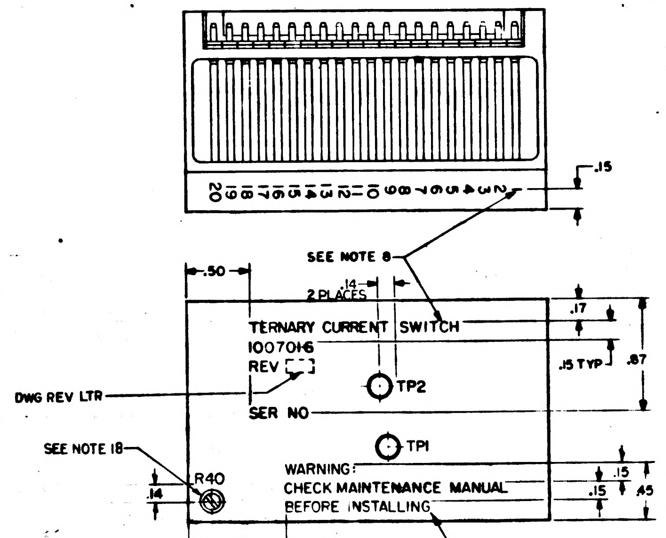
SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 31 AND 34


Q3 32 REF
SEE NOTE 14
42
38
43
42
44

SECTION A-A



SECTION B-B
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 36 AND 18


20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2
.15
SEE NOTE 8
.50
.14
2 PLACES
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
TP2
SER NO
.17
.15 TYP
.87
TP1
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.15
.45
.75

MARKING VIEW
SCALE 2/1

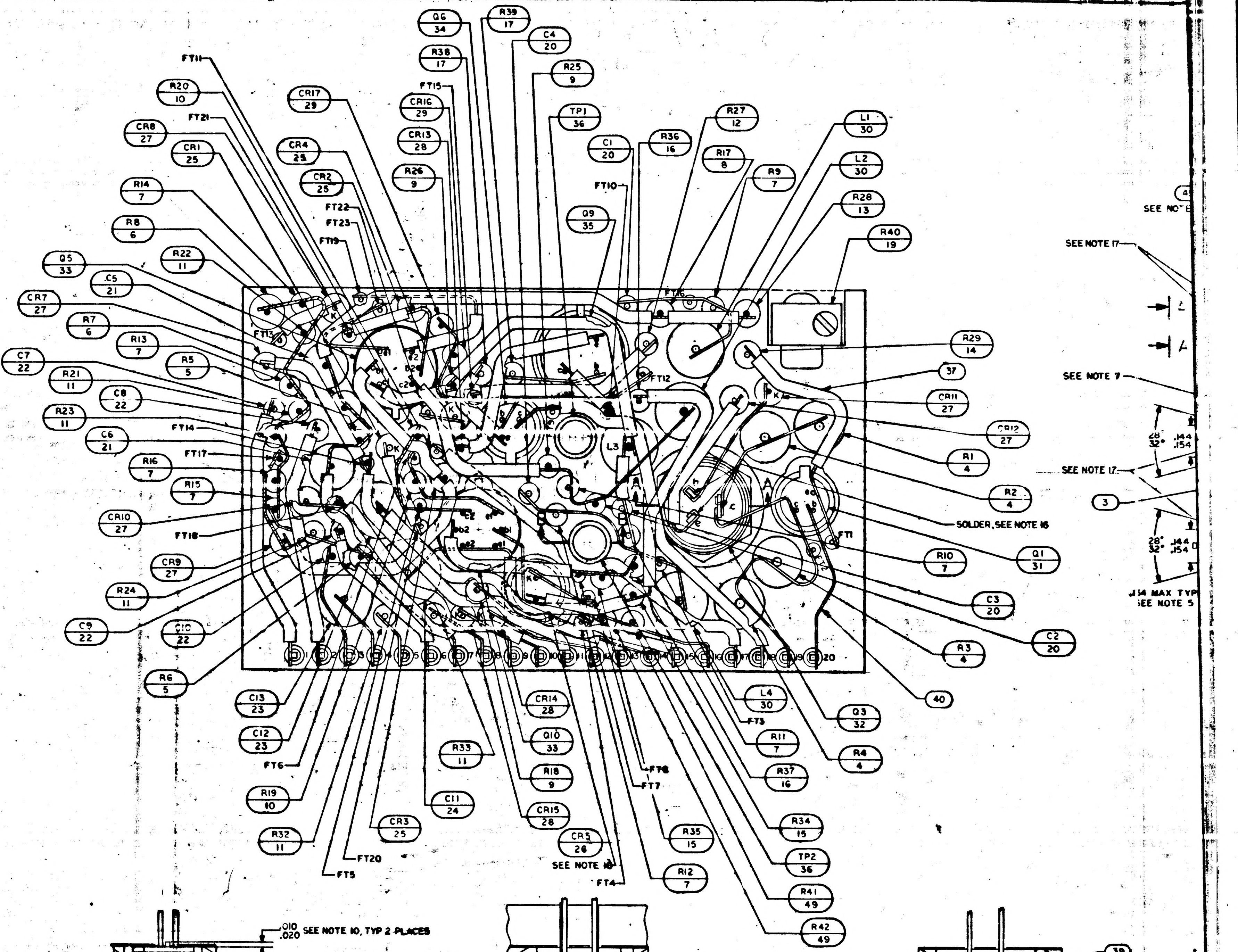
SEE NOTE 15

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

INCHES 0 1 2 PHOTOGRAPHIC SCALE ONLY

F2 1007016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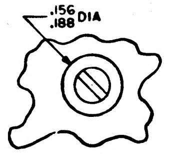
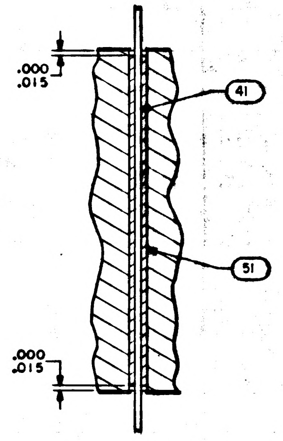
R39 17
C4 20
R38 17
R25 9
FT11
FT15
R20 10
CR17 29
CR16 29
TP1 36
R27 12
FT21
CR13 28
C1 20
R36 16
L1 30
CR8 27
CR1 25
CR4 25
R26 9
R17 8
R9 7
L2 30
CR2 25
FT10
R14 7
FT22
FT23
Q9 35
R28 13
R8 6
FT19
R40 19
Q5 33
R22 11
C5 21
CR7 27
R7 6
FT13
R13 7
R29 14
C7 22
R5 5
R21 11
FT12
37
C8 22
CR11 27
R23 11
FT14
CR12 27
C6 21
FT17
R1 4
R16 7
R2 4
R15 7
SOLDER, SEE NOTE 16
CR10 27
FT18
FT1
R10 7
Q1 31
CR9 27
R24 11
C3 20
C9 22
C10 22
C2 20
R3 4
R6 5
40
L4 30
FT3
Q3 32
C13 23
CR14 28
R11 7
C12 23
Q10 33
R4 4
R33 11
FT6
R18 9
FT8
R37 16
FT7
R19 10
C11 24
CR15 28
R34 15
CR3 25
R35 15
R32 11
CR5 26
TP2 36
FT20
SEE NOTE 18
FT5
R12 7
FT4
R41 49
R42 49
L3
K
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
SEE NOTE 17
SEE NOTE 7
SEE NOTE 17
SEE NOTE 5
3
28° 32°
.144 .154
.114 MAX TYP



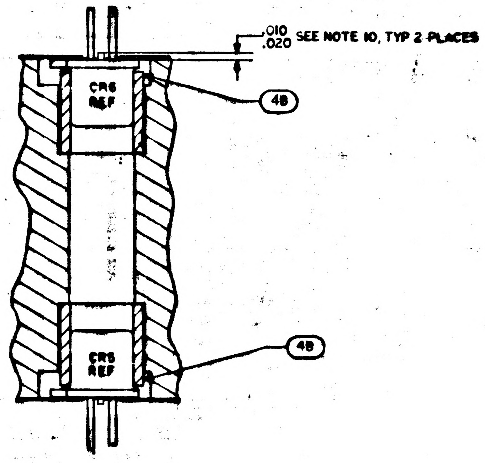
VIEW A-A

NOTES

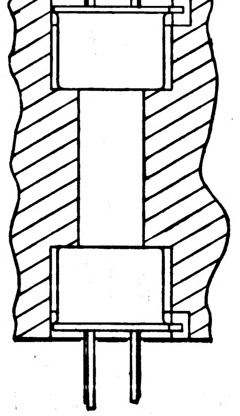
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO.39, FIND NO.48 AND FIND NO.49 PER ND 1002009
10. ON CR5 AND CR6 CUT PIN NO. 2, .010/.020 ABOVE CASE
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND._____


.000
.015
41
51
.000
.015

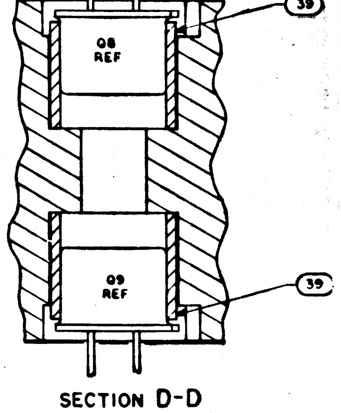
SECTION G-G


.010
.020 SEE NOTE 10, TYP 2 PLACES
CR6 REF
48
CR5 REF
48

SECTION F-F



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33


39
Q8 REF
Q9 REF
39

SECTION D-D

INCHES
PHOTOGRAPHIC SCALE ONLY

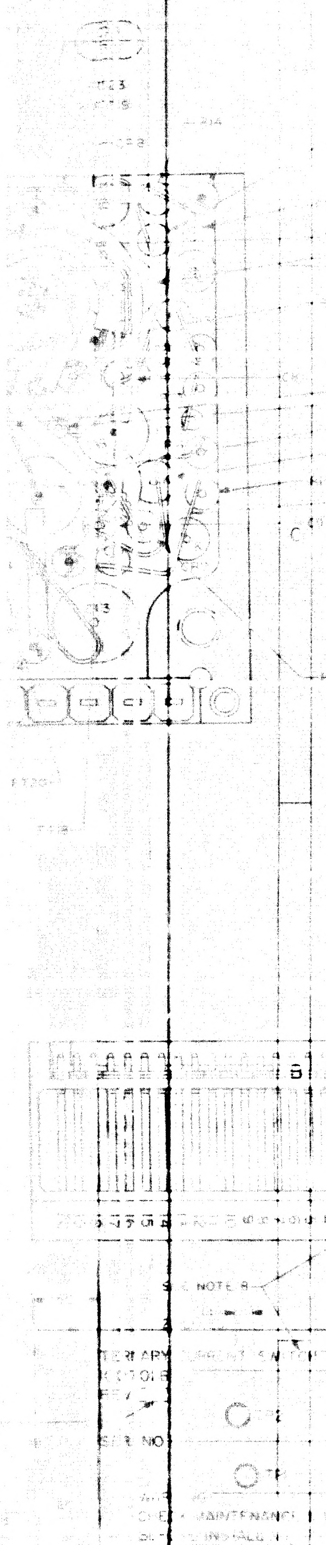
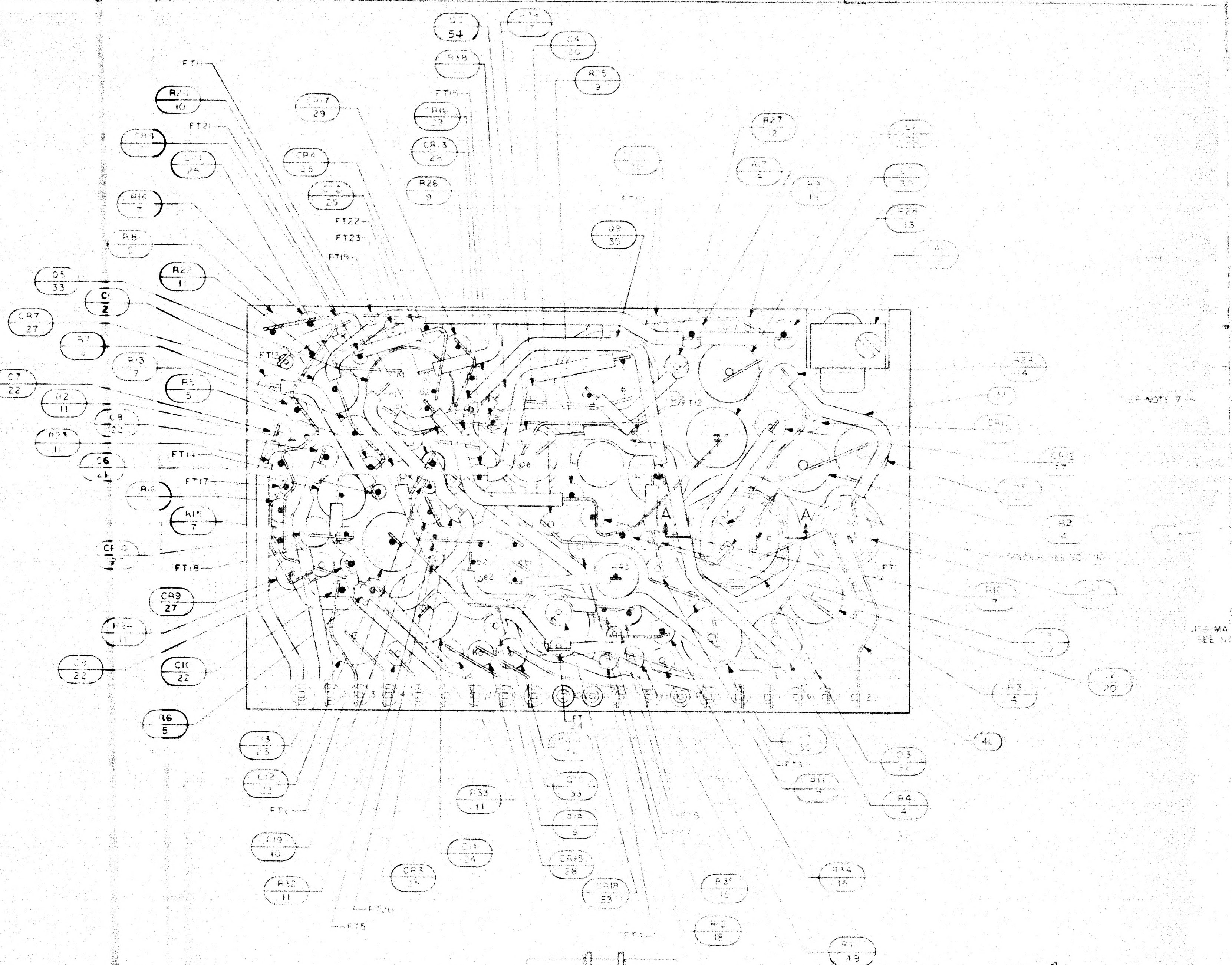
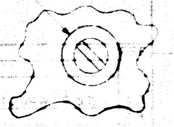

FT23
FT19
R24
FT20
FT18
SEE NOTE 8
MAKING VIEW

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 40% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE.	N/A
WAFER AND ADJACENT [illegible] HEATSINK SURFACE	[illegible] AND [illegible] SURFACE TO WITHIN .08 [illegible] OF EXTERNAL SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK-FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH ON TOTAL [illegible] 80% OF PERIMETER TO WITHIN .25 ±.03 OF EXTERNAL EDGE

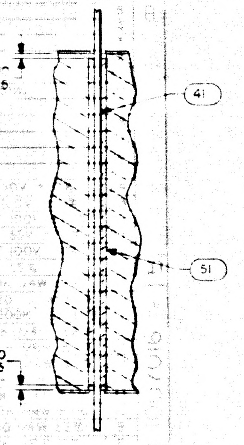

FT11
FT21
FT22
FT23
FT19
FT17
FT18
FT20
FT5
FT1
FT2
FT3
FT4
R5 9
R27 17
R26 9
R2 11
R8 6
R13 7
R5 5
R21 11
R15 7
R33 11
R32 11
R36 5
R34 16
R41 19
R42 49
R44 14
R3 4
R4 4
R2 4
CR7 27
CR9 27
CR3 24
CR4 25
CR13
CR15 28
CR18 53
C7 22
C10 22
C11 24
C1 25
C6 21
C9 35
C4 20
Q1 2
Q3 32
54
39
29
33
41
SEE NOTE 7
SEE NOTE 8
A



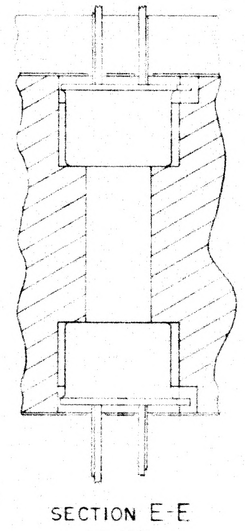
VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ~~WELDING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND MIL-S-[illegible] CLASS 3) TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .06 HIGH (WHITE) ~~AND SERIALIZE~~ AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002019. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE. SERIALIZE PER ND1002028.
9. ~~TIN~~ FIND NO. 4 THRU FIND NO. 34 FIND NO. 39 FIND NO. 48 AND FIND NO. 49 PER ND1002001 METHOD J.
11. A/R DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-F-6508 (A) TO THREADS OF FIND NO. 43
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. ~~MARK 060/100 RED PER ND1002019~~
16. ~~FINISH PER~~ ND1002071
17. ~~INDICATED~~ AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND1002009 METHOD J.
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO. 46 AND FIND NO. 47 PER ND1002136
21. PROCURE PER PS 1007016.
22. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.
23. ~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLY [illegible] BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~
24. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.
25. EXCEPT FOR THE HELICOIL MOUNTING SURFACE PAINT ALL SURFACES PER ND1002279, USING [illegible] PRIMER AND [illegible] PAINT. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.


.000
.015
41
51
.000
.015

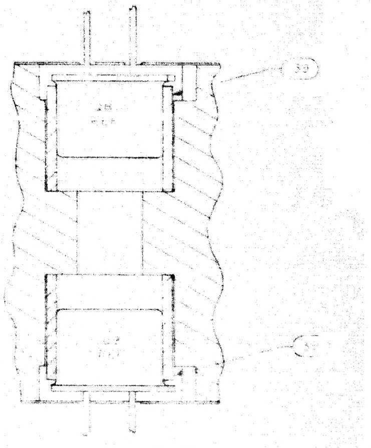
SECTION G-G



SECTION E-E

ROTATED

TYPICAL INSTALLATION FOR FIND NO. 35



SECTION D-D

TERNARY CURRENT SWITCH,
COMPUTER OUTPUT,
ASSEMBLY

J 1007016

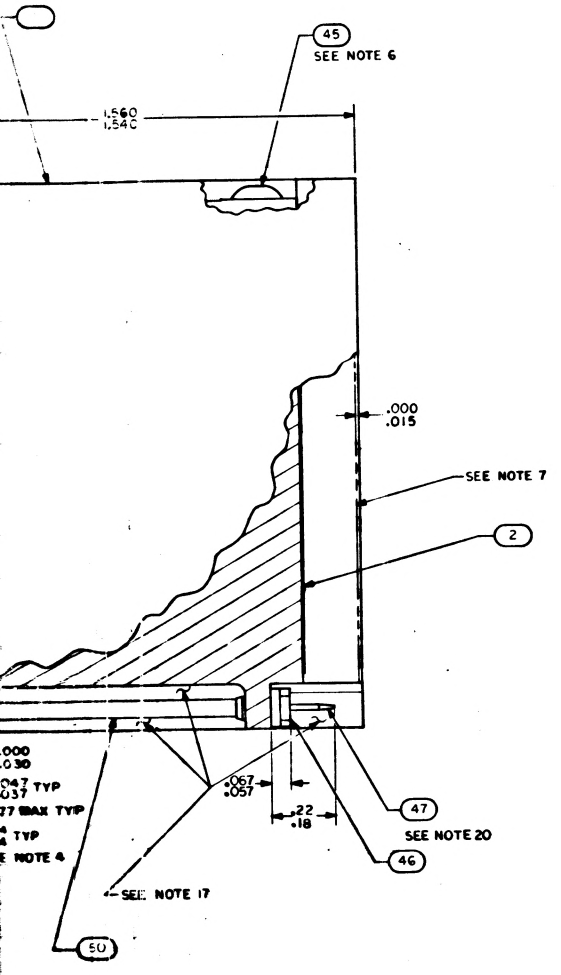
1007016 REV. AA SHEET 1

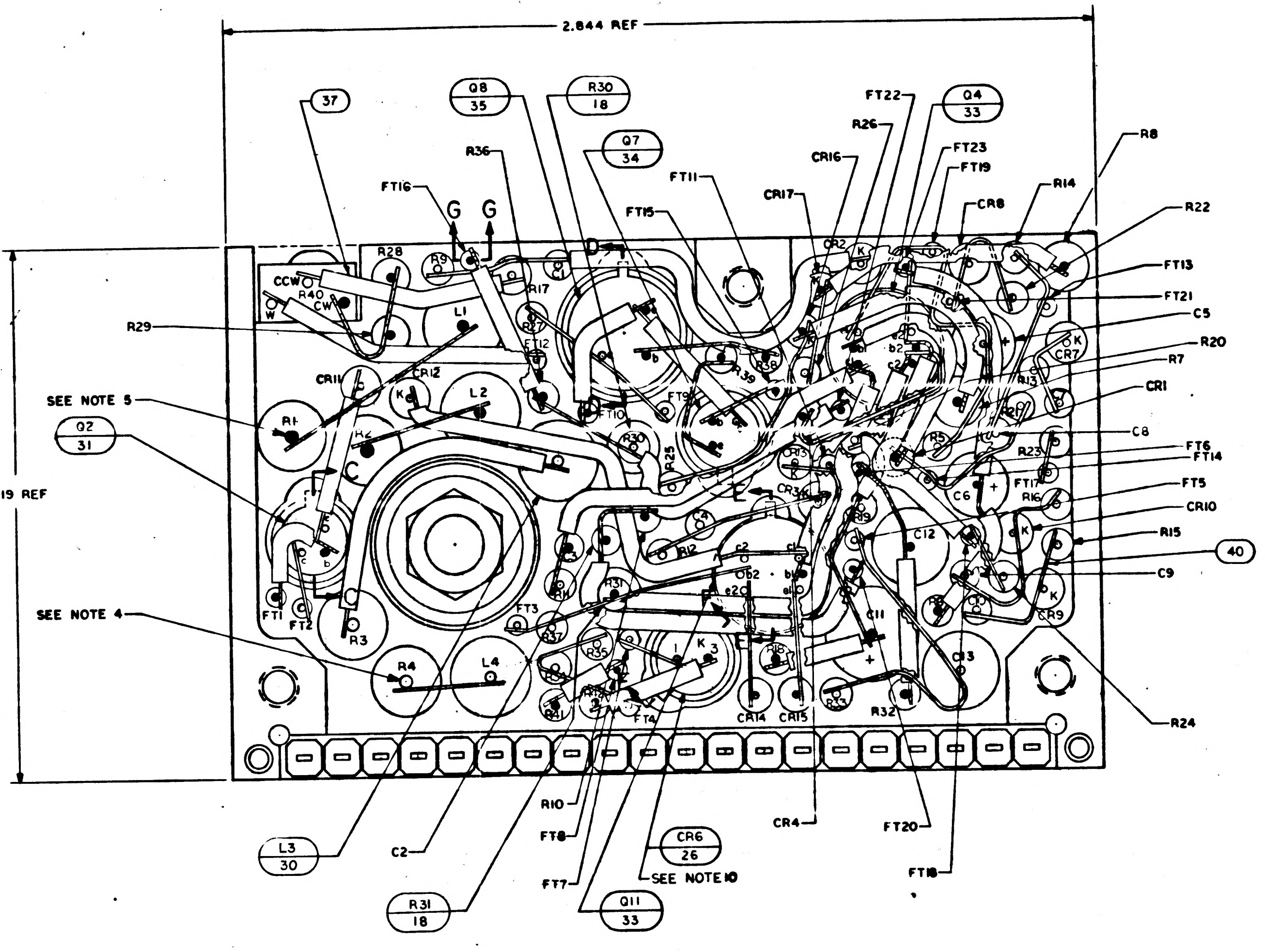
1A1007016

PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00777	4-3-63	OT WK
B	REVISED PER TDRR 01013	4-25-63	JT WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01179	5-8-63	DT WK
E	REVISED PER TDRR 01355	5-20-63	DT WK
F	REVISED PER TDRR 01616	6-10-63	WK
G	REVISED PER TDRR 01716	6-26-63	WK
H	REVISED PER TDRR 01868	7-2-63	WK

REVISIONS TDRR 00411


45
SEE NOTE 6
1.560
1.540
.000
.015
SEE NOTE 7
2
.000
.030
.047
.037 TYP
.27 MAX TYP
TYP
SEE NOTE 4
.067
.057
.22
.18
47
SEE NOTE 20
46
SEE NOTE 17
50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1.719 REF
37
Q8
35
R30
18
Q7
34
Q4
33
R36
FT16
G
G
FT11
FT22
R26
CR16
CR17
FT23
FT19
CR8
R14
R8
R22
FT15
R28
R9
R17
CCW
CW
W
R40
R29
L1
FT12
FT13
FT21
C5
R20
R7
CR1
C8
FT6
FT14
FT5
CR10
R15
40
C9
CR9
R24
SEE NOTE 5
Q2
31
CR11
CR12
L2
R1
FT10
FT9
R5
R23
C6
R16
C12
SEE NOTE 4
FT1
FT2
R3
FT3
R4
L4
R31
R12
K
CR14
CR15
R32
C13
C11
R10
FT8
FT7
C2
L3
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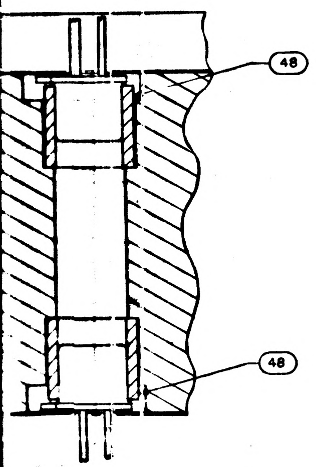
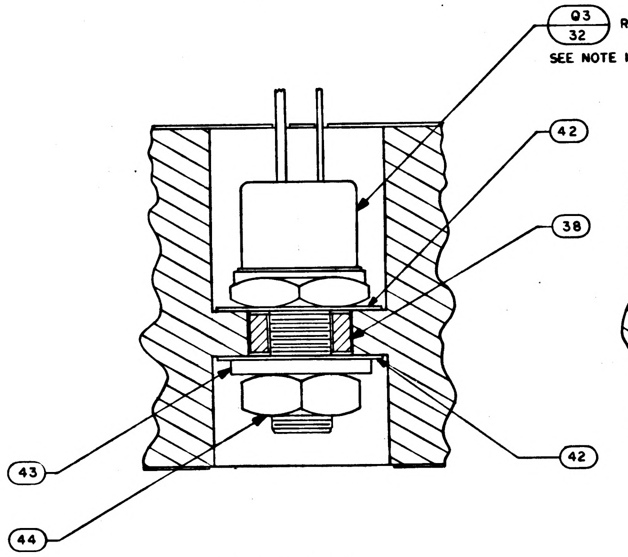
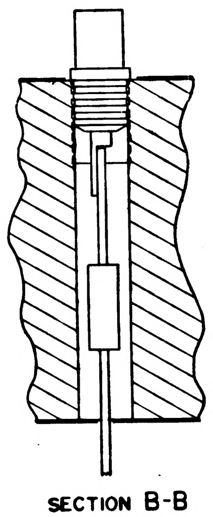
R31
18
CR6
26
SEE NOTE 10
Q11
33
CR4
FT20
FT18



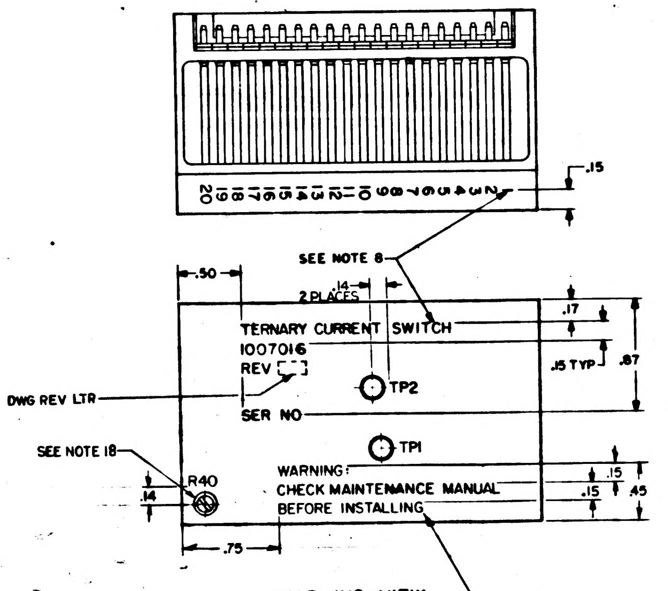
SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 31 AND 34


Q3
32
REF
SEE NOTE 14
42
38
42
43
44

SECTION A-A



SECTION B-B
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 36 AND 18


20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2
.15
SEE NOTE 8
.50
.14
2 PLACES
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
TP2
TP1
.17
.15 TYP
.87
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.15
.45
.75
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010016	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-1	RESISTOR, FIXED MF 51, 1/4W ±5%	49
6	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010292-2	TEST POINT	36
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
2	1010390	DIODE	26
4	1010462	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1006750-80	RESISTOR, FIXED MF, 100K 1/4W ±2%	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1010369-92	RESISTOR, FIXED COMP, 300K 1/8W ±5%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-44	RESISTOR, FIXED MF, 3.3K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
8	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 29 JAN 63
CHECKED 18 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

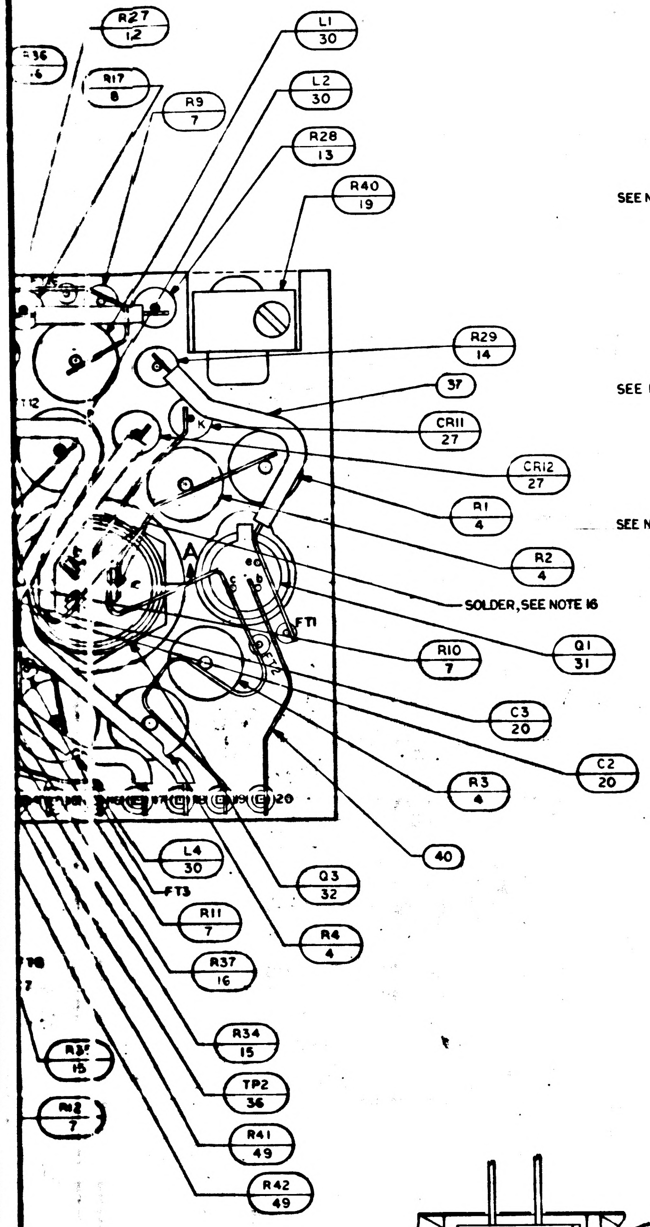
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007016
SCALE 5/1 WT SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

E3 1007016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R9 7
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L2 30
R28 13
R40 19
R29 14
37
CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
Q1 31
R10 7
C3 20
C2 20
R3 4
40
L4 30
FT3
R11 7
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R34 15
TP2 36
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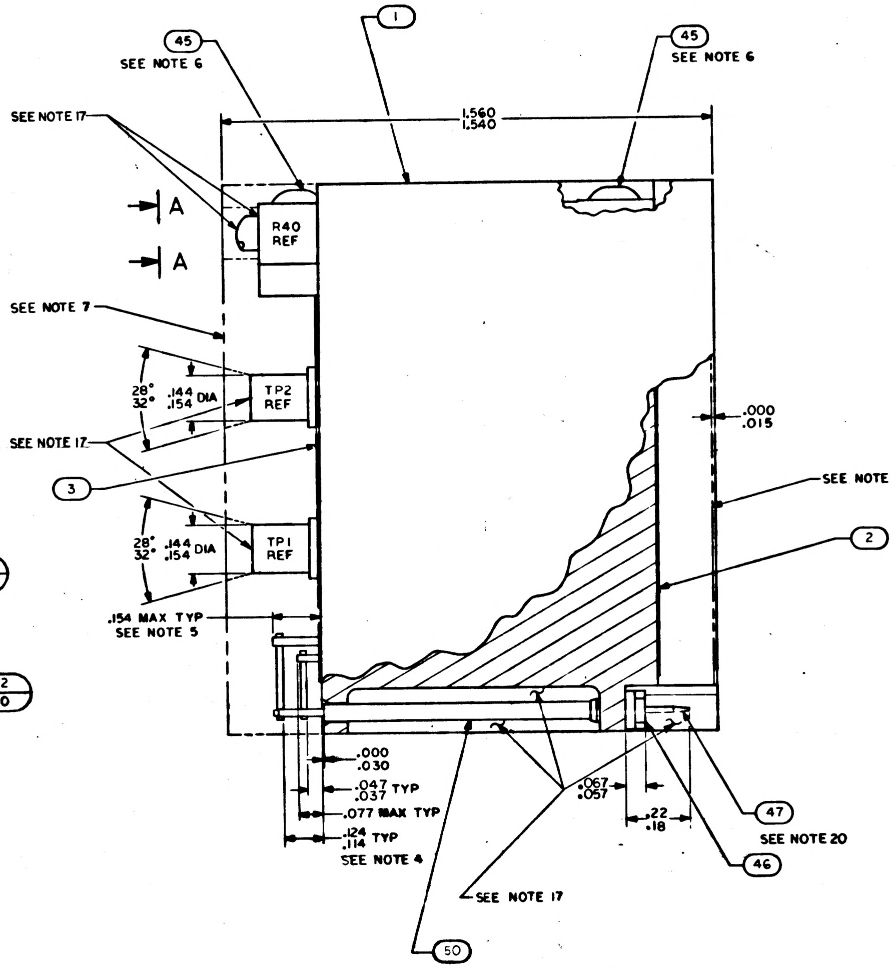
FT1
FT2
R35 15
R12 7
20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SEE NOTE 17
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TP1 REF
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SEE NOTE 5
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.015
SEE NOTE 7
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.000
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SEE NOTE 20
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SEE NOTE 17
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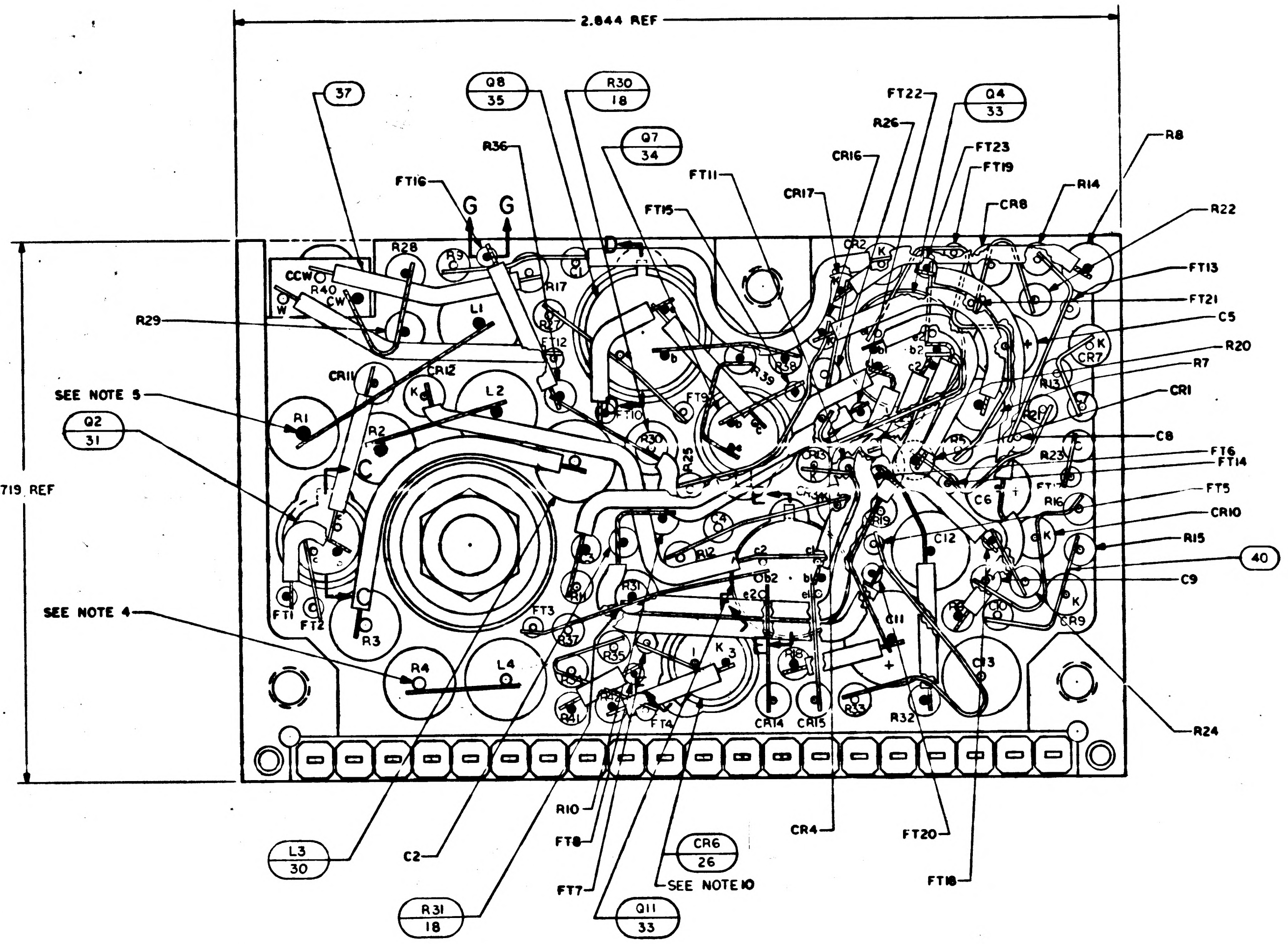
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Q4 33
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FT23
FT19
CR17
FT15
CR8
R14
R22
FT13
FT21
C5
R20
R7
CR1
C8
FT6
FT14
FT5
CR10
R15
C9
40
R24
R29
SEE NOTE 5
Q2 31
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SEE NOTE 4
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CW
R28
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CR11
CR12
L2
R1
R2
R3
R4
L4
FT1
FT2
FT3
C6
C12
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CR7
CR14
CR15
R32
R33
FT4
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SEE NOTE 10
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CR4
FT20
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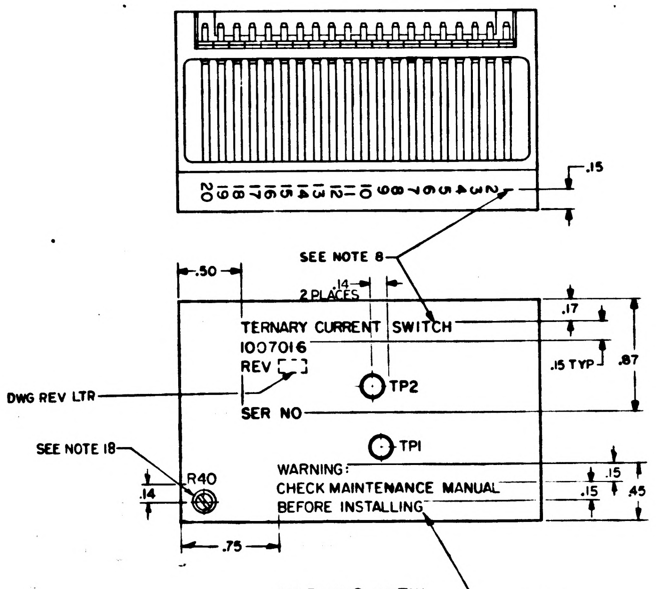
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SEE NOTE 8
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2 PLACES
TERNARY CURRENT SWITCH
1007016
REV
TP2
SER NO
TP1
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
R40
DWG REV LTR
SEE NOTE 18
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.15 TYP
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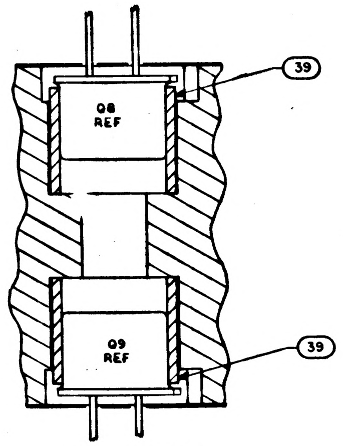
SEE NOTE 15

MARKING VIEW
SCALE 2/1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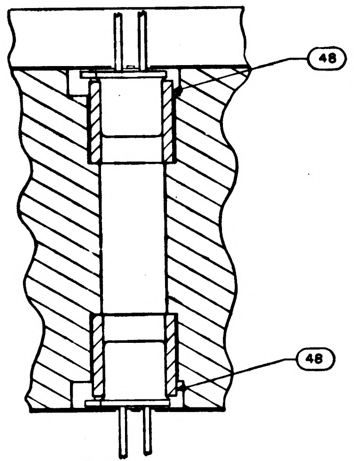
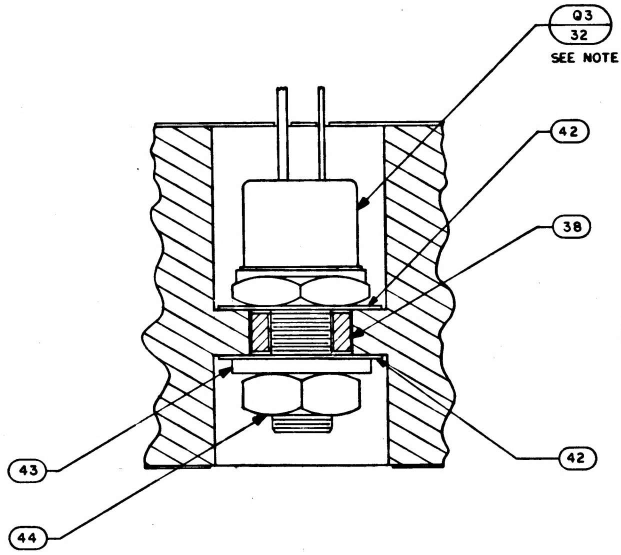
Q9 REF
39

SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 31 AND 34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SEE NOTE 14
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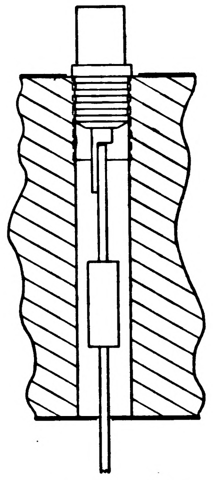
43
44
42

SECTION A-A



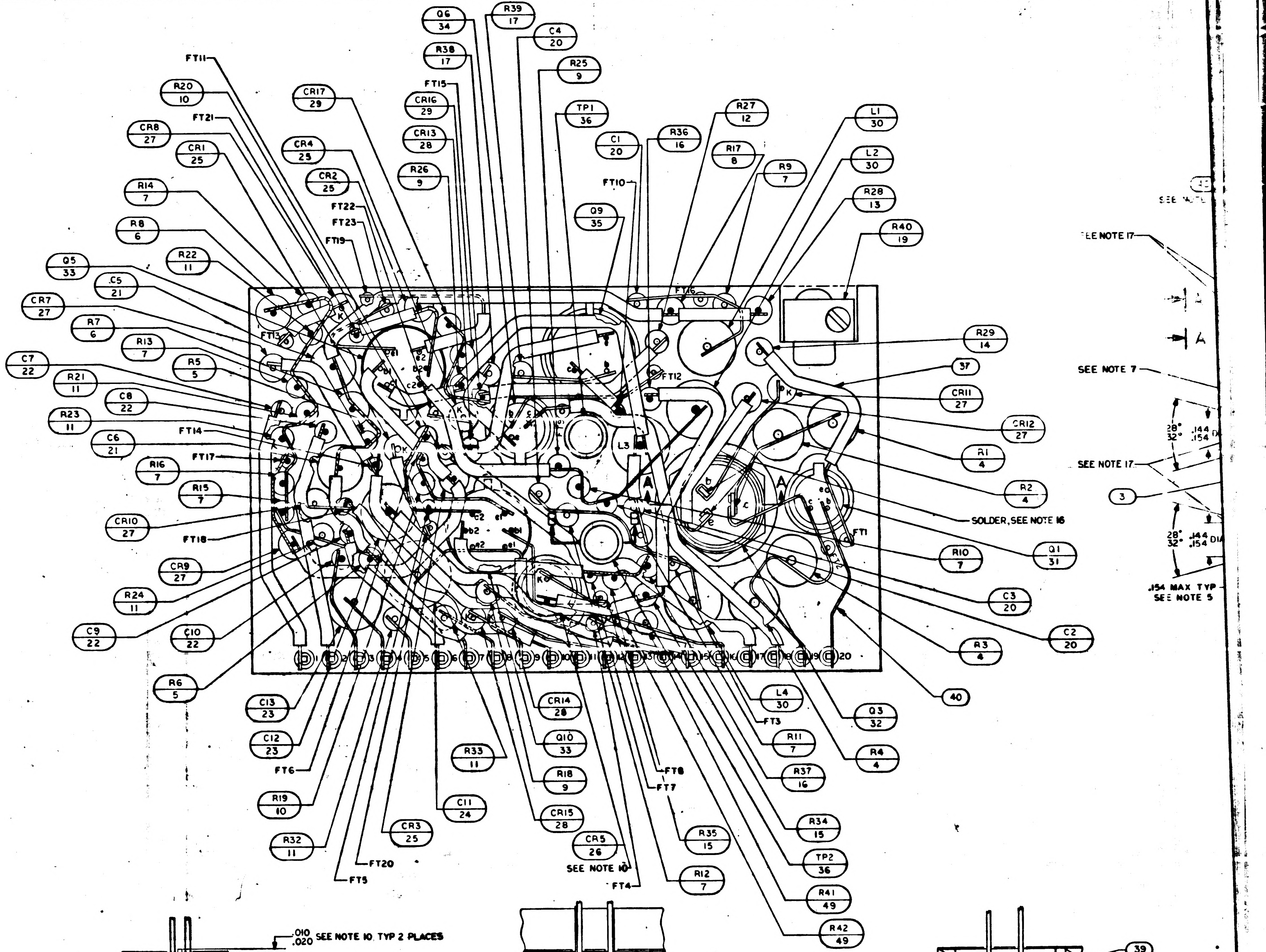
SECTION B-B
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 36 AND 18

MASTE

1007102	
1007101	
NEXT ASSY	USED ON
APPLICATION	

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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FT15
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R26 9
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R17 8
L1 30
L2 30
R9 7
R28 13
R40 19
FT10
Q9 35
R20 10
CR17 29
FT21
CR8 27
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CR2 25
FT22
FT23
FT19
R14 7
R8 6
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Q5 33
C5 21
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FT13
R13 7
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R21 11
C8 22
R23 11
FT14
C6 21
FT17
R16 7
R15 7
CR10 27
FT18
CR9 27
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C9 22
C10 22
R6 5
FT16
FT12
L3
A
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CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
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FT1
R10 7
C3 20
C2 20
R3 4
40
Q3 32
R4 4
L4 30
FT3
R11 7
R37 16
FT8
FT7
R34 15
TP2 36
R41 49
R42 49
R35 15
R12 7
CR5 26
SEE NOTE 10
FT4
CR15 28
R18 9
Q10 33
CR14 28
R33 11
C11 24
CR3 25
FT20
FT5
R32 11
R19 10
FT6
C12 23
C13 23
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SEE NOTE
SEE NOTE 17
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A
SEE NOTE 7
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SEE NOTE 17
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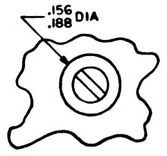
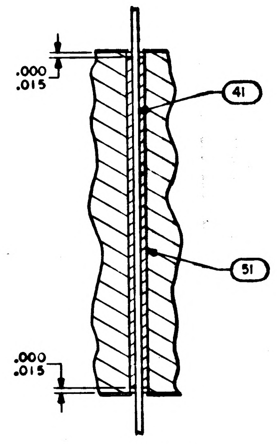
28° 32°
.144 .154 DIA
.154 MAX TYP
SEE NOTE 5



VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO.39, FIND NO.48 AND FIND NO.49 PER ND 1002009
10. ON CR5 AND CR6 CUT PIN NO. 2, .010/.020 ABOVE CASE
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND._____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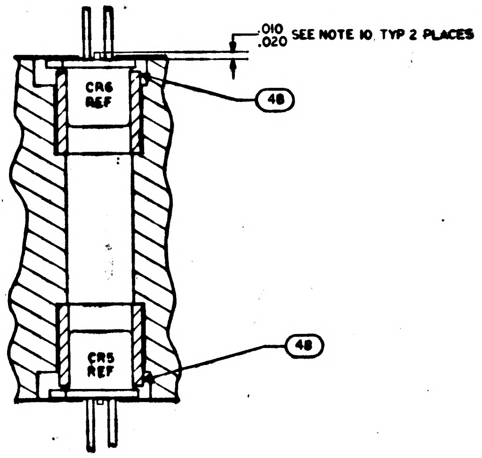
SECTION G-G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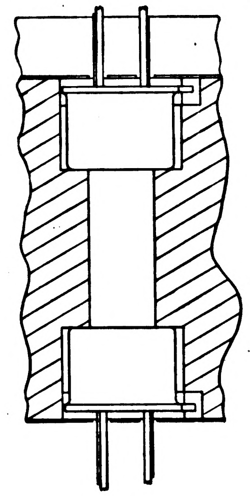
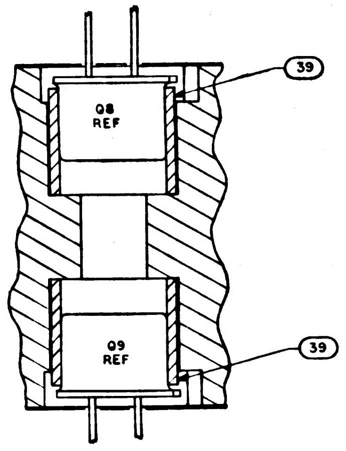
SECTION F-F



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33

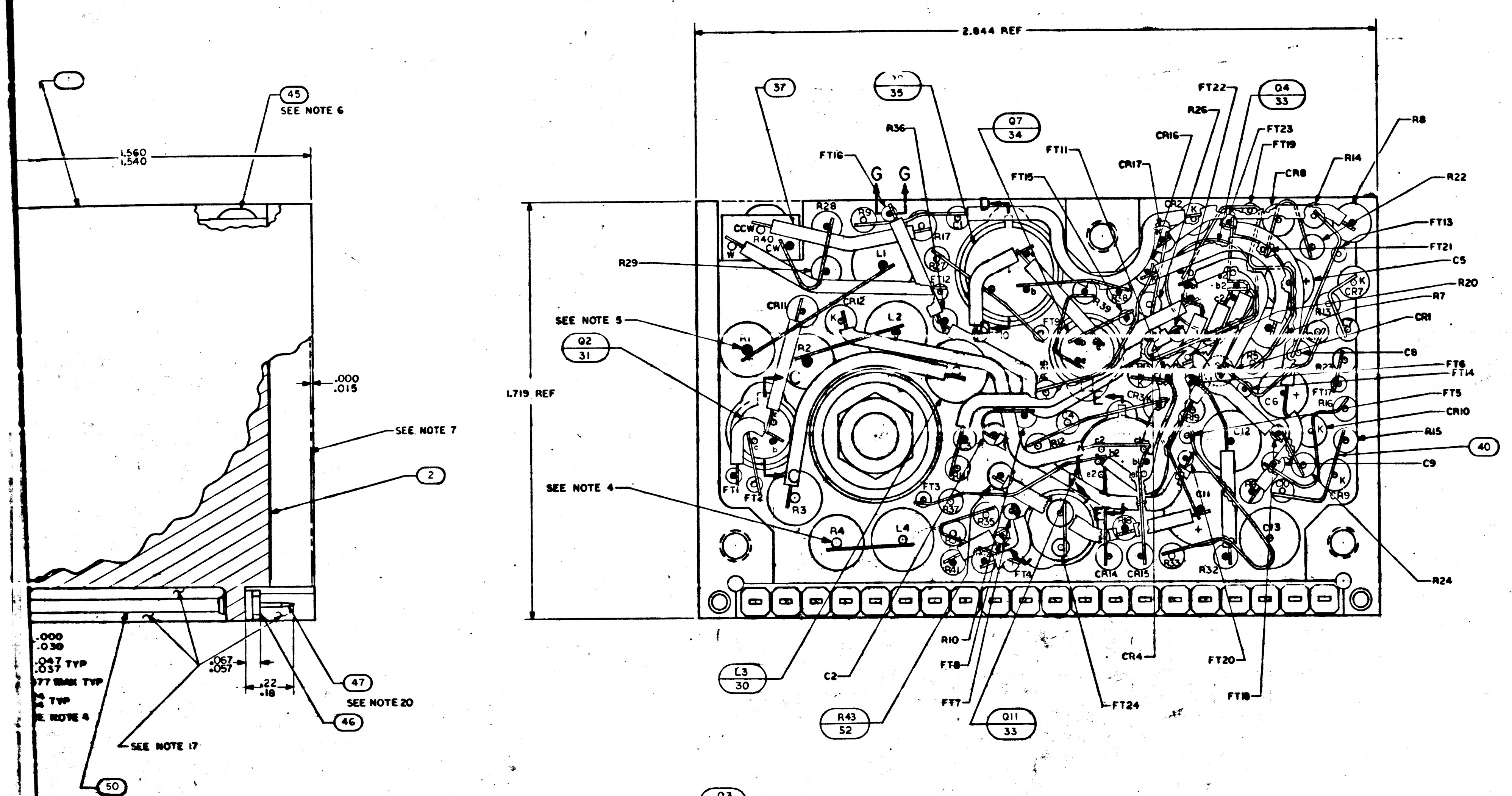

39
Q8 REF
Q9 REF
39

SECTION D-D

INCHES
PHOTOGRAPHIC SCALE ONLY

1007016 J

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00411		
A	CHANGED PER TDRR 00777	4-3-63	OT. WK
B	REVISED PER TDRR 01013	4-25-63	OT. WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	OT. WK
E	REVISED PER TDRR 01355	5-20-63	O.T. WK
F	REVISED PER TDRR 01616	6-8-63	RPK. WK
G	REVISED PER TDRR 01716	6-26-63	RPK. WK
H	REVISED PER TDRR 01868	7-2-63	JJM. WK
J	REVISED PER TDRR 02169	7-31-63	JJM WK



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1.560
1.540
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SEE NOTE 6
.000
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SEE NOTE 7
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.037 TYP
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.057
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.18
47
SEE NOTE 20
46
SEE NOTE 17
50
37
35
R36
Q7
34
FT22
Q4
33
R26
FT23
FT19
CR16
CR17
FT11
FT15
FT16
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FT21
C5
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FT6
FT14
FT5
CR10
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C9
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R29
SEE NOTE 5
Q2
31
L.719 REF
SEE NOTE 4
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CW
R40
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L1
R17
CR11
CR12
L2
R2
R3
R4
L4
FT1
FT2
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R16
CR9
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CR4
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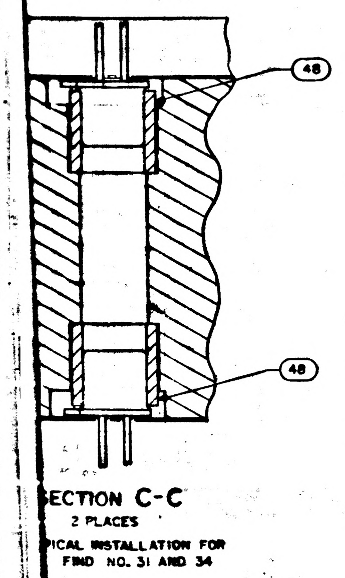
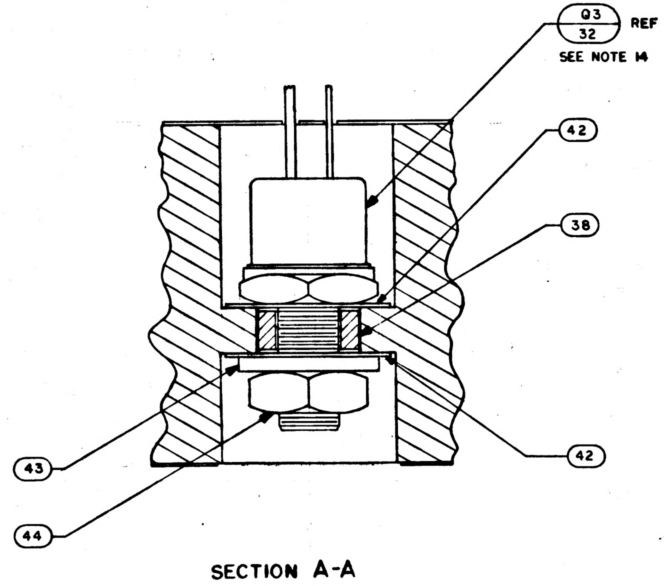
FT20
FT18



SECTION C-C
2 PLACES
PICAL INSTALLATION FOR
FIND NO. 31 AND 34



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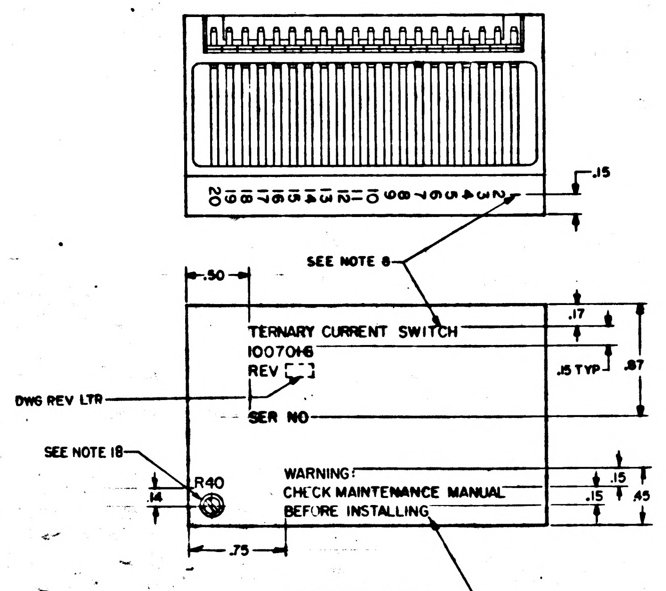
SECTION A-A



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SEE NOTE 8
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1007016
REV
DWG REV LTR
SER NO
.17
.15 TYP
.87
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.15
.45
.75
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
	1010016	SCHEMATIC	REF
1	1010372 – 6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR,FIXED MF 75K 1/4W ±2%	49
64	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	16
2	1006750-55	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
8	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

J 1007016 J

MASTER

NEXT ASSY	USED ON
1007102	
1007101	
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

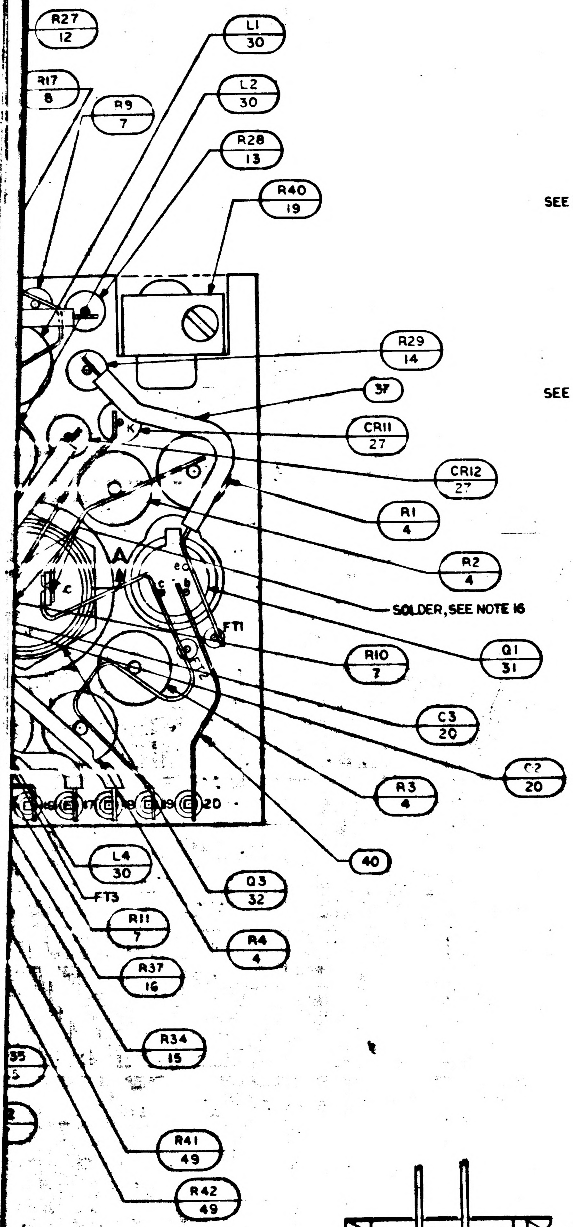
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN J. W. Snyder DATE 29 JAN 63
CHECKED 14 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007016
SCALE 5/1
WT
SHEET 1 OF 1

F-3 1007016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R2 4
SOLDER, SEE NOTE 16
Q1 31
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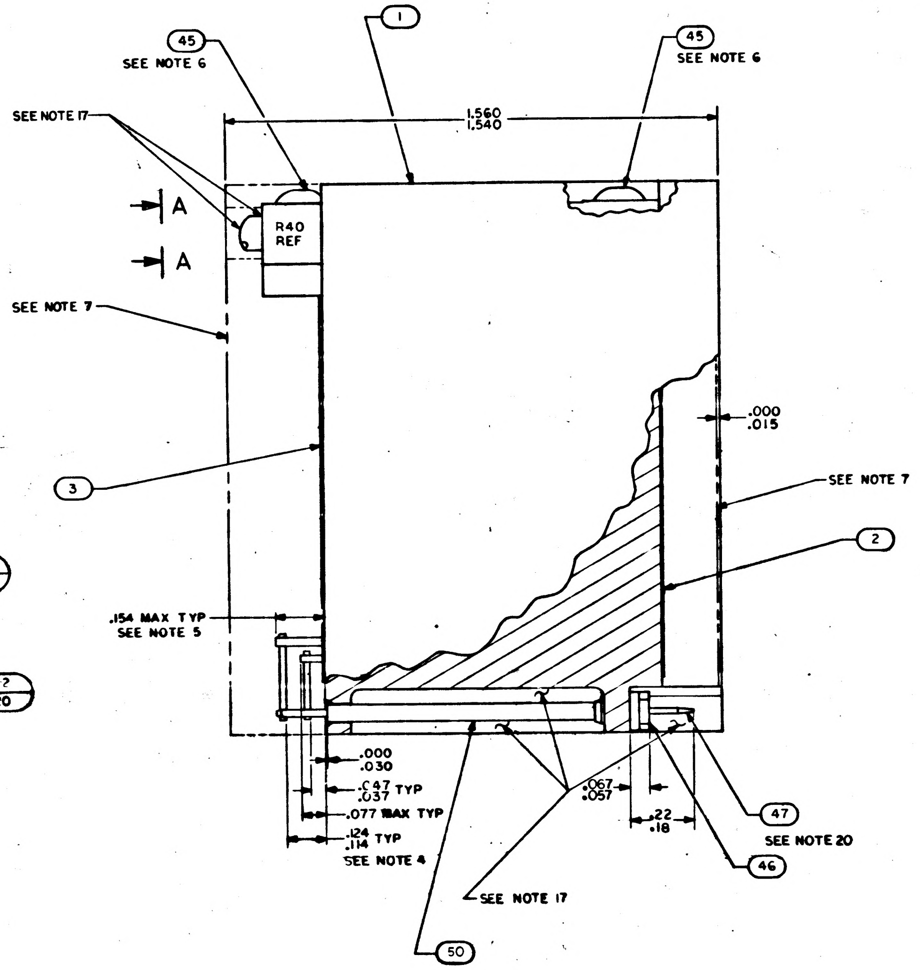
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SEE NOTE 17
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SEE NOTE 7
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SEE NOTE 5
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SEE NOTE 20
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SEE NOTE 17
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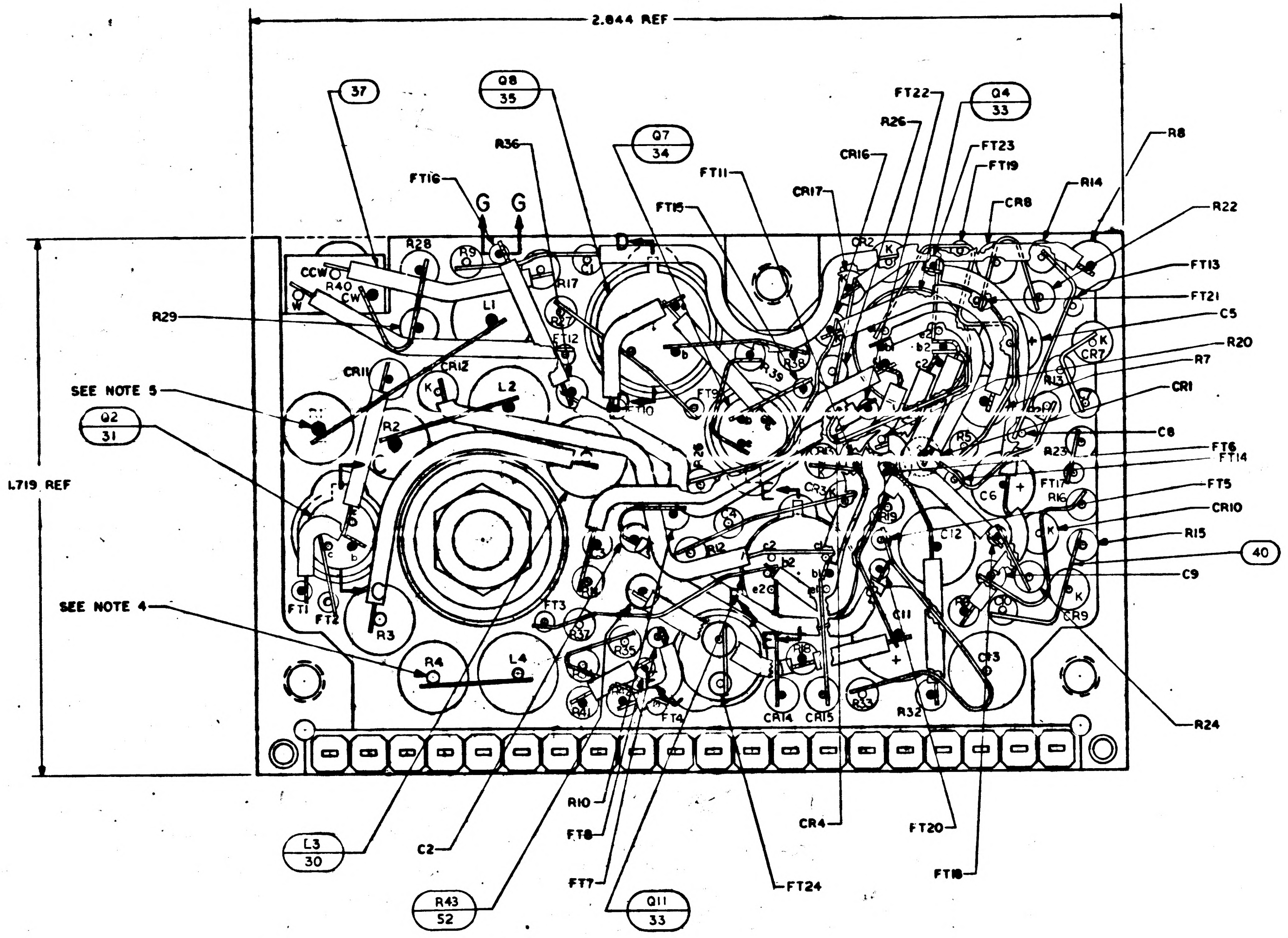
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CR17
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R7
CR1
C8
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FT14
FT5
CR10
R15
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C9
R24
R29
SEE NOTE 5
Q2 31
1.719 REF
SEE NOTE 4
CCW
CW
R40
R28
L1
CR11
CR12
L2
R3
R4
L4
FT1
FT2
C6
C12
C11
C13
CR14
CR15
R32
CR9
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CR4
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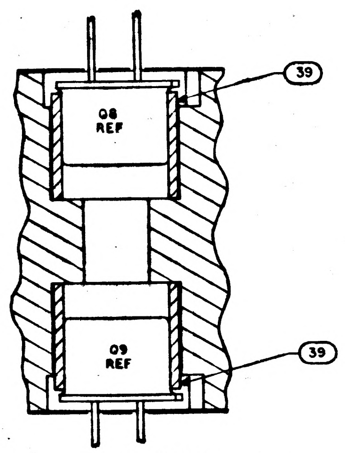
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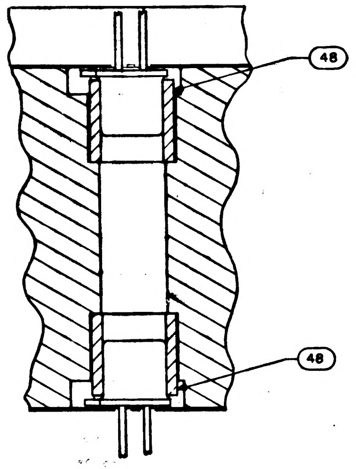
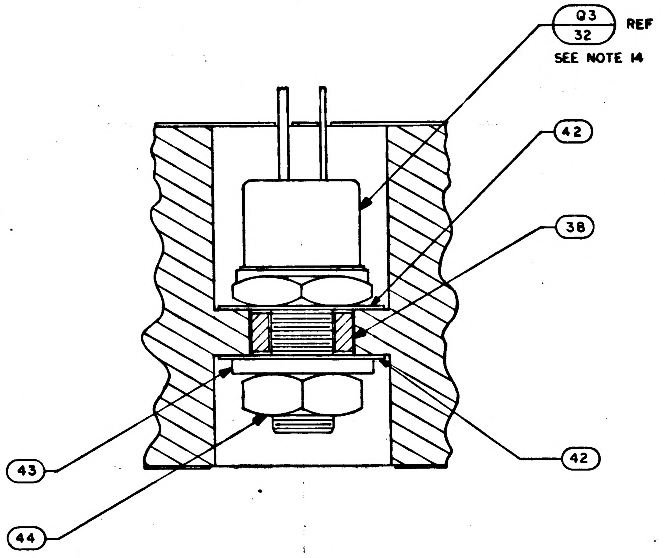
Q9 REF
39

SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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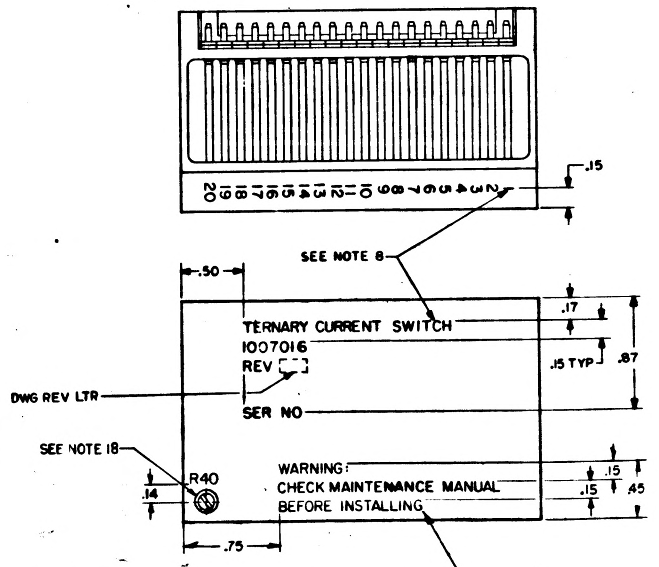
SECTION A-A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SEE NOTE 8
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TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
.17
.15 TYP
.87
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.15
.45
.75
SEE NOTE 15

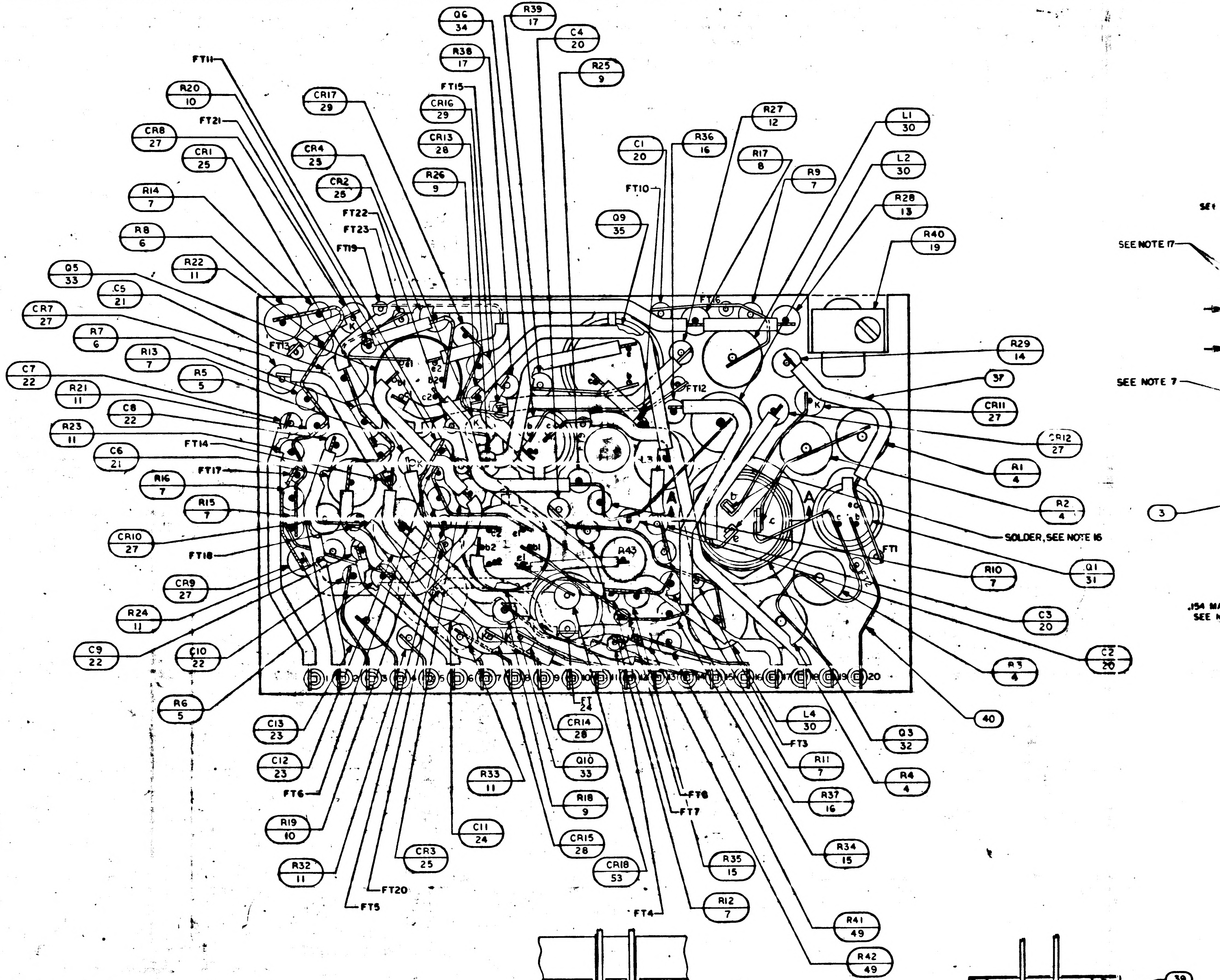
MARKING VIEW
SCALE 2/1

NEXT ASSY
1007102
1007101

APPLICATION

E2 1007016

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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CR4 25
CR2 28
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FT23
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C1 20
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R27 12
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R9 7
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L2 30
R28 13
FT10
Q9 35
R40 19
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SEE NOTE 17
SEE NOTE 7
.154 MA
SEE N
A
K
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FT5
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FT20
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FT 24
CR14 28
Q10 33
R18 9
CR15 28
CR18 53
FT4
FT8
FT7
R35 15
R12 7
L4 30
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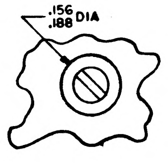
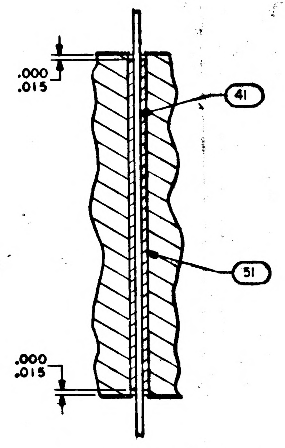


VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31
   TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO.39, FIND NO.48 AND FIND NO.49 PER ND 1002009

11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS
   OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND.____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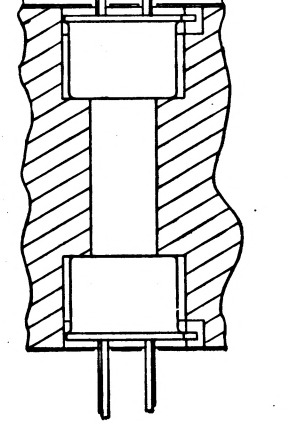
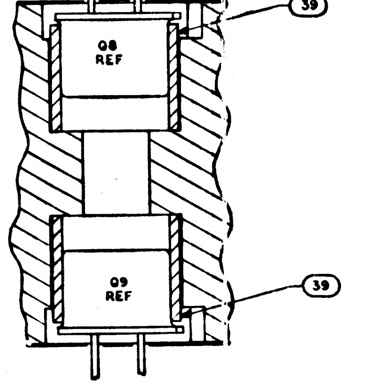
SECTION G-G



SECTION E-E

2 PLACES

TYPICAL INSTALLATION FOR FIND NO. 33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SECTION D-D

INCHES

PHOTOGRAPHIC SCALE ONLY

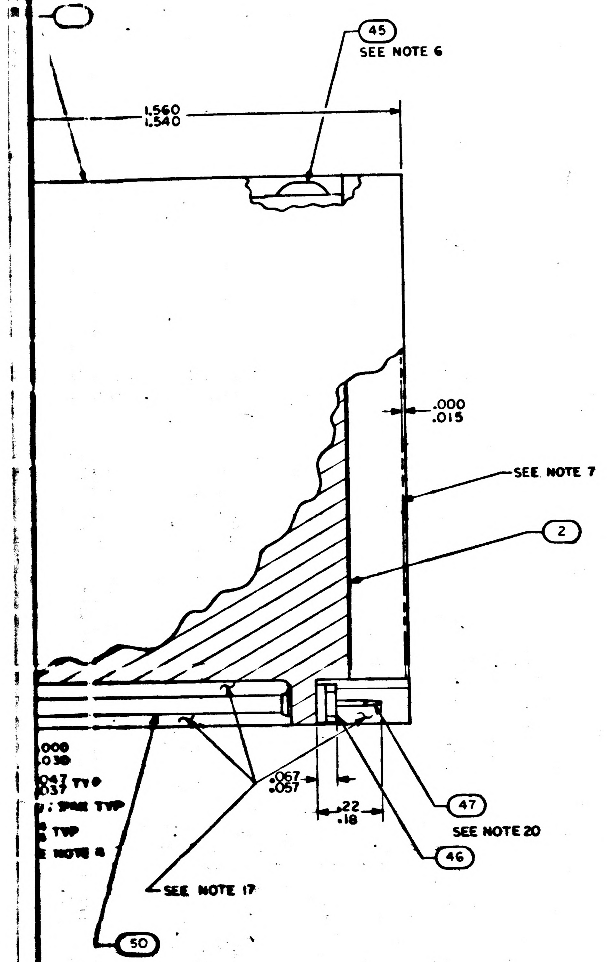
E1

1007016

1007016 K

REVISIONS TDRR00 4[illegible]

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00777	4-3-63	O.T. WK
B	REVISED PER TDRR 01013	4-25-63	RX WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	O.T. WK
E	REVISED PER TDRR 01355	5 20 63	O.T. WK
F	REVISED PER TDRR 01616	6-18-63	EPK. WK
G	REVISED PER TDRR 01716	6-26-63	EPK WK
H	REVISED PER TDRR 01868	7-2-63	J.J.M. WK
J	REVISED PER TDRR 02167	7-31-63	J.J.M WK
K	REVISED PER TDRR 05276	17 Oct 63	JFW EPK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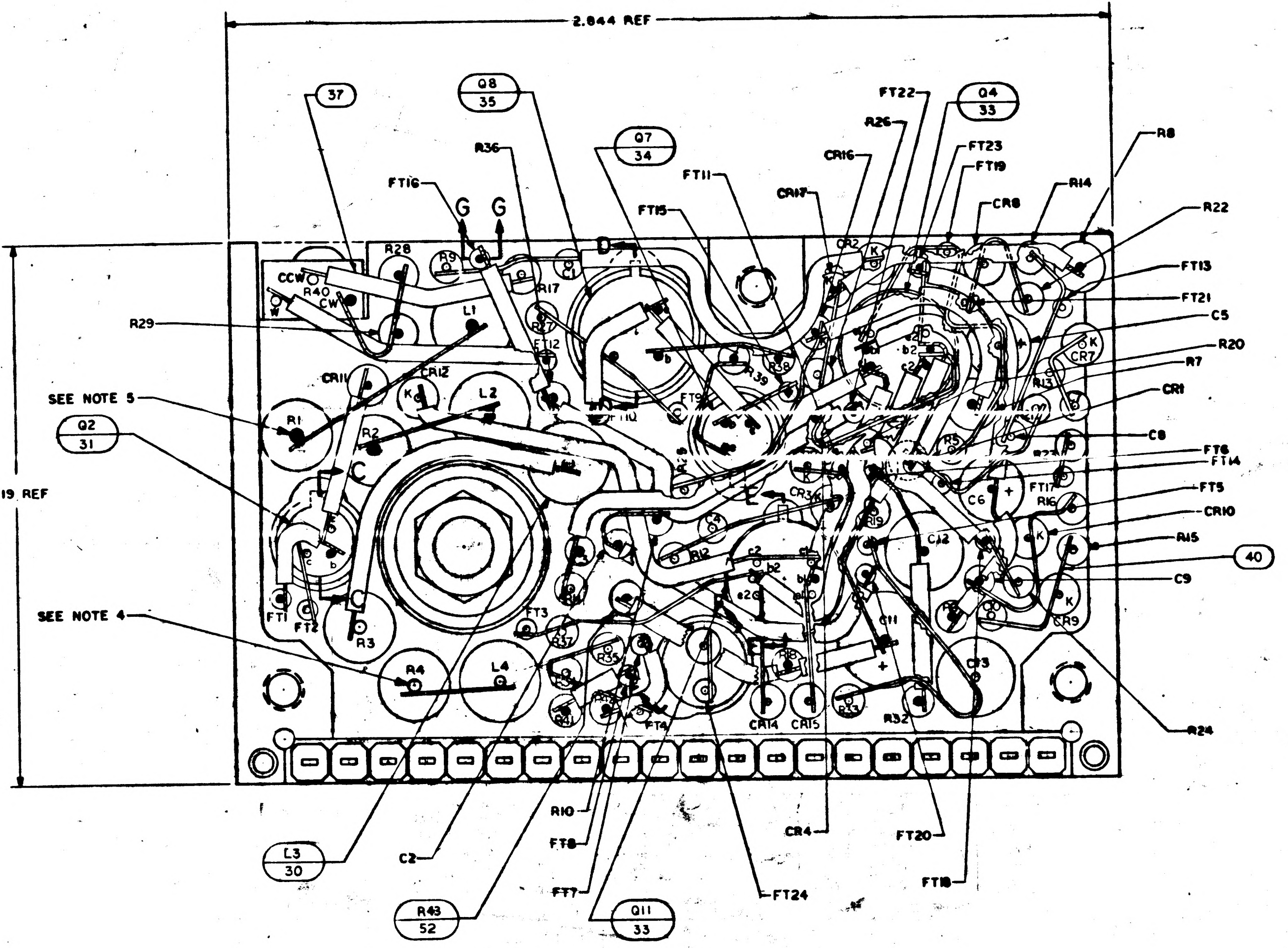
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Q4
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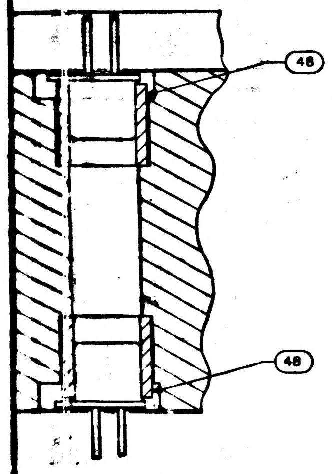
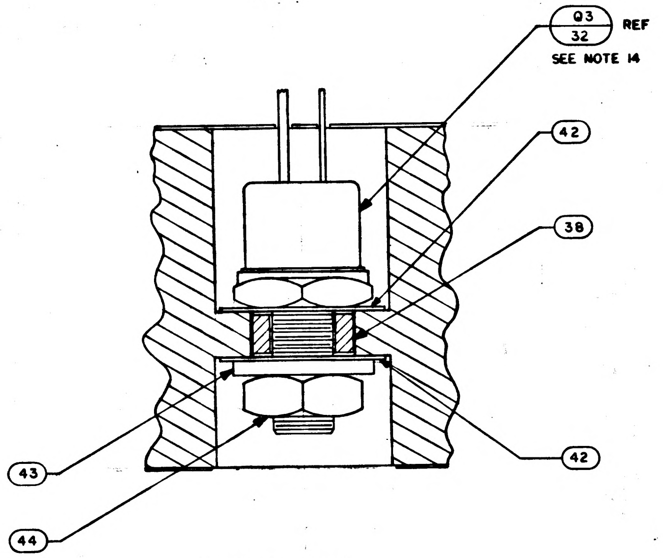


SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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SEE NOTE 14
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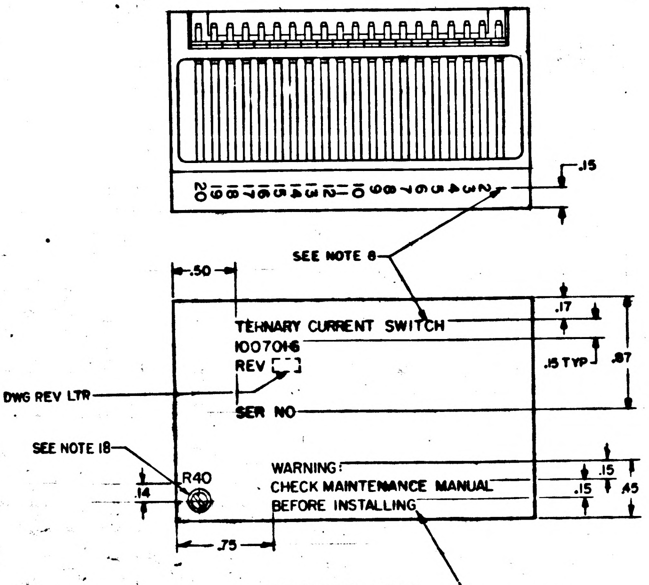
SECTION A-A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SER NO
DWG REV LTR
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.15 TYP
.87
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.15
.45
.75
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010016	SCHEMATIC	REF
1	1010372-6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR,FIXED MF 75K 1/4W ±2%	49
64	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-15	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
4	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

K
J 1007016

MASTER

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN DATE 29 JAN 63
CHECKED 18 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

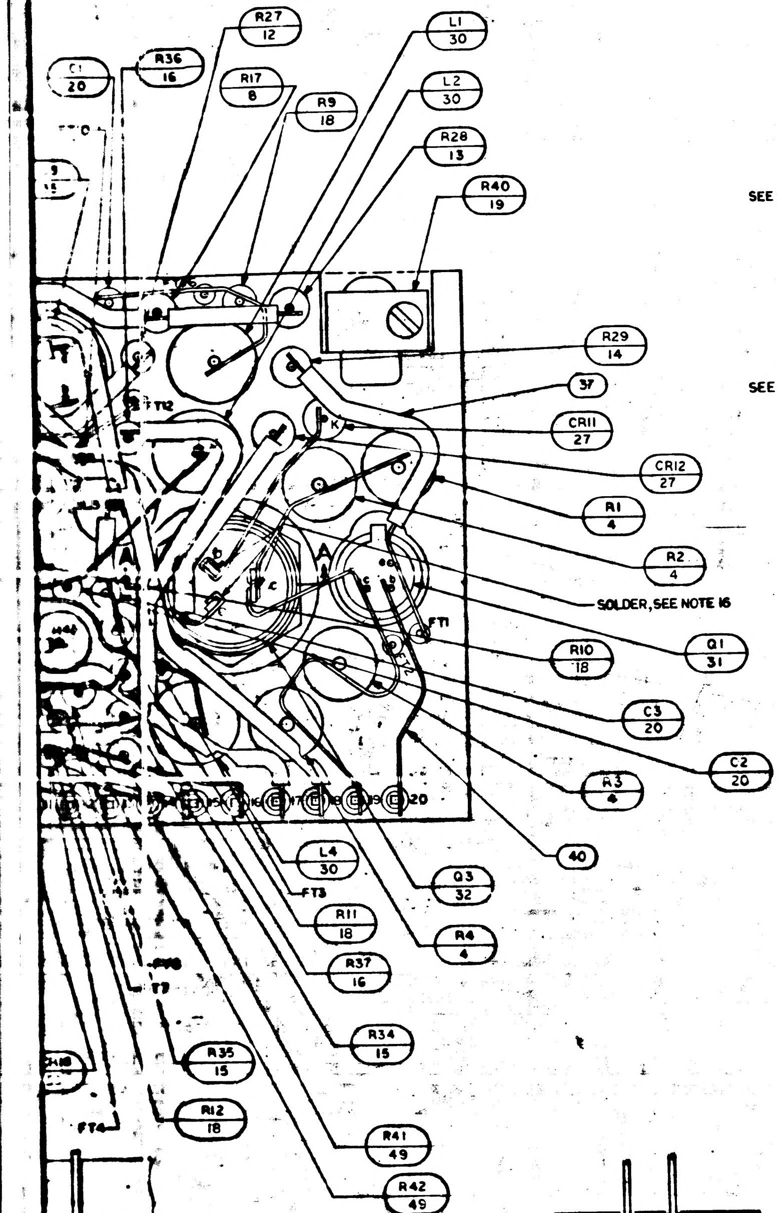
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH,
COMPUTER OUTPUT,
ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007016
SCALE 5/1 | WT | SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

E3 1007016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CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
Q1 31
R10 18
C3 20
C2 20
R3 4
40
L4 30
Q3 32
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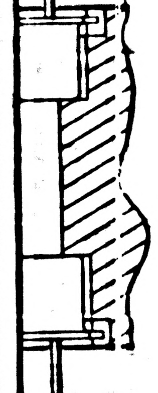
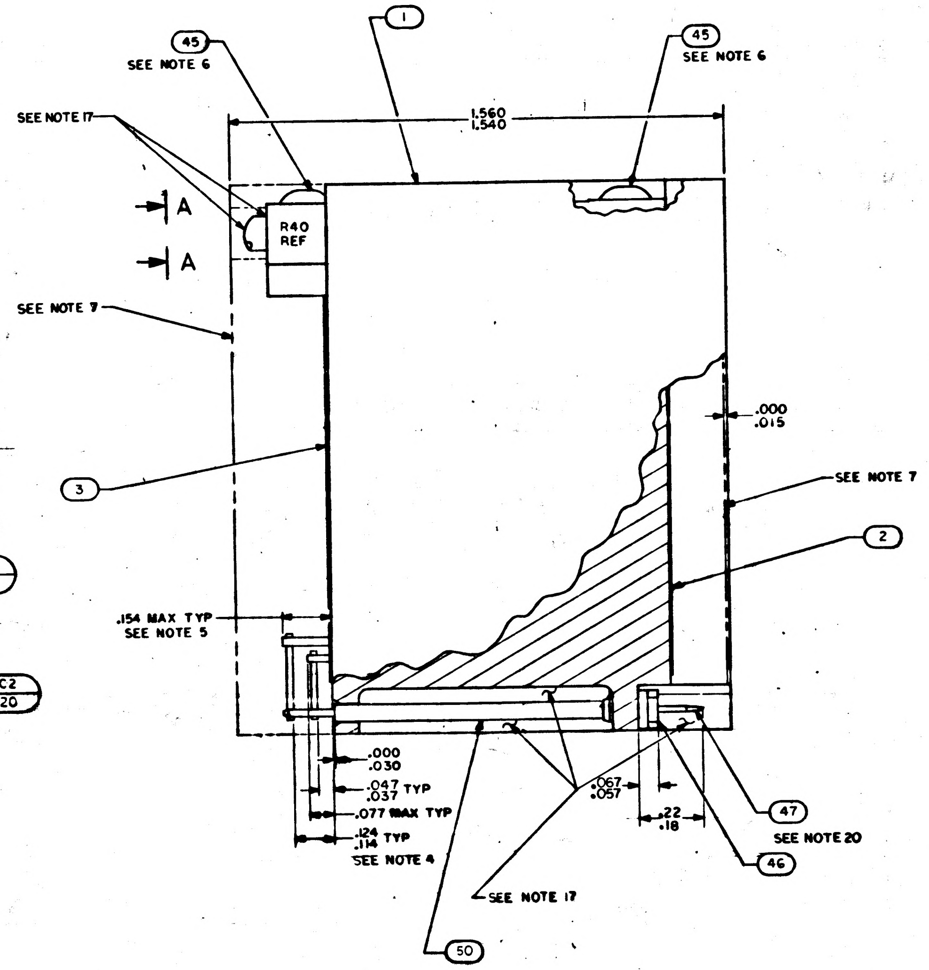


SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 33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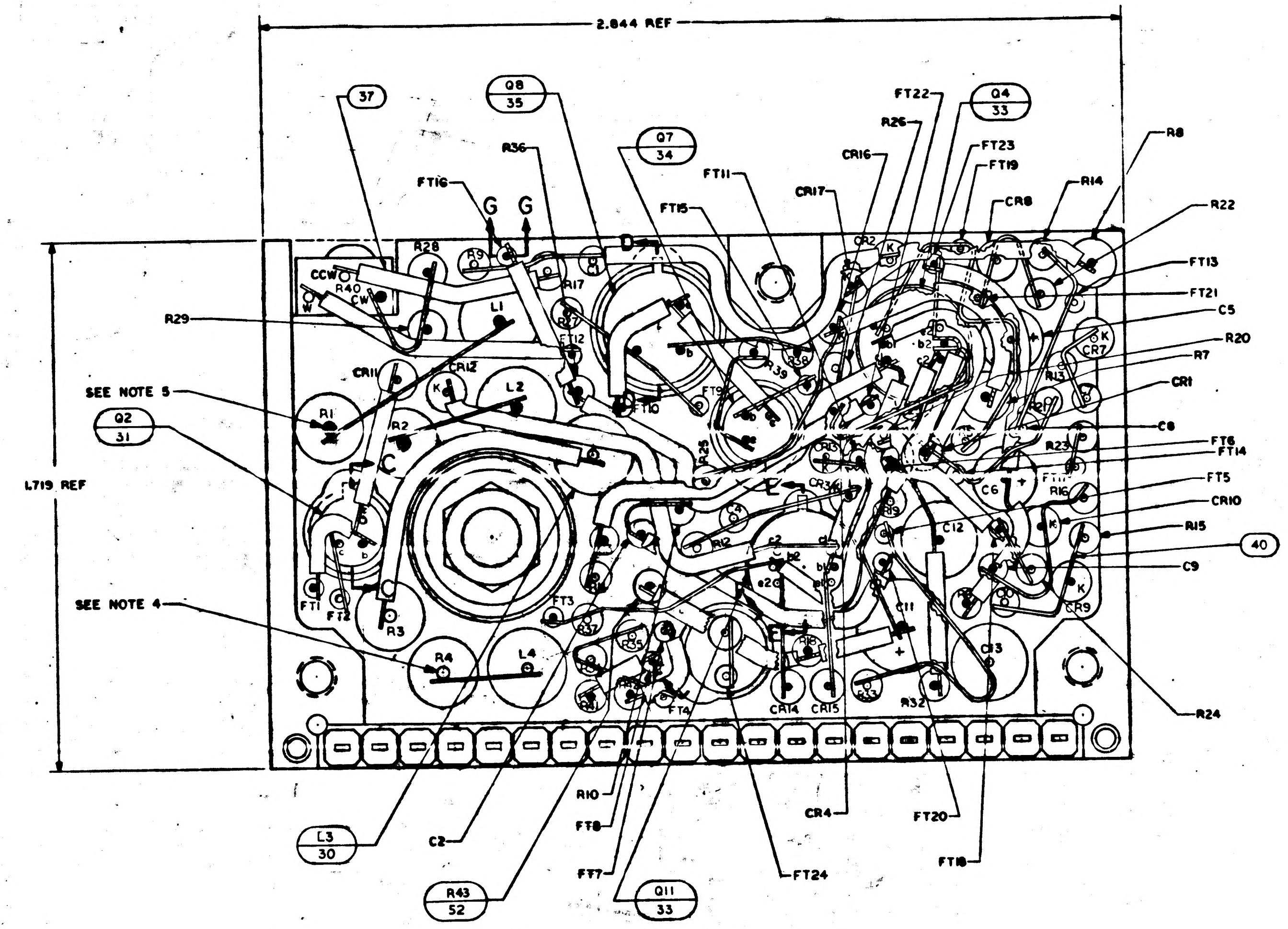
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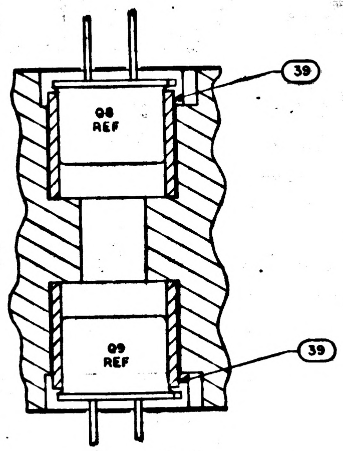
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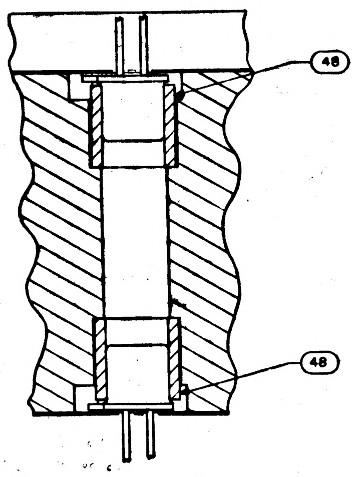
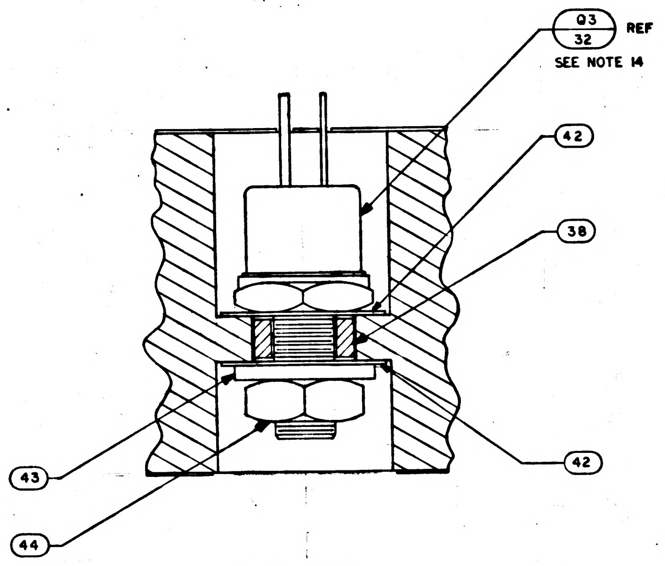
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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SEE NOTE 14
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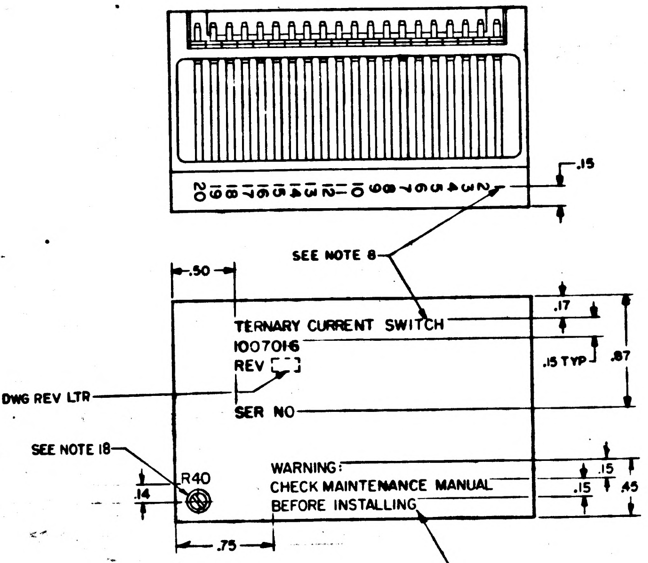
SECTION A-A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TERNARY CURRENT SWITCH
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SER NO
.17
.15 TYP
.87
SEE NOTE 18
R40
.14
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.15
.45
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SEE NOTE 15

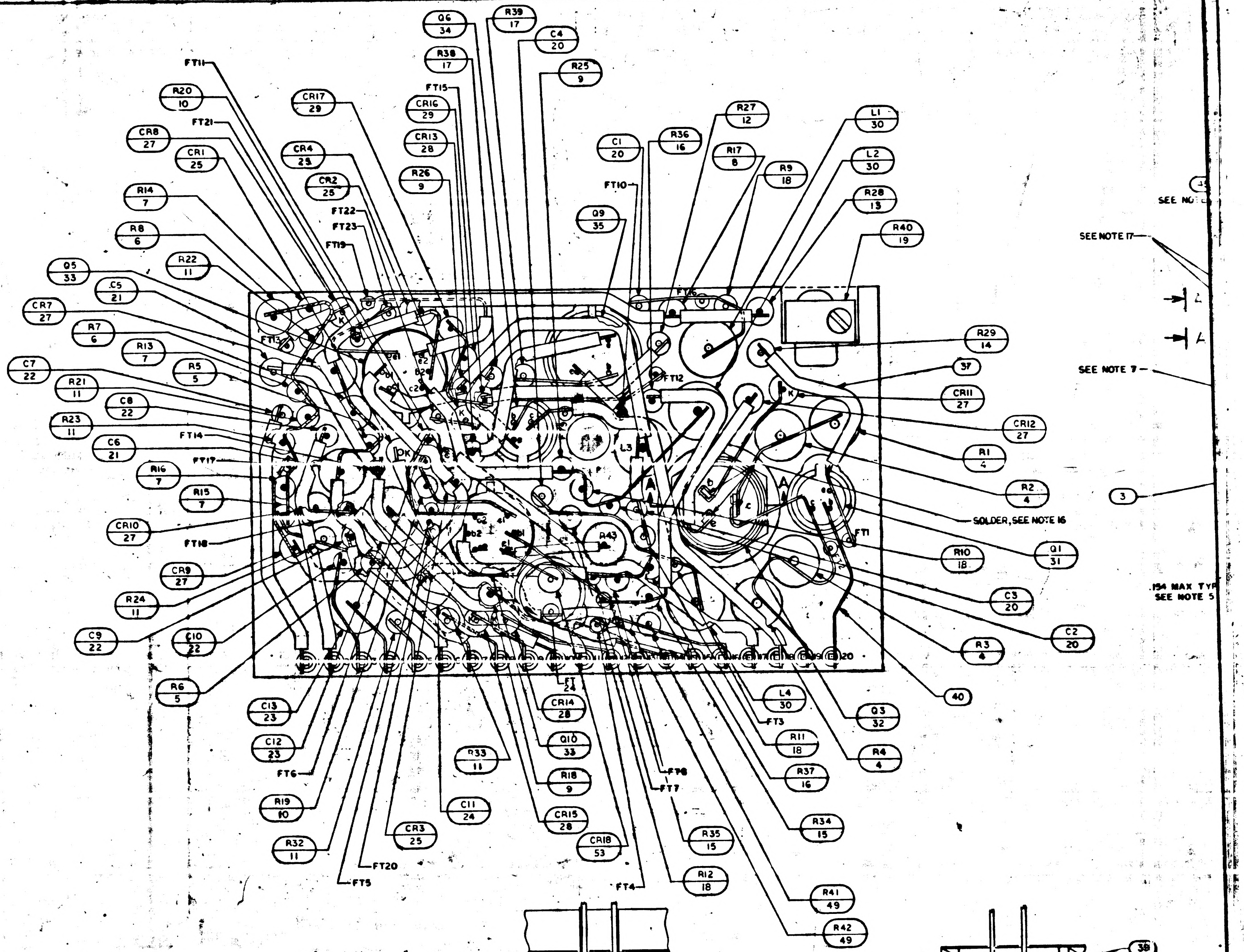
MARKING VIEW
SCALE 2/1

1007108
1007101
NEXT ASSY

PHOTOGRAPHIC SCALE ONLY

F 2 1007016

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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SEE NOTE 17
SEE NOTE 7
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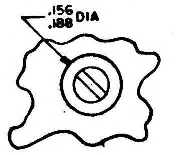
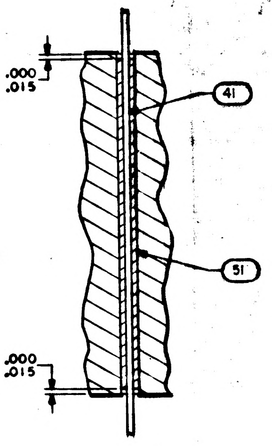
.154 MAX TYP
SEE NOTE 5



VIEW A-A

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31
TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO. 39, FIND NO. 48 AND FIND NO. 49 PER ND 1002009

11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS
OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO. 46 AND FIND NO. 47 PER ND.____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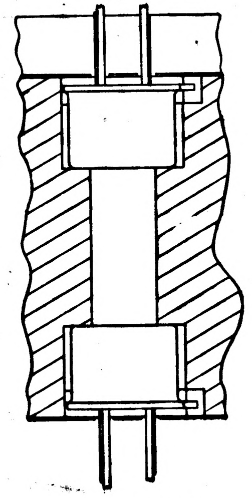
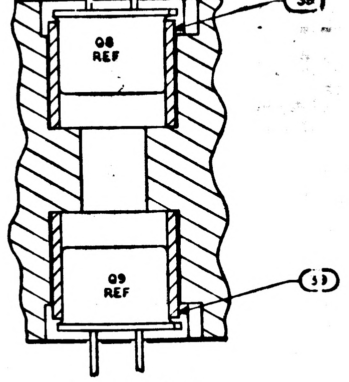
SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 33


39
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Q9
REF
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SECTION D-D

INCHES
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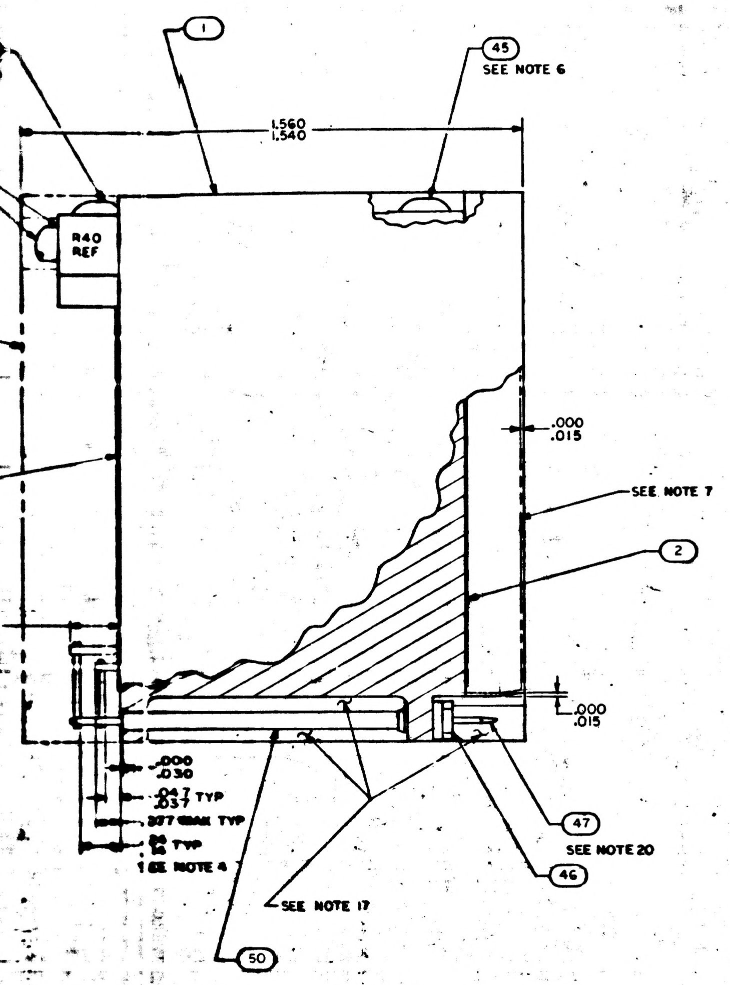
PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00777	4-3-63	O.T. WK
B	REVISED PER TDRR 01013	4-25-63	JX WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01179	5-8-63	O.T. WK
E	REVISED PER TDRR 01355	5 20 63	O.T. WK
F	REVISED PER TDRR 01616	6-18-63	EPK WK
G	REVISED PER TDRR 01716	6-26-63	EPK WK
H	REVISED PER TDRR 01868	7-2-63	J.L.M. WK
J	REVISED PER TDRR 02169	7-31-63	JLM WK
K	REVISED PER TDRR 05276	17 OCT 63	JEW EPK
L	REVISED PER TDRR 05409	27 OCT 63	EPK WK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SEE NOTE 6
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SEE NOTE 4
SEE NOTE 17
47
SEE NOTE 20
46
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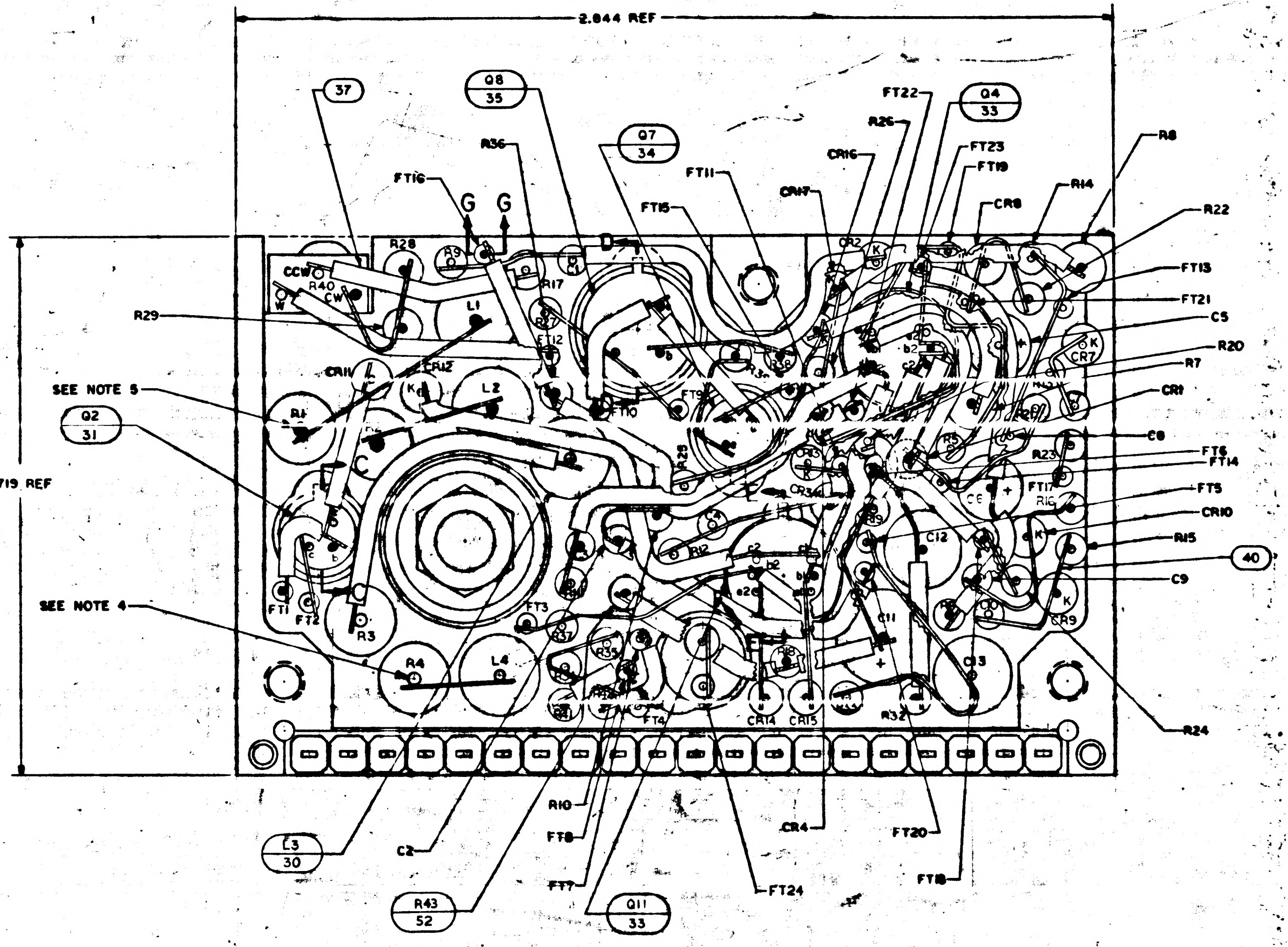
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FT22
R26
Q4
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FT23
FT19
CR8
R14
R8
R22
FT13
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C5
R20
R7
CR1
C8
FT6
FT14
FT5
CR10
R15
40
C9
R24
R29
SEE NOTE 5
Q2
31
SEE NOTE 4
R28
R40
CCW
CW
L1
L2
CR11
CR12
R1
R3
R4
L4
FT1
FT2
FT3
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CR14
CR15
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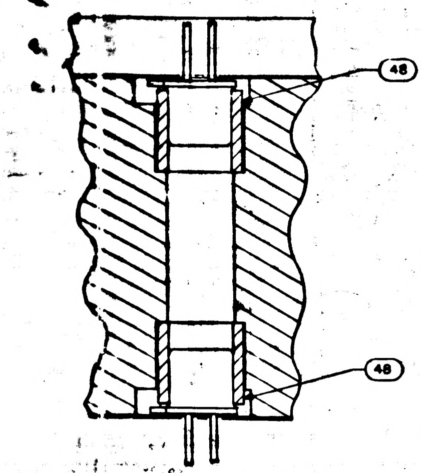
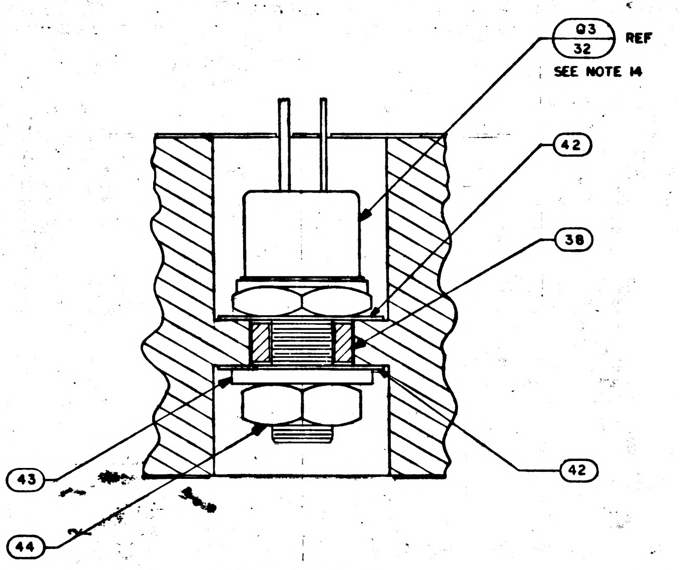
FT18



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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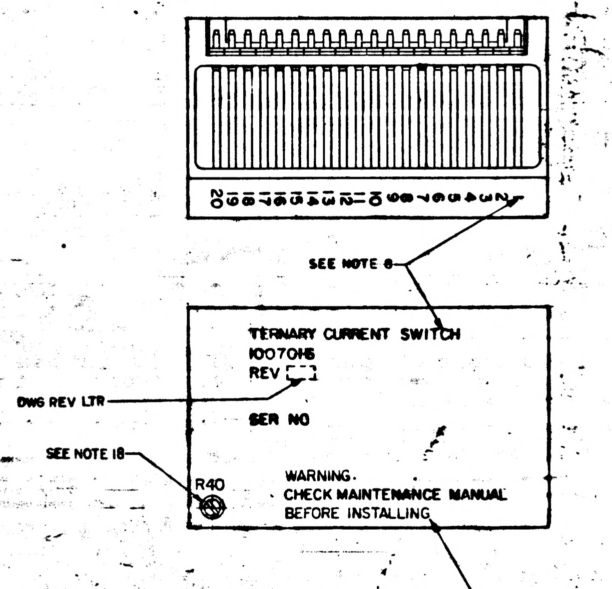
SECTION A-A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TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 18

MARKING VIEW
SCALE 2/1

F-3

MASTER

☒	1010016	SCHEMATIC	REF
1	1010372-6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR,FIXED MF 7.5K 1/4W ±2%	49
64	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP, FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP, FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP, FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP, FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10 K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 32K 1/8W ±1%	8
4	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1007154	
NEXT ASSY	USED ON
APPLICATION	

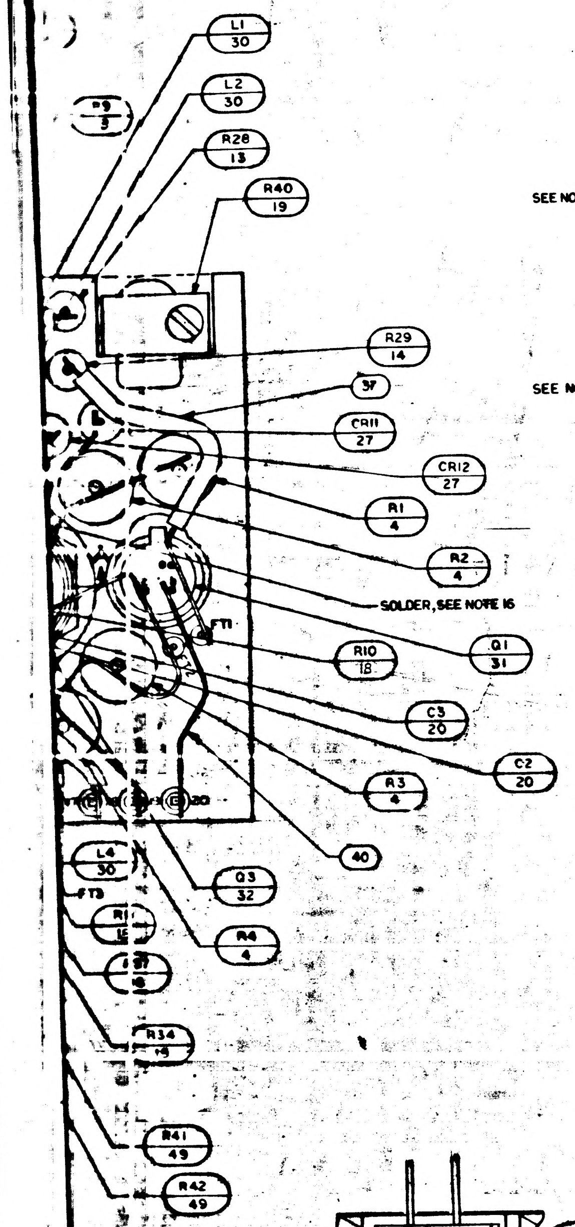
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 29 JAN 63
CHECKED 18 FEB 63
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007016
SCALE 5/1
WT
SHEET 1 OF 1



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CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
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FT1
R10 18
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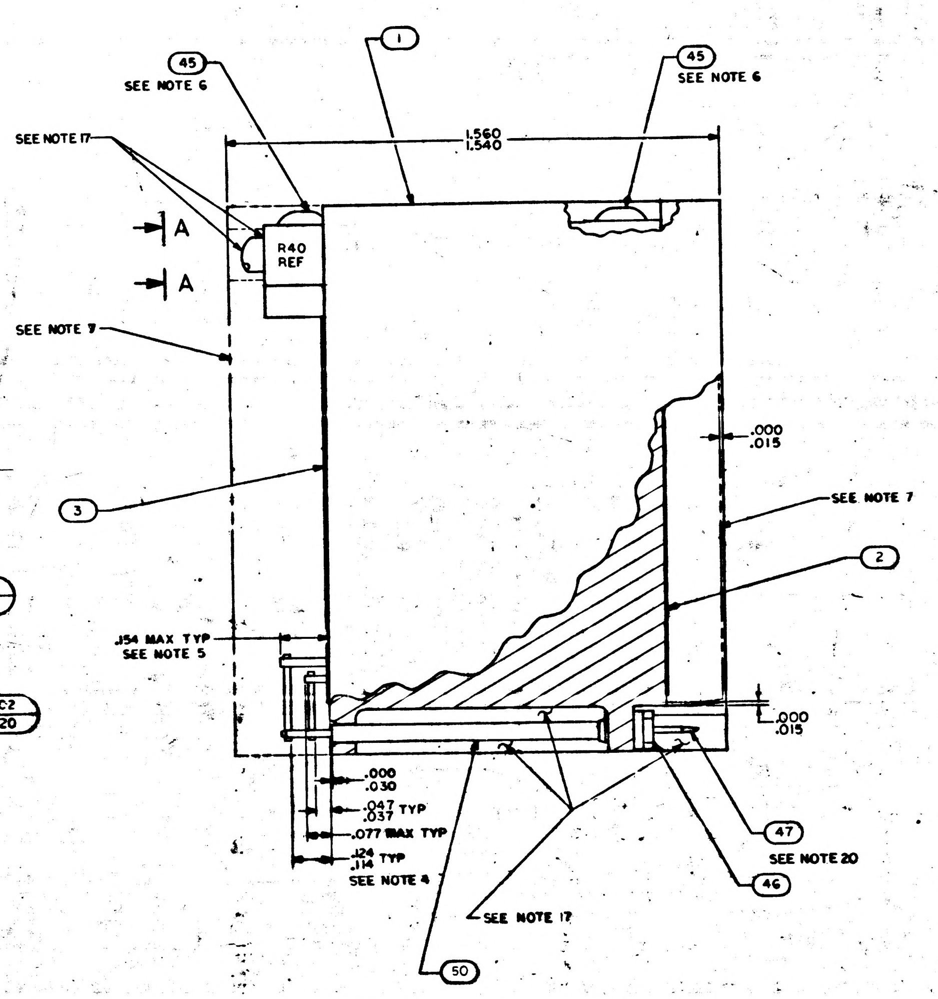
R42 49



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SEE NOTE 17
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SEE NOTE 7
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SEE NOTE 5
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SEE NOTE 4
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SEE NOTE 20
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SEE NOTE 17
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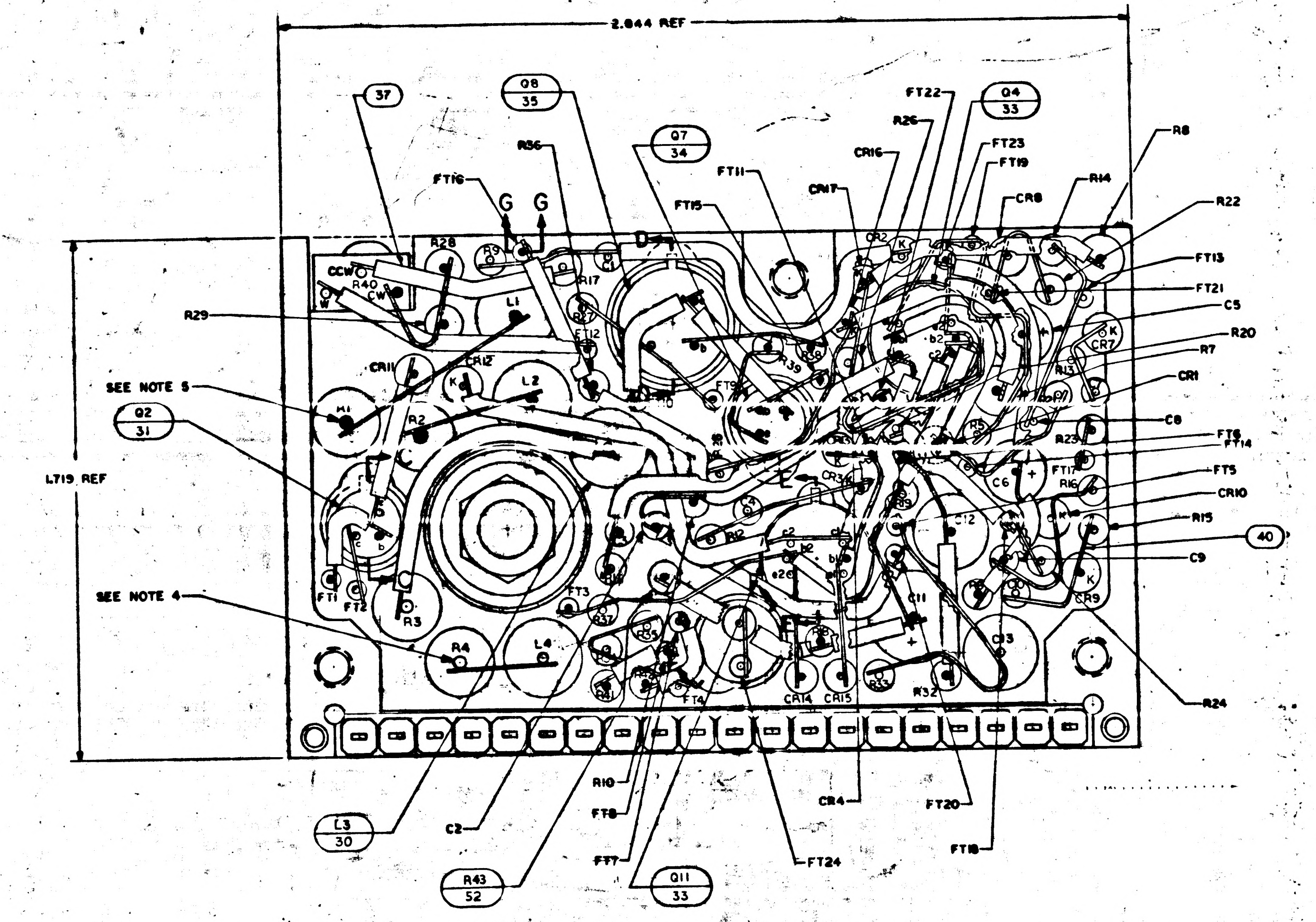

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FT11
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FT22
R26
Q4 33
FT23
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CR8
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R8
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FT13
FT21
C5
R20
R7
CR1
C8
FT6
FT14
FT5
CR10
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CR9
R24
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CCW
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CR11
CR12
L2
SEE NOTE 5
Q2 31
R2
SEE NOTE 4
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FT1
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R4
L4
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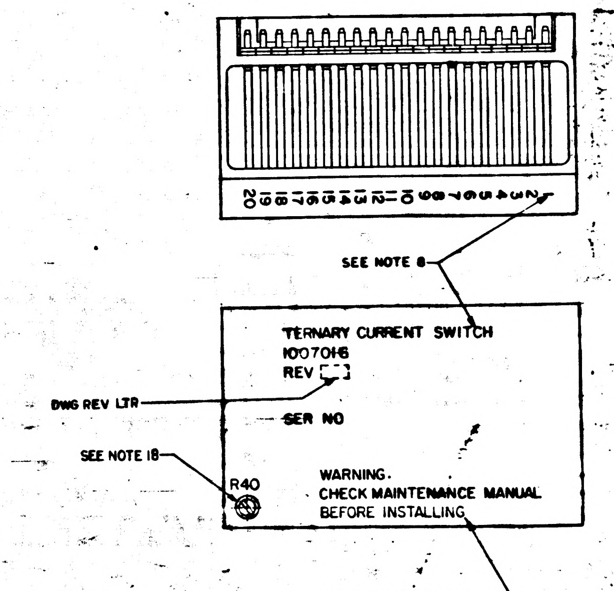
FT20
FT18



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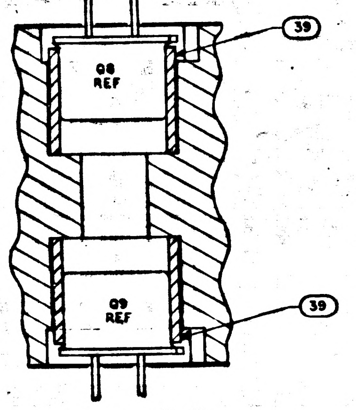
SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1



Q8 REF
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Q9 REF
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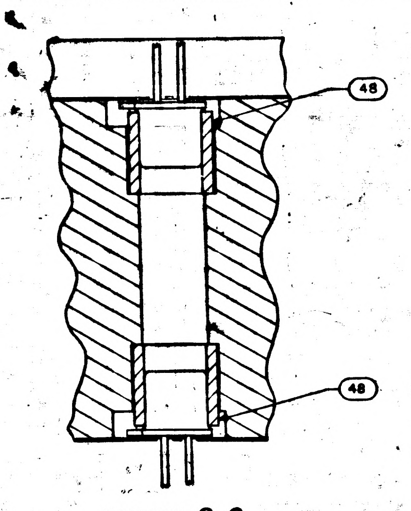
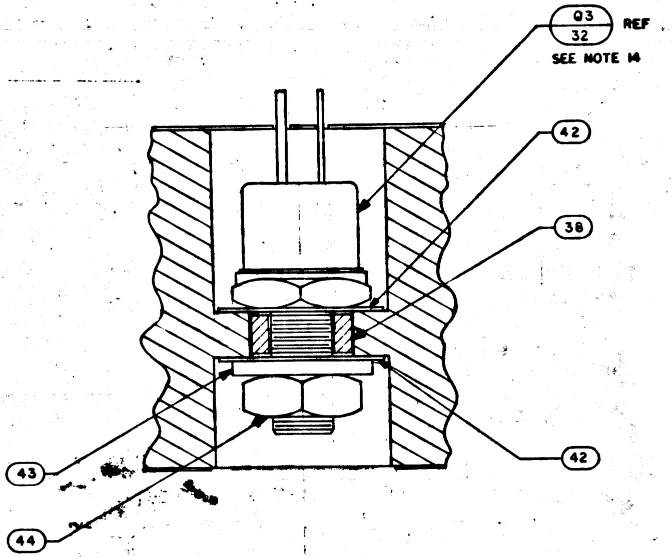
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34



Q3 32 REF
SEE NOTE 14
42
38
43
44
42

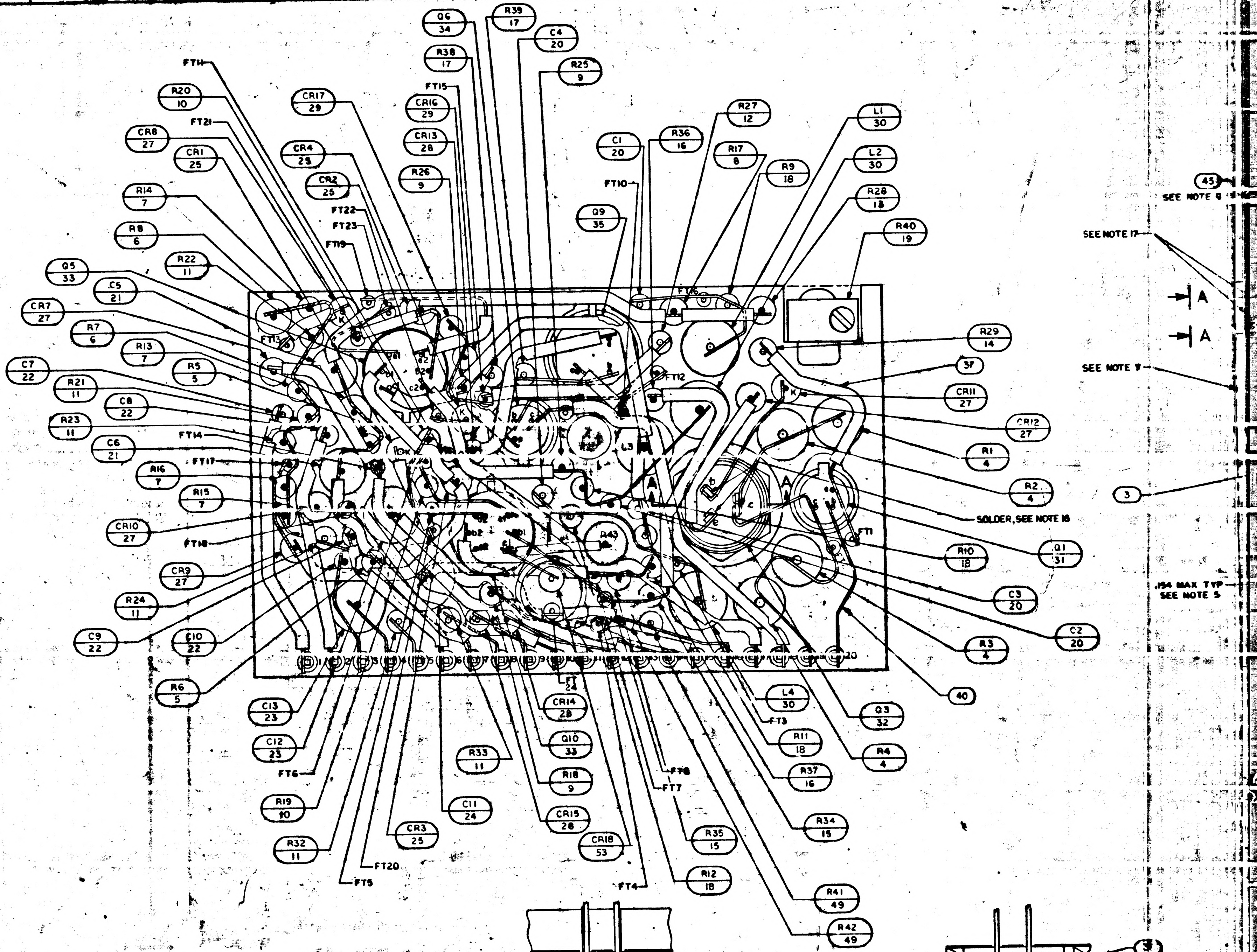
SECTION A-A

MASTER

C07154	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS
± XX ±.02
XXX ±.00
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL

INCHES
PHOTOGRAPHIC SCALE ONLY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FT17
R2 4
R15 7
SOLDER, SEE NOTE 16
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FT18
FT1
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C3 20
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C2 20
C9 22
C10 22
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R6 5
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L4 30
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FT3
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C12 23
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R18 9
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FT6
FT8
FT7
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CR15 28
R34 15
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CR3 25
CR18 53
R32 11
FT20
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SEE NOTE 6
SEE NOTE 17
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SEE NOTE 9
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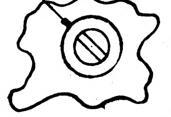
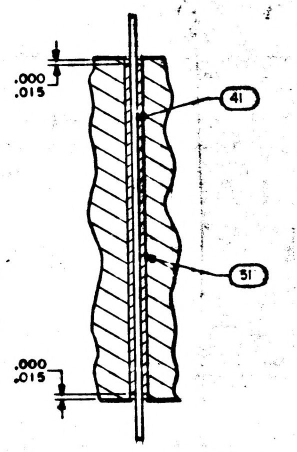
.154 MAX TYP SEE NOTE 5



VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH [illegible]~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4. THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. OUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
~~15. MARK .080/.100 RED PER [illegible]~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136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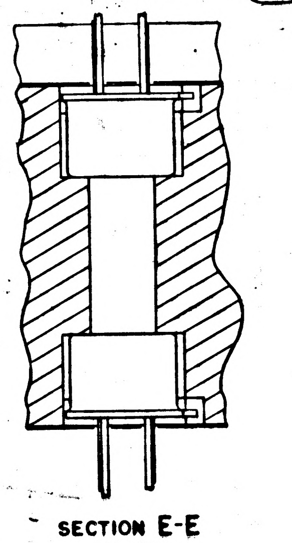
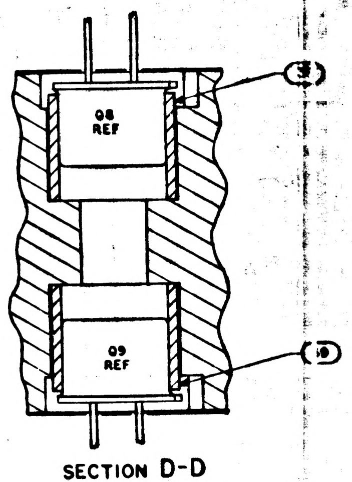
SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33


38
Q8 REF
Q9 REF
19

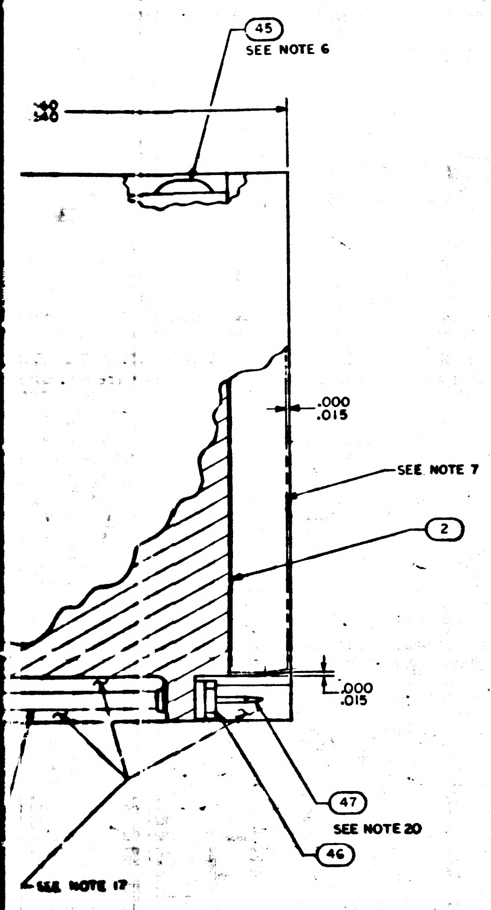
SECTION D-D

INCHES
PHOTOGRAPHIC SCALE ONLY

1007016 M

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00777	7-3-63	CT WK
B	REVISED PER TDRR 01013	3-25-63	JX WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	4-8-63	JT. WK
E	REVISED PER TDRR 01355	5-20-63	O.T. WK
F	REVISED PER TDRR 01616	6-10-63	RPK. WK
G	REVISED PER TDRR 01716	6-26-63	EPK. WK
H	REVISED PER TDRR 01868	7-2-63	J.J.M. WK
J	REVISED PER TDRR 02167	7-31-63	JJM WK
K	REVISED PER TDRR 05276	17 DEC 63	EPK WK
L	REVISED PER TDRR 05409	27 DEC 63	EPK WK
M	REVISED PER TDRR 05876	21 JAN 64	EPK WK

REVISIONS TDRR 00411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SEE NOTE 6
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SEE NOTE 7
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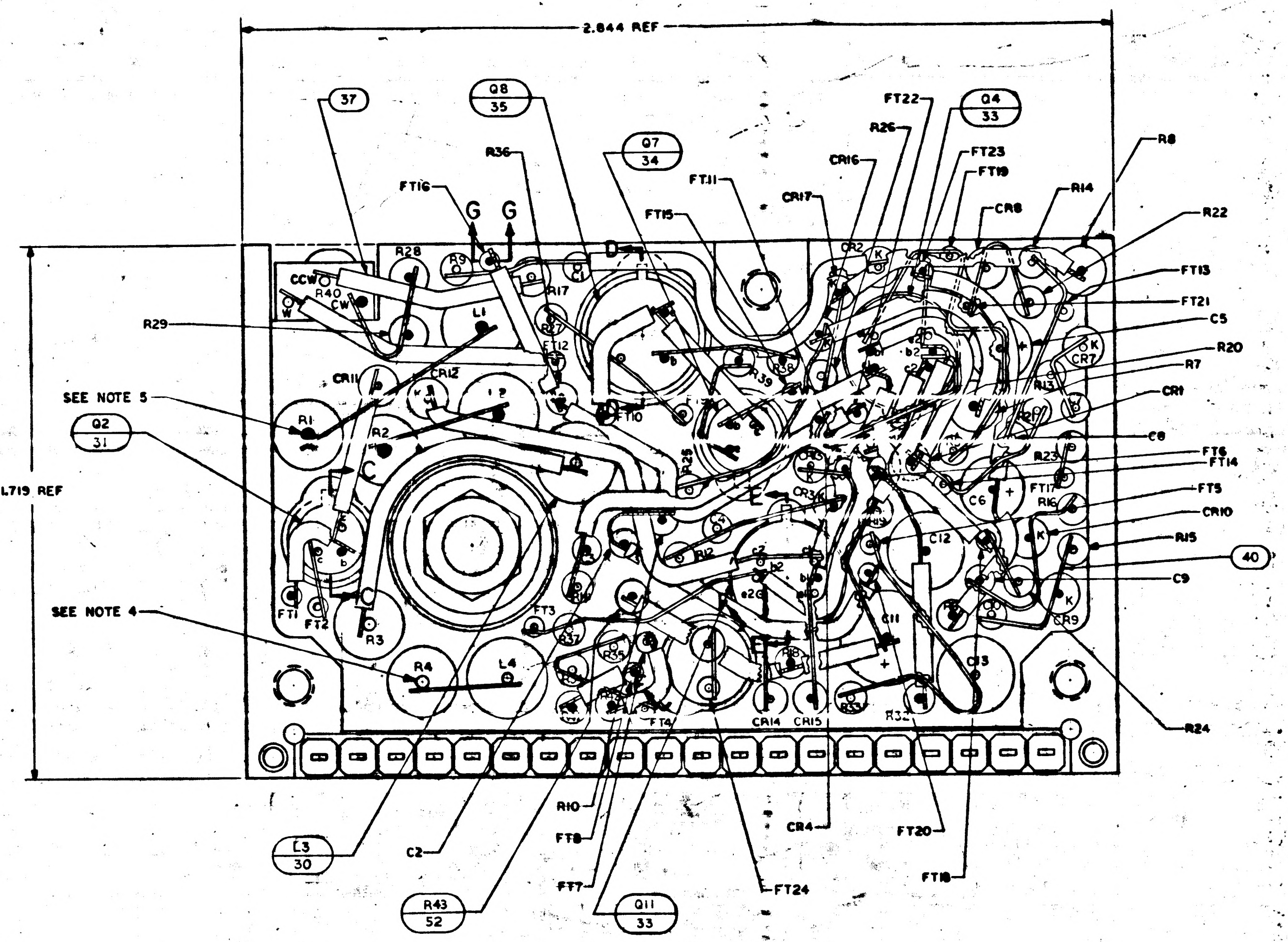
SEE NOTE 20
46
SEE NOTE 17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R7
CR1
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CR12
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CR9
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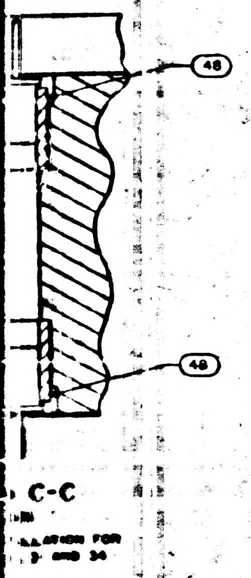
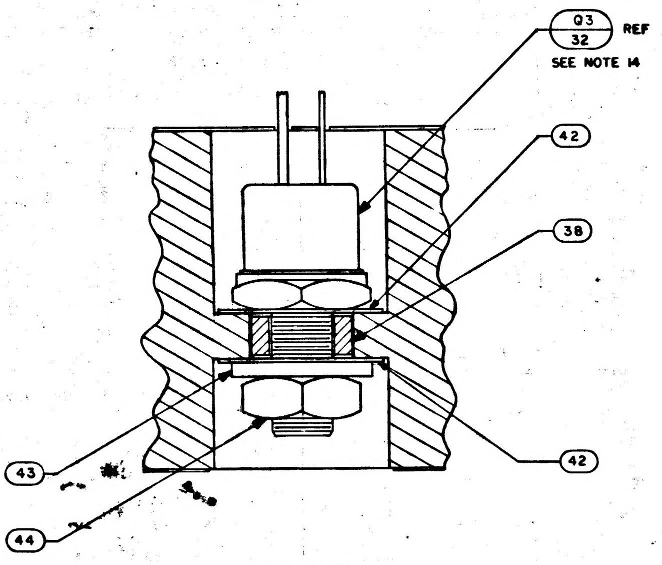
FT24
FT18

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REF
SEE NOTE 14
42
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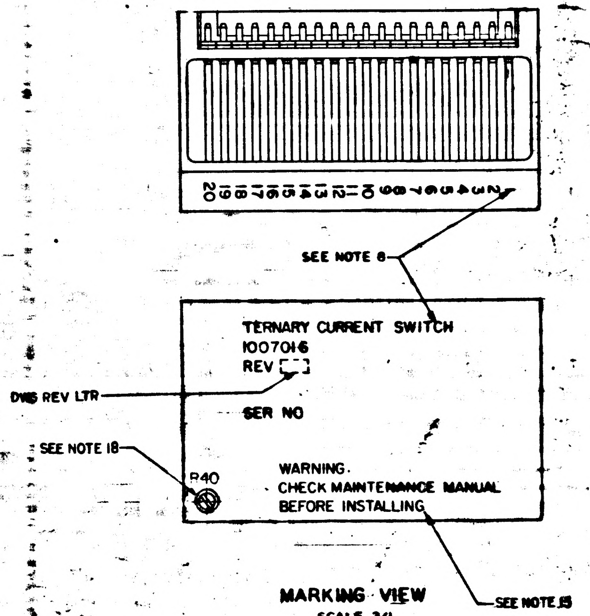
44
42

SECTION A-A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SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010016	SCHEMATIC	REF
1	1010372-6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-63	RESISTOR, FIXED MF 25K 1/4W ± 2%	49
64	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP, FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP, FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP, FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP, FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10 K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF. 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 92K 1/8W ±1%	8
4	1006750-81	RESISTOR, FIXED MF, 10K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007154	

APPLICATION

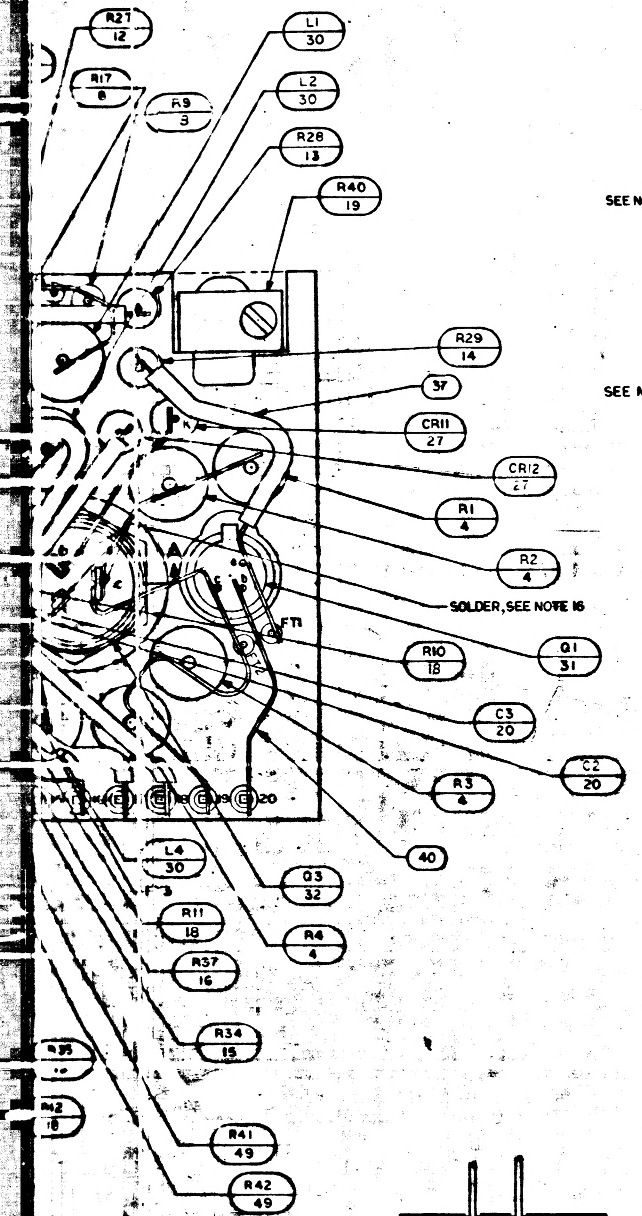
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN J. F. [illegible] DATE 24 JAN 63
CHECKED [illegible] 14 FEB 63
APPROVAL [illegible]
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007016
SCALE 5/1 WT SHEET 1 OF 1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R9 3
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R28 13
R40 19
R29 14
37
CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
Q1 31
R10 18
C3 20
C2 20
R3 4
40
FT1
L4 30
Q3 32
R11 18
R4 4
R37 16
R34 15
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R12 18
R41 49
R42 49
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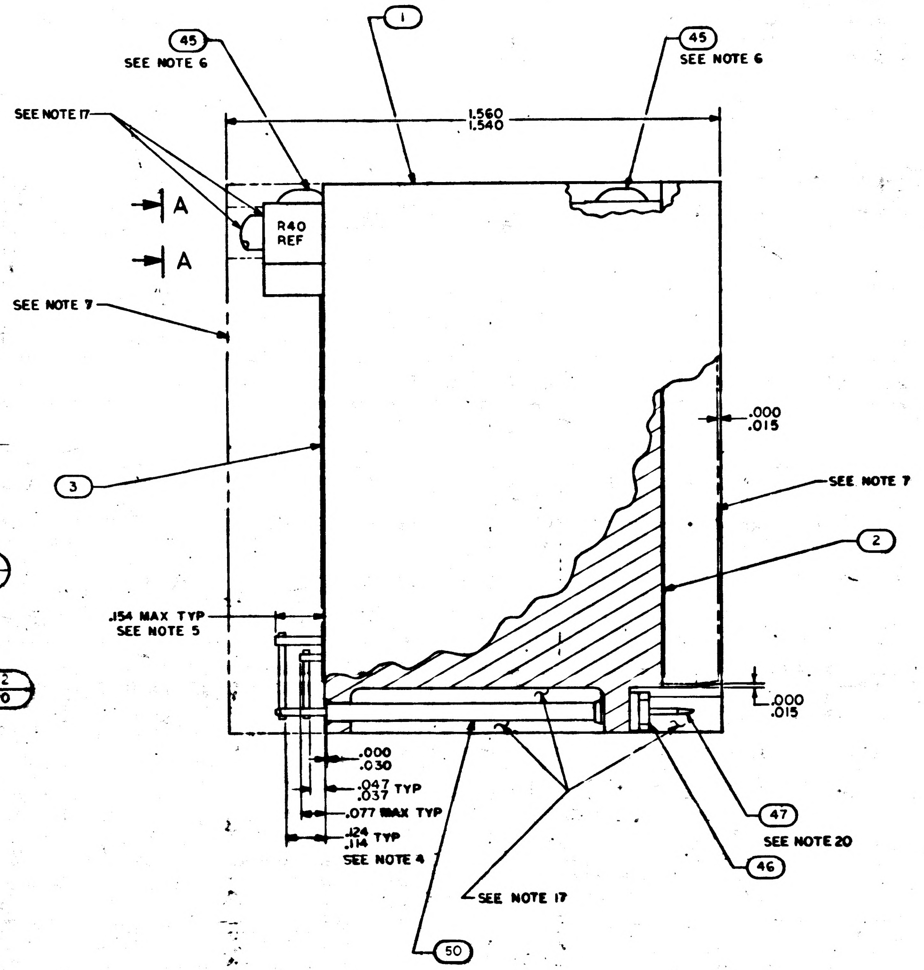
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SEE NOTE 6
SEE NOTE 17
A
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1.540
SEE NOTE 7
3
SEE NOTE 7
2
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.015
.154 MAX TYP
SEE NOTE 5
.000
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.037 TYP
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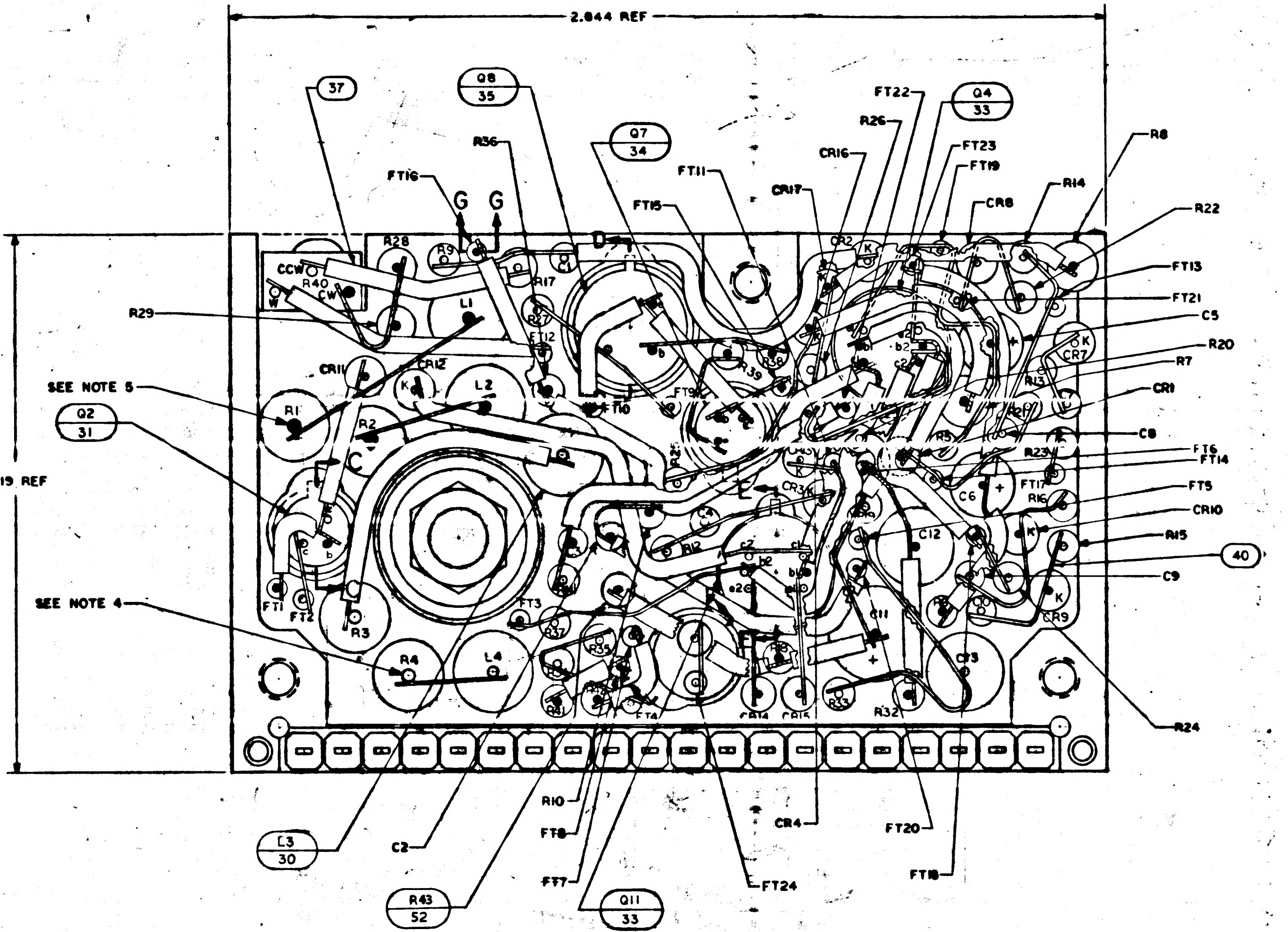
.124
.114 TYP
SEE NOTE 4
SEE NOTE 17
47
SEE NOTE 20
46
50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1.719 REF
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R36
Q7 34
FT16
G G
D
FT11
FT15
CR17
CR16
FT22
R26
Q4 33
FT23
FT19
CR8
R14
R8
R22
FT13
FT21
C5
R20
R7
CR1
C8
FT6
FT14
FT5
CR10
R15
C9
40
R24
R28
R9
R17
CCW
R40
CW
L1
FT12
R29
CR11
CR12
L2
SEE NOTE 5
Q2 31
R1
R2
C
E
FT10
FT9
R39
R13
R5
R23
C6
R16
FT17
C12
C11
C13
CR9
SEE NOTE 4
FT1
FT2
R3
R4
L4
FT3
R37
R35
R34
R12
FT4
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FT7
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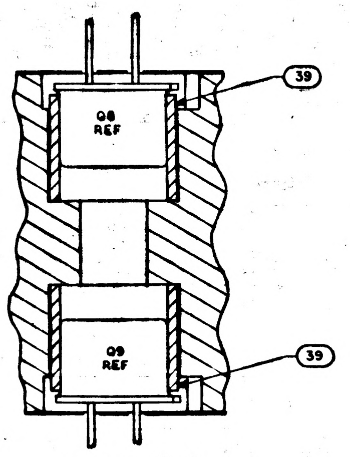
FT24
CR4
FT20
FT18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Q9 REF
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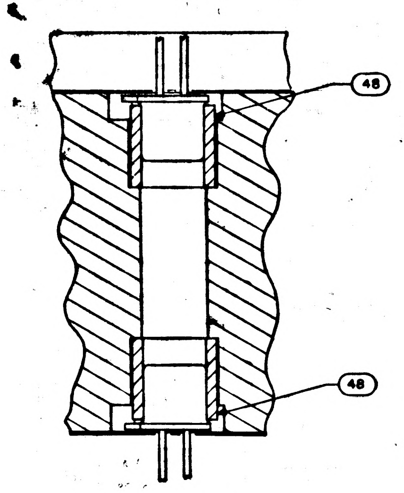
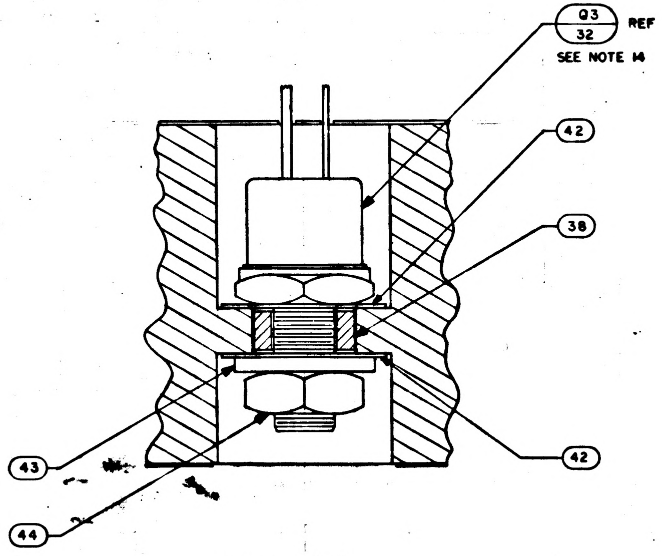
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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SEE NOTE 14
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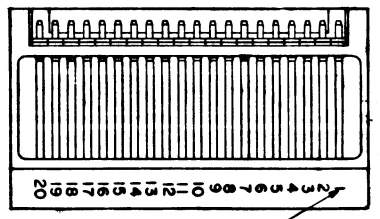
38
43
44
42

SECTION A-A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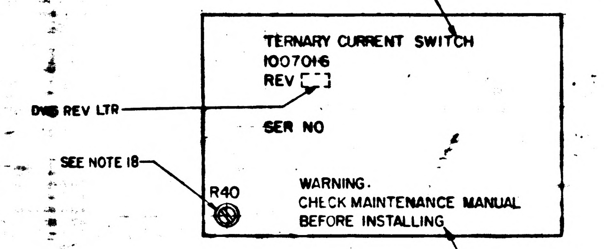
SEE NOTE 8



TERNARY CURRENT SWITCH
1007016
REV [ ]

SER NO

R40

WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

DWG REV LTR
SEE NOTE 18
SEE NOTE 15

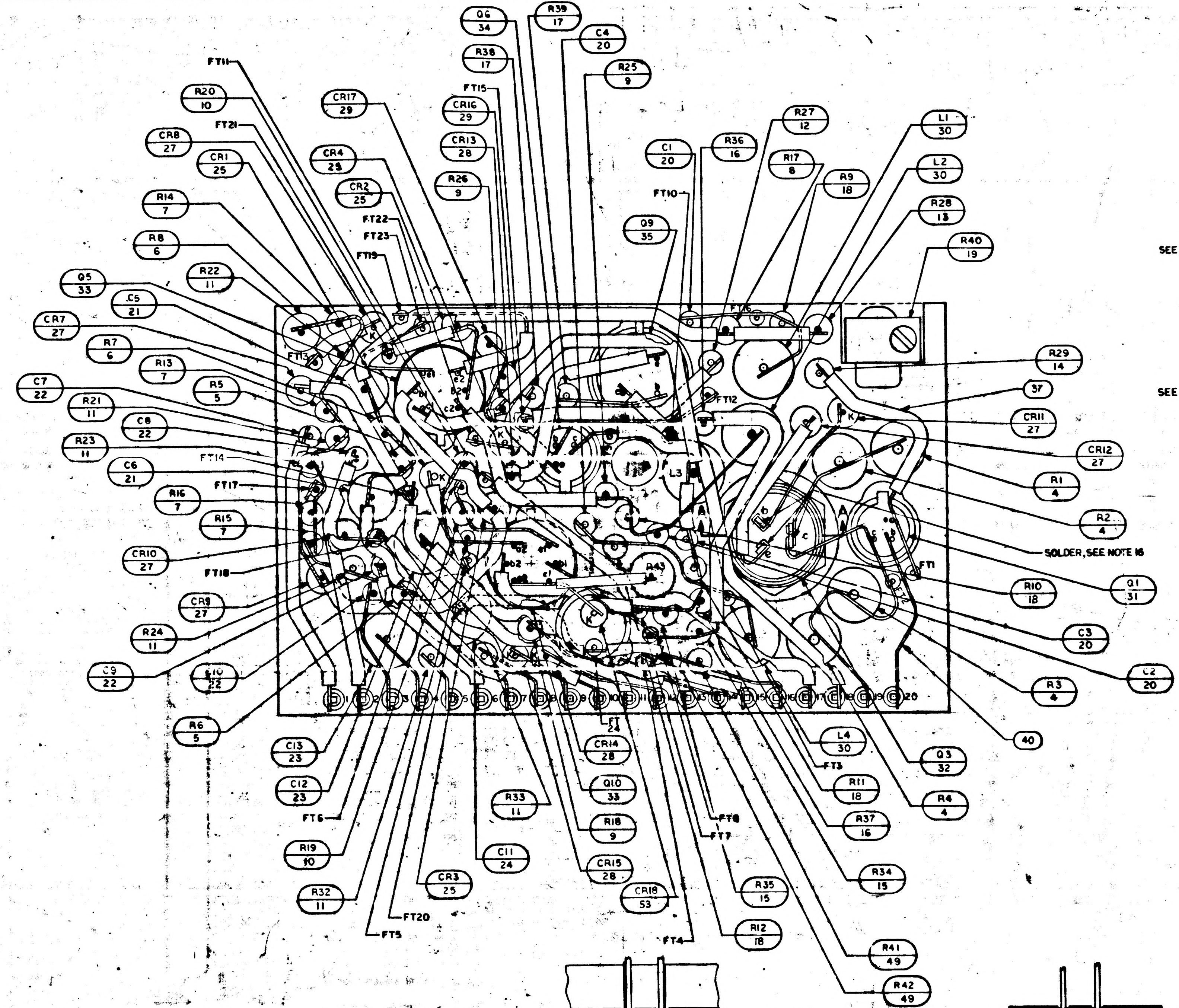
MARKING VIEW
SCALE 2/1

MASTER

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS
± .XX ± .02
.XXX ± .005
DO NOT SCALE DWG
MATERIAL
HEAT TREATMENT
FINAL FINISH
K/07154
NEXT ASSY USED ON
APPLICATION

F-2

[illegible] SPECIFICATIONS OR [illegible] FOR ANY PURPOSE [illegible] GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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FT21
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CR1 25
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R8 6
Q5 33
R22 11
C5 21
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R7 6
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C7 22
R5 5
R21 11
C8 22
R23 11
FT14
C6 21
FT17
R16 7
R15 7
CR10 27
FT18
CR9 27
R24 11
C9 22
C10 22
R6 5
CR17 29
CR4 29
CR2 25
FT22
FT23
FT19
FT13
Q6 34
R38 17
FT15
CR16 29
CR13 28
R26 9
R39 17
C4 20
R25 9
C1 20
FT10
Q9 35
R36 16
R27 12
R17 8
R9 18
L1 30
L2 30
R28 13
R40 19
FT16
FT12
L3
R43
R29 14
37
CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
FT1
FT2
Q1 31
R10 18
C3 20
C2 20
R3 4
40
K
A
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
C13 23
C12 23
FT6
R19 10
R32 11
FT20
FT5
CR3 25
C11 24
R33 11
FT 24
CR14 28
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R18 9
CR15 28
CR18 53
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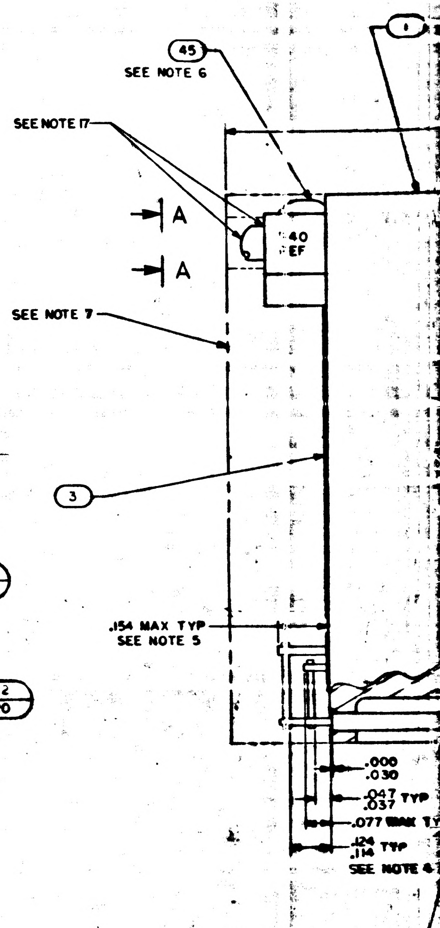
Q3 32
R4 4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SEE NOTE 6
SEE NOTE 17
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A
40 REF
SEE NOTE 7
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SEE NOTE 5
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.047
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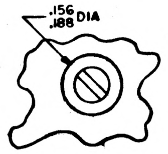
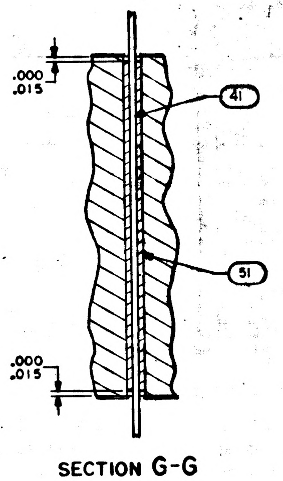
.114 TYP
SEE NOTE 4



VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH [illegible]~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO. 4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
~~15. [illegible]~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO. 46 AND FIND NO. 47 PER ND1002136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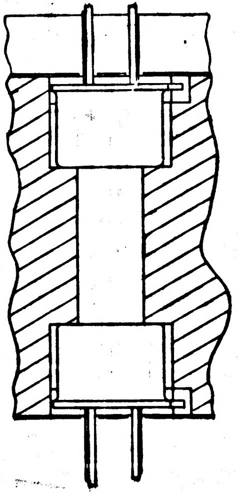
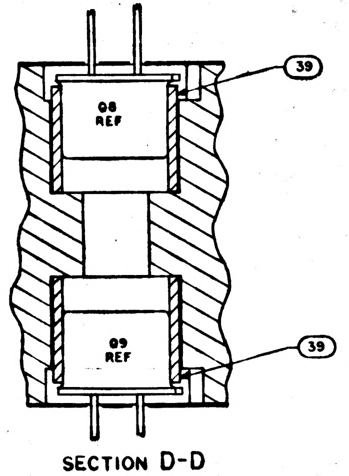
SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33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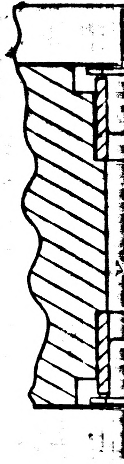
Q9 REF
39

SECTION D-D

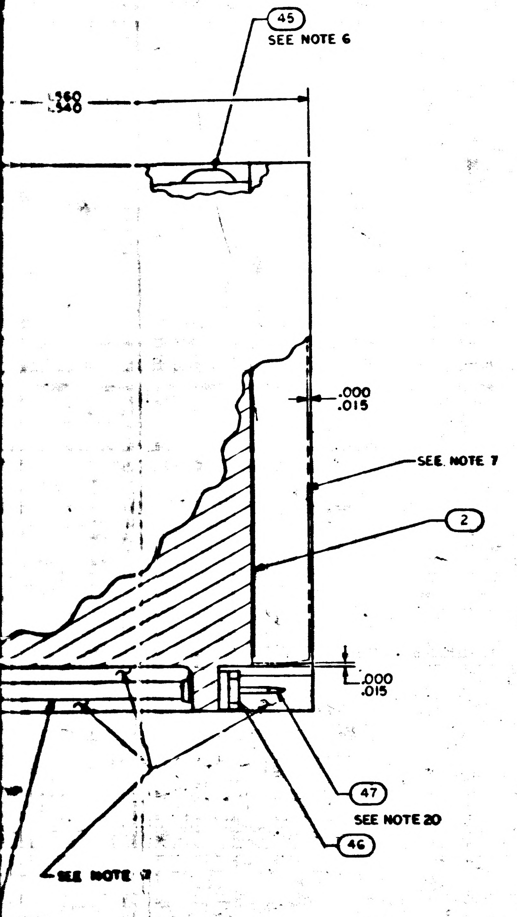


SECT
2 P
TYPICAL I
FIND

N 1007016

REVISIONS TDRR00 411

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00777	4-3-63	OT. WK
B	REVISED PER TDRR 01013	[illegible]	[illegible] WK.
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	6.8.63	OT. WK
E	REVISED PER TDRR 01355	5 20 63	O.T. WK
F	REVISED PER TDRR 01616	6-18-63	EPK. WK.
G	REVISED PER TDRR 01716	6-26-63	EPK WK
H	REVISED PER TDRR 01468	7-2-63	JJM WK
J	REVISED PER TDRR 02169	7-31-63	JJM WK
K	REVISED PER TDRR 05276	17 DEC 63	JFW EPK WK
L	REVISED PER TDRR 05409	[illegible] 63	EPK WK
M	REVISED PER TDRR 05876	21 JAN 64	JFW EPK WK
N	REVISED PER TDRR 06639	25 FEB 64	EPK WK



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SEE NOTE 6
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SEE NOTE 7
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SEE NOTE 20
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SEE NOTE 7
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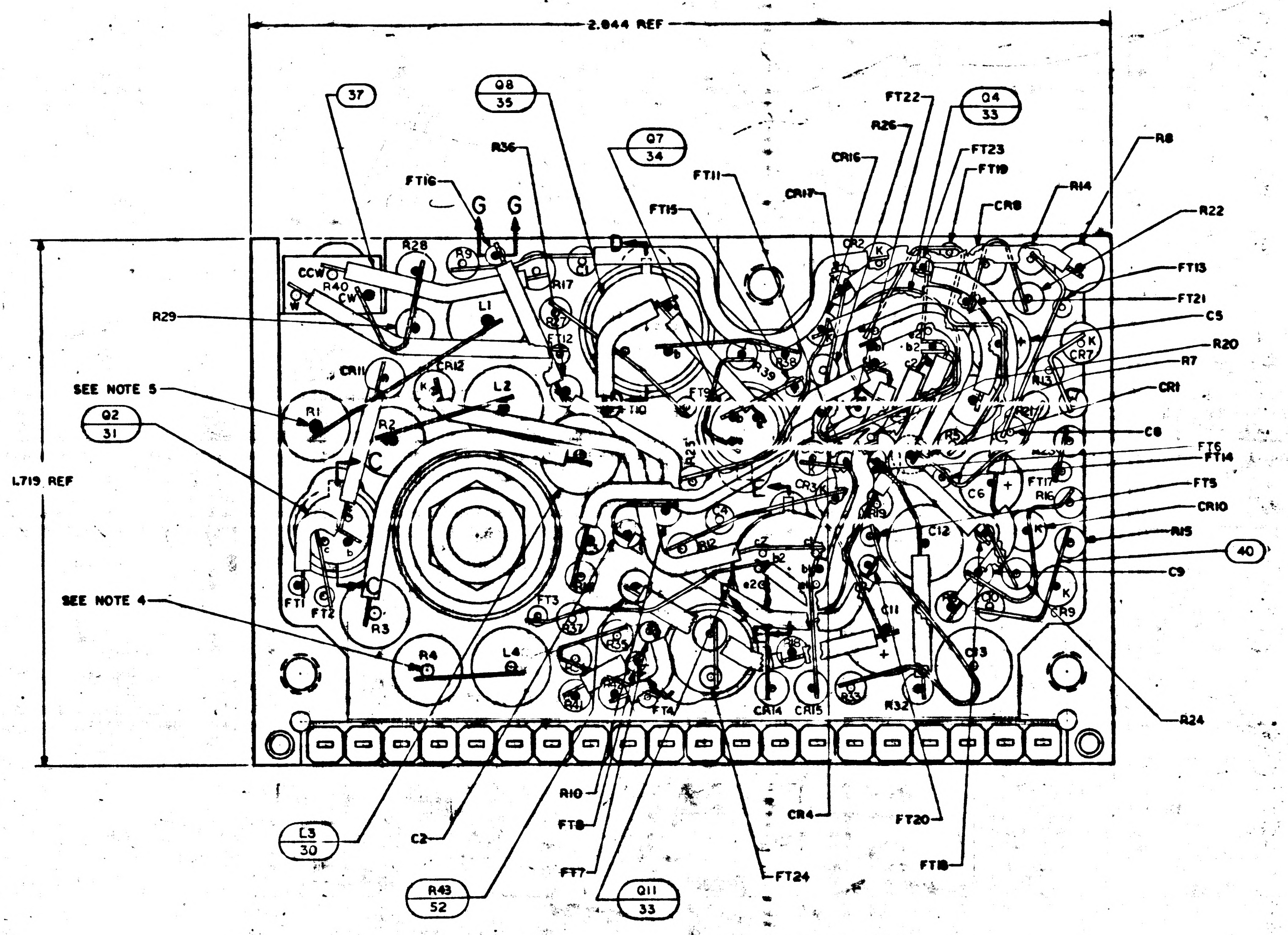

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31
R3
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FT2
SEE NOTE 4
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CR7
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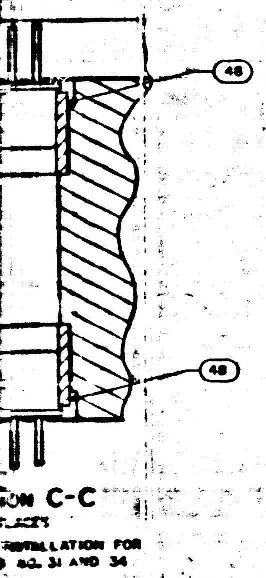
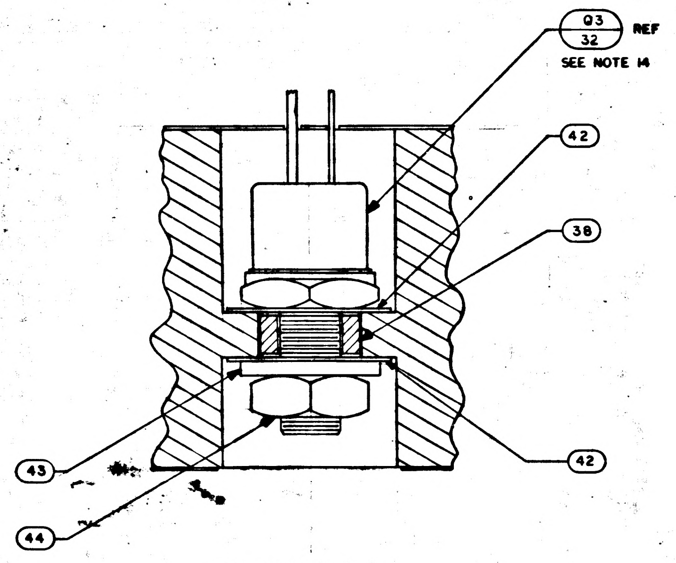


ON C-C
TALLATION FOR
D NO. 31 AND 34



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SEE NOTE 14
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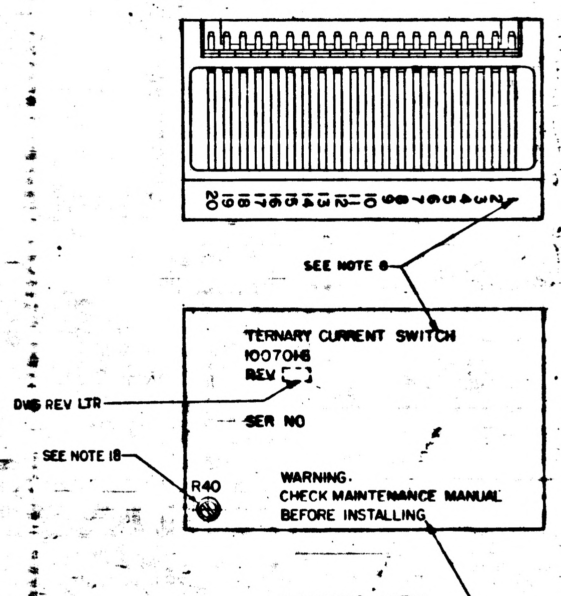
SECTION A-A



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SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
SER NO
DWG REV LTR
SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010016	SCHEMATIC	REF
1	1010372 – 6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR, FIXED MF 25K 1/4W ±2%	49
64	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .0IHY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-15	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10 K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
6	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

N J 1007016

1007154	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

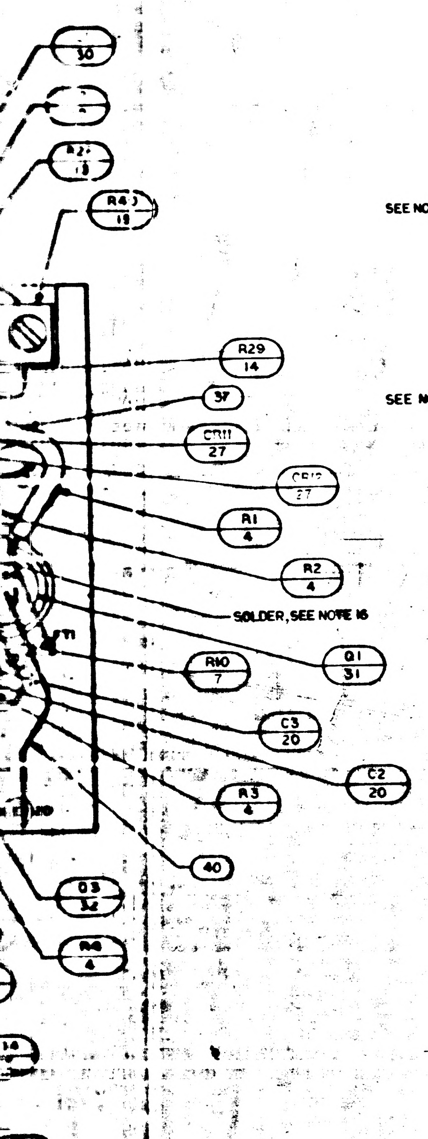
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 29 JAN 63
CHECKED 18 FEB 63
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH,
COMPUTER OUTPUT,
ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007016
SCALE 5/1 WT SHEET 1 OF 1

INCHES
PHOTOGRAPHS SCALE ONLY
F3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R29
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37
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27
CR12
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R1
4
R2
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C3
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C2
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R3
4
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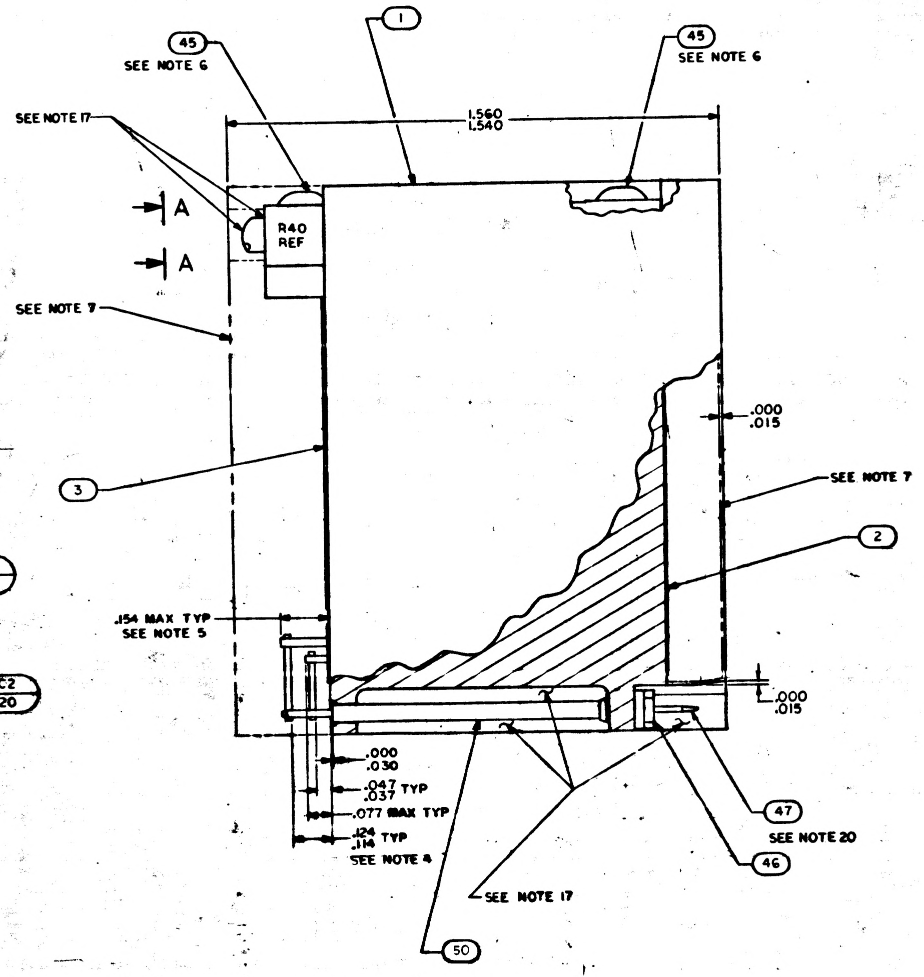
Q3
32
R6
4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SEE NOTE 6
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SEE NOTE 6
SEE NOTE 17
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1.540
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SEE NOTE 7
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.015
3
SEE NOTE 7
2
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SEE NOTE 5
.000
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SEE NOTE 4
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SEE NOTE 20
46
SEE NOTE 17
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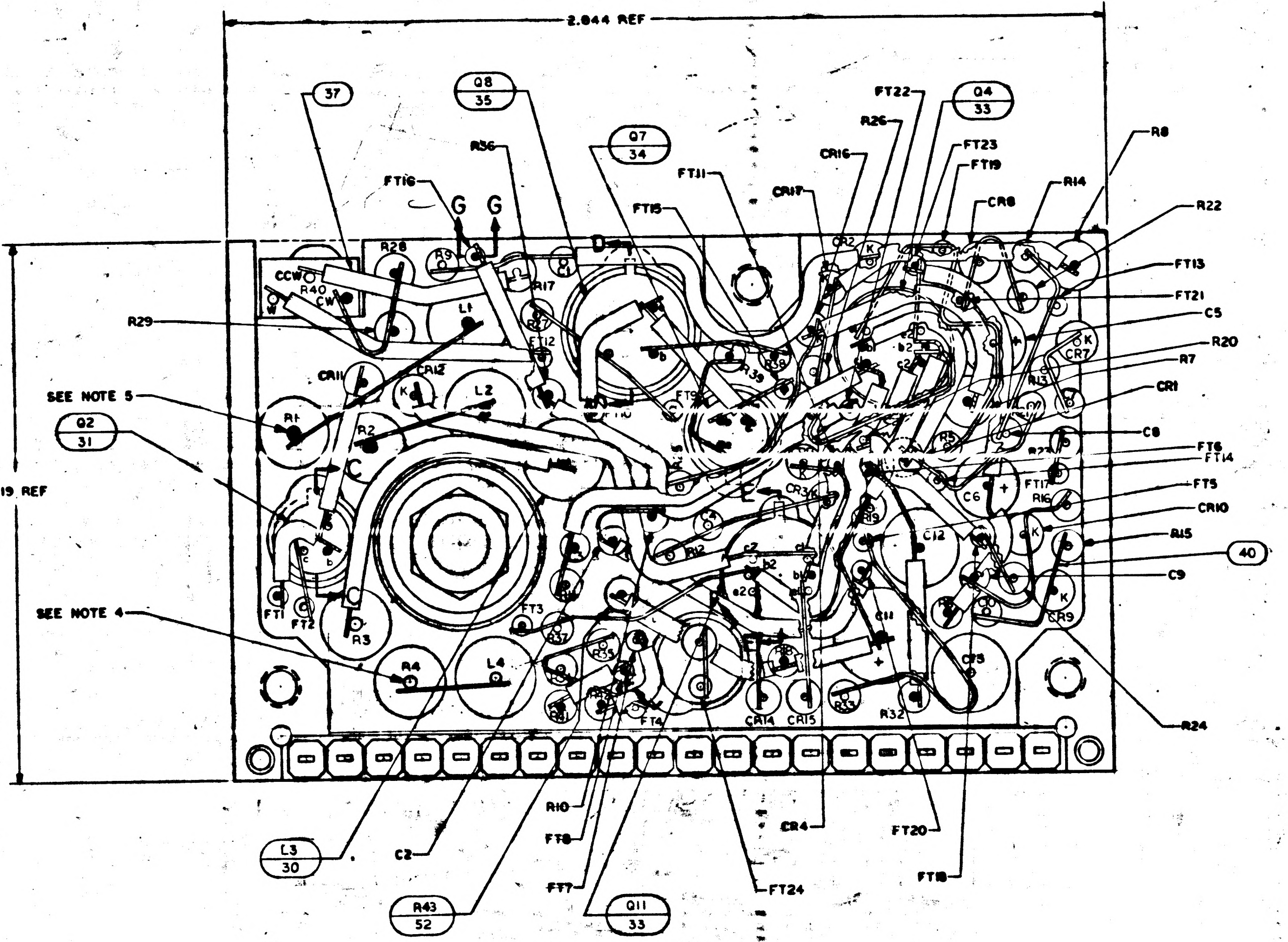
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CR17
FT11
FT16
G
G
FT15
D
CR8
R14
R22
R28
CCW
R40
CW
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R17
L1
FT12
FT13
FT21
C5
R29
K
CR7
R20
R13
R7
CR11
CR12
L2
CR1
SEE NOTE 5
Q2
31
R1
R2
C8
FT6
FT14
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C
FT17
C6
R16
FT5
CR10
CR3
R12
C12
R15
40
C9
FT1
FT2
FT3
CR9
SEE NOTE 4
R3
R4
L4
C13
CR14
CR15
R32
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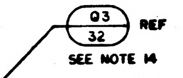
FT20
FT18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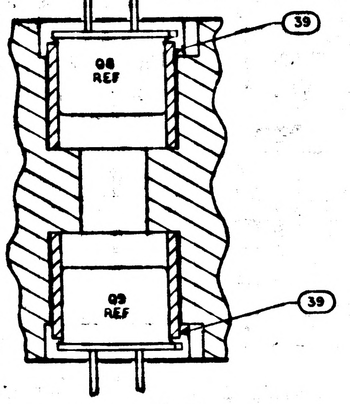
REF
SEE NOTE 14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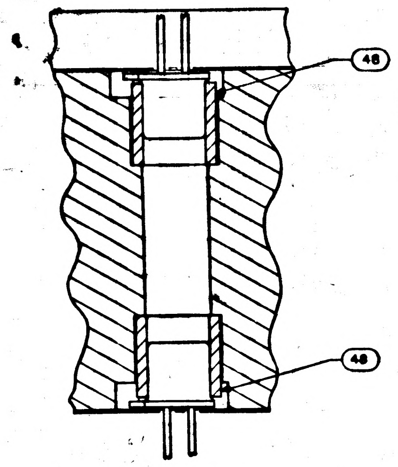
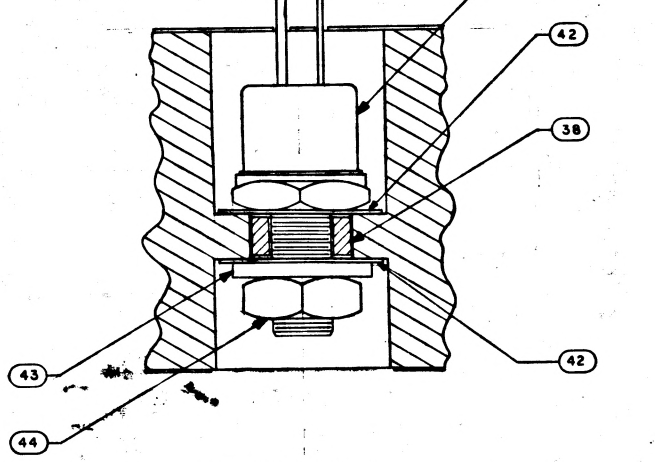
Q8
REF
Q9
REF
39

SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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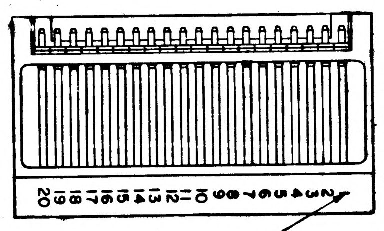
44

SECTION A-A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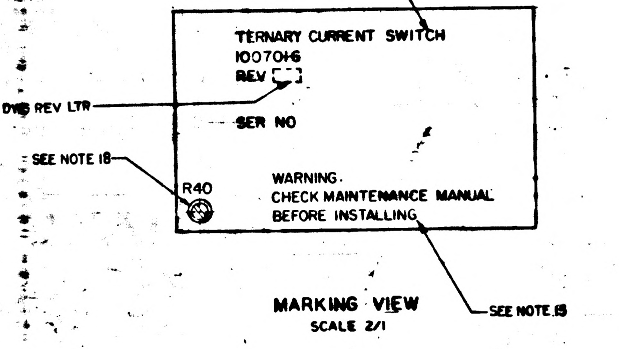
SEE NOTE 8


TERNARY CURRENT SWITCH
1007016
REV [ ]
SER NO
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

DWG REV LTR
SEE NOTE 18
R40
SEE NOTE 13

MARKING VIEW
SCALE 2/1

QTY REQD	PART IDENT
	1010016
1	1010372-6
1	1006750-40
AR	1006776-22
AR	1006776-20
2	1006750-53
64	1008025-1
20	1006762-4
20	1006775
2	1000093-3
1	MS35650-104
1	1008020-1
2	1008024-1
AR	1006787-2
AR	1006757-1
2	1009023-2
1	1008021-1
AR	1006776-21
2	101060[illegible]
2	100675[illegible]
8	101037[illegible]-4
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2	1010357-1
4	1010388-39
2	1010384
3	1010394
6	1010385
4	1010462-6
1	1010393-39
2	1006777-33
4	1006777-20
2	1006755-73
4	1006777-18
1	1010373-10
2	1010369-8
2	1010369-148
2	1006750-61
2	1006750-53
1	1010364-683
1	1010364-635
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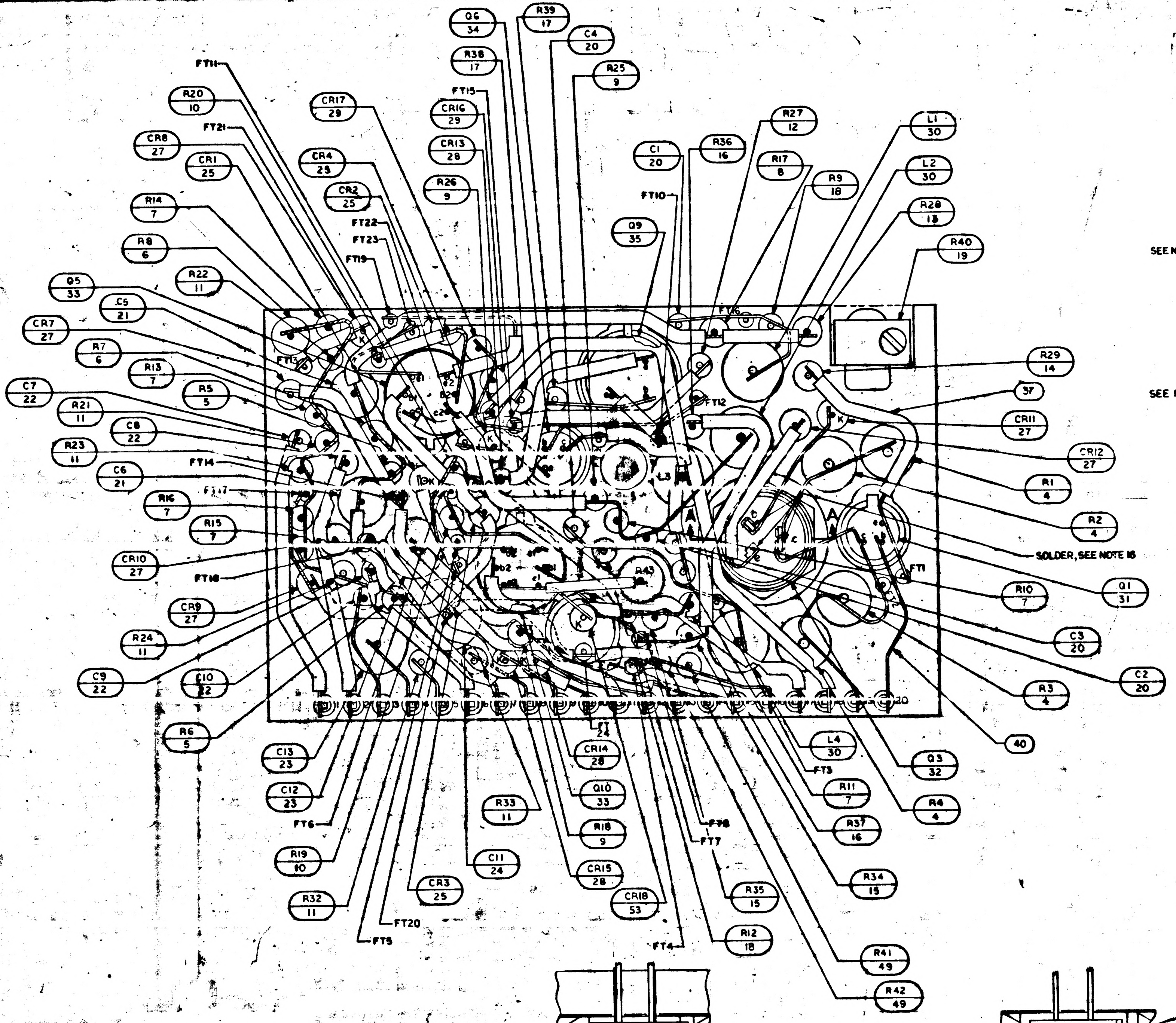
6	1006750-67
2	1006750-56
3	1006750-15
1	1010364-557
8	1006750-81
2	[illegible]
2	1006750-18
4	1010389-20
1	1008019-2
1	1008019-1
1	1007008

MASTER

1007154	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± XX±.02 ±
— XXX±.005 —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION
CAMBRIDGE, MASS.
DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL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C4 20
R38 17
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FT21
CR8 27
CR1 25
CR4 25
CR13 28
R36 16
C1 20
R17 8
L2 30
R9 18
CR2 25
R26 9
FT10
R28 13
R14 7
FT22
FT23
Q9 35
R40 19
R8 6
FT19
R22 11
Q5 33
C5 21
CR7 27
R7 6
R13 7
R5 5
R29 14
C7 22
R21 11
37
C8 22
CR11 27
R23 11
CR12 27
FT14
C6 21
R1 4
R16 7
R2 4
R15 7
SOLDER, SEE NOTE 18
CR10 27
Q1 31
FT18
FT1
R10 7
CR9 27
C3 20
R24 11
C2 20
C9 22
C10 22
R3 4
R6 5
40
C13 23
CR14 28
L4 30
Q3 32
C12 23
Q10 33
R11 7
FT3
R4 4
R33 11
FT6
R18 9
FT8
R37 16
R19 10
C11 24
FT7
CR15 28
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FT5
FT4
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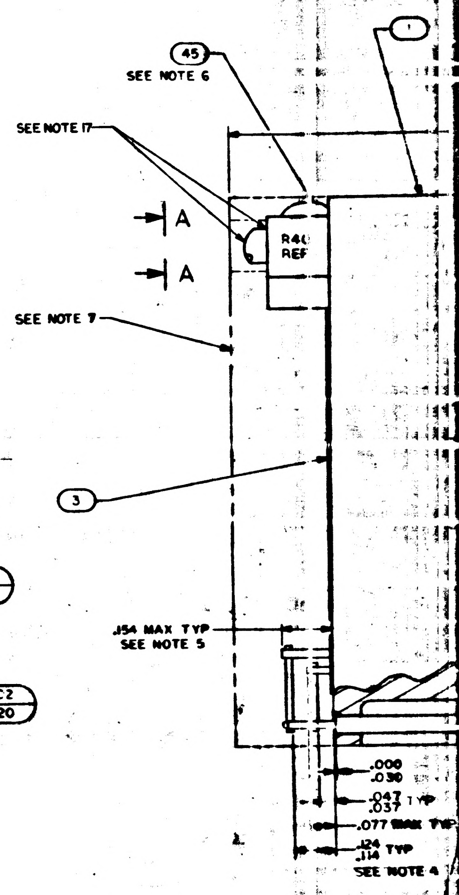
R42 49
L3
R43
20


45
SEE NOTE 6
SEE NOTE 17
A
A
R40 REF
SEE NOTE 7
3
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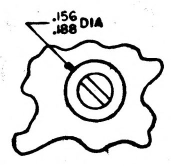
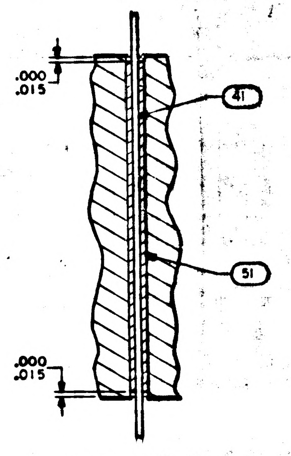
SEE NOTE 5
.000 .030
.047 .037 TYP
.077 MAX TYP
.124 .114 TYP
SEE NOTE 4



VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH [illegible]~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023, CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
15. ~~[illegible]~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136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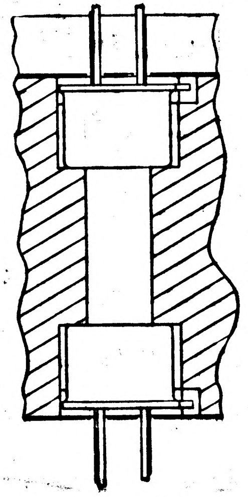
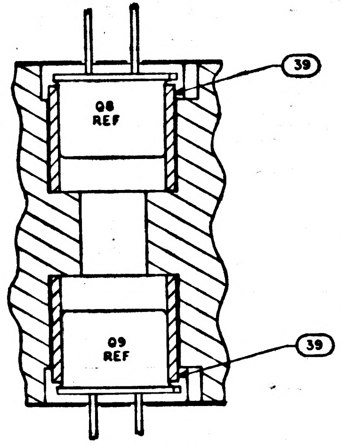
51
.000 .015

SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33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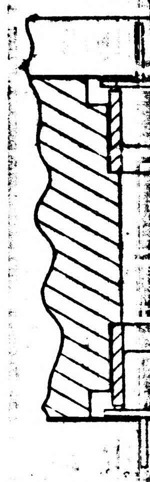
Q8 REF
Q9 REF
39

SECTION D-D



SECTIO

1007016 P

SYM	REVISIONS CRR00411 DESCRIPTION	DATE	APPROVAL
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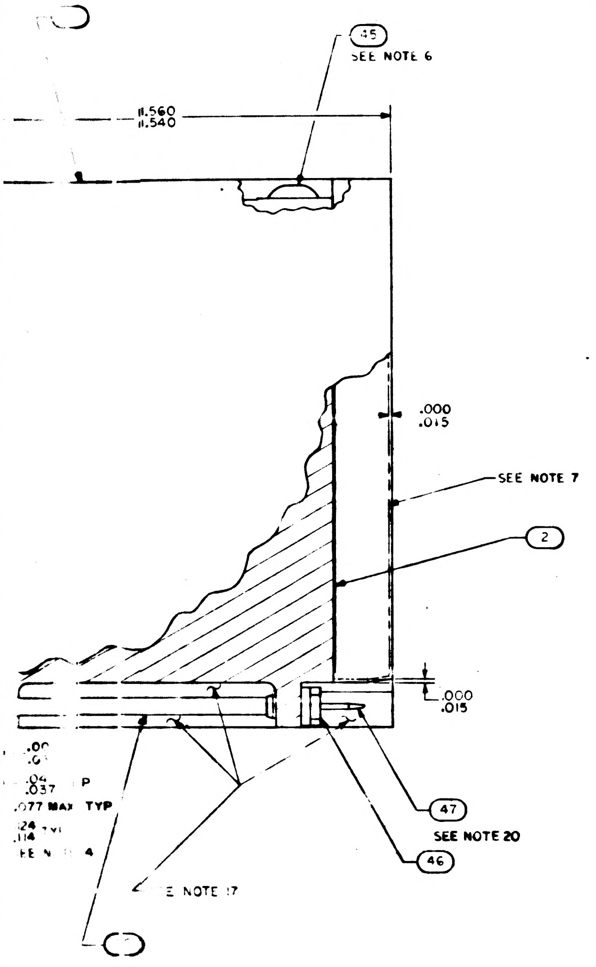
B	REVISED PER TDRR 01013	4-25-63	DT WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	DT WK
E	REVISED PER TDRR 01355	5-20-63	DT WK
F	REVISED PER TDRR 01616	6-10-63	EPK WK
G	REVISED PER TDRR 01716	6-26-63	EPK WK
H	REVISED PER TDRR 01868	7-2-63	JJM WK
J	REVISED PER TDRR 02167	7-31-63	JJM WK
K	REVISED PER TDRR 05276	17 OCT 63	EPK WK
L	REVISED PER TDRR 05409	29 NOV 63	EPK WK
M	REVISED PER TDRR 05876	21 JAN 64	EPK WK
N	REVISED PER TDRR 06639	25 FEB 64	EPK WK
P	REVISED PER TDRR 07011	30 MAR 64	JJ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SEE NOTE 6
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SEE NOTE 4
SEE NOTE 17
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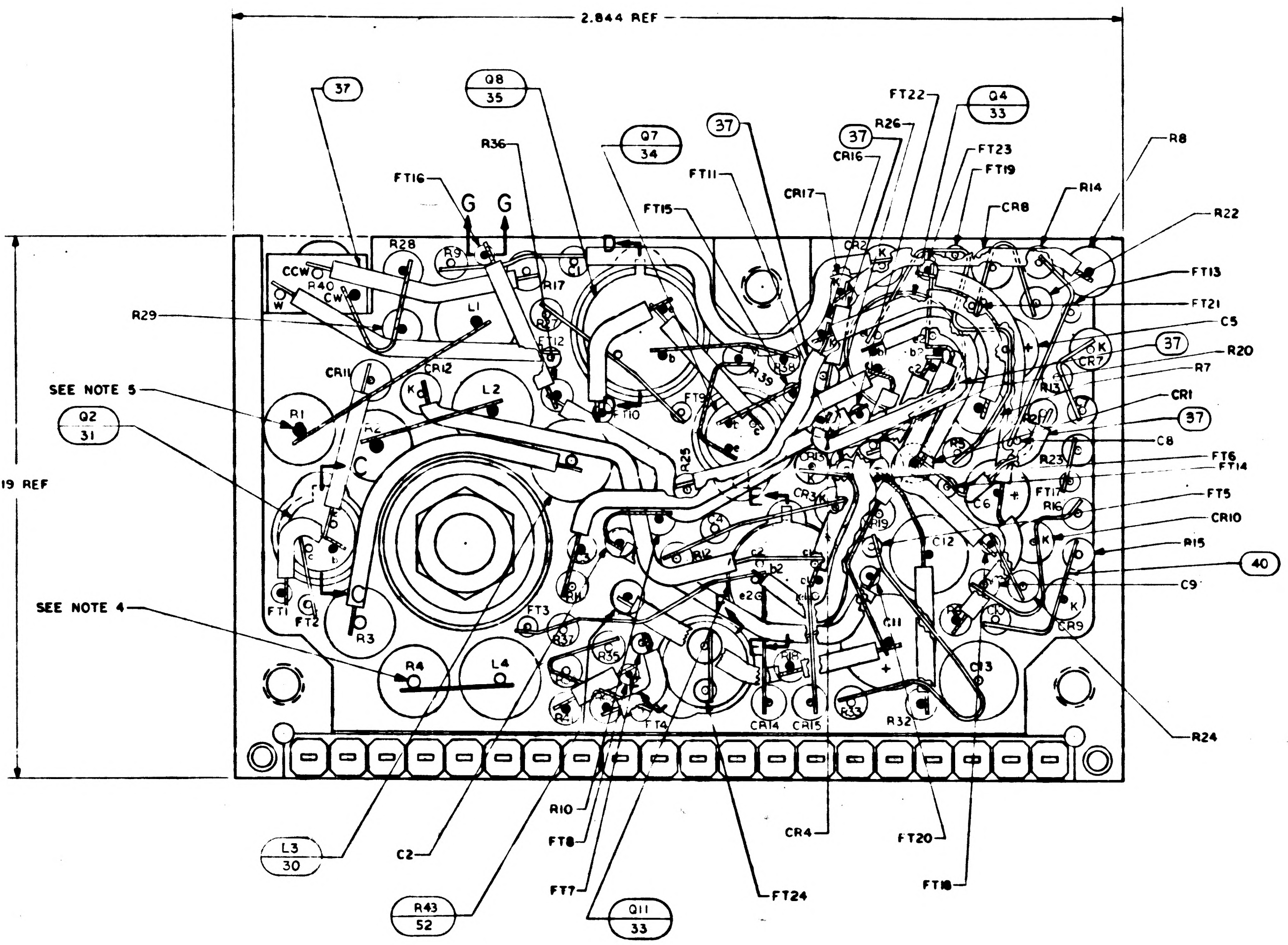
SEE NOTE 20
46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FT6
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CR9
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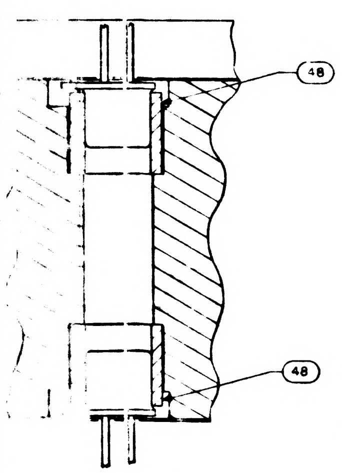
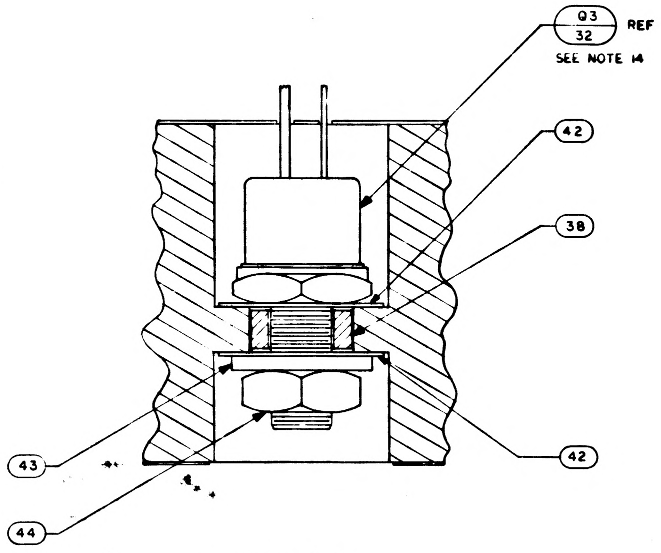


SECTION C-C
PLACES
INSTILLATION FOR
FIND NO. 31 AND 34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SEE NOTE 14
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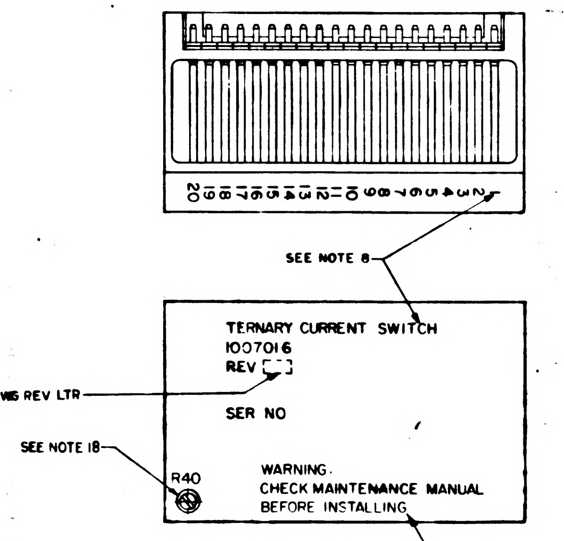
SECTION A-A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SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010016	SCHEMATIC	REF
1	1010372-6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR, FIXED MF 7.5K 1/4W ±2%	49
64	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
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2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
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1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
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2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 29 JAN 63
CHECKED 18 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

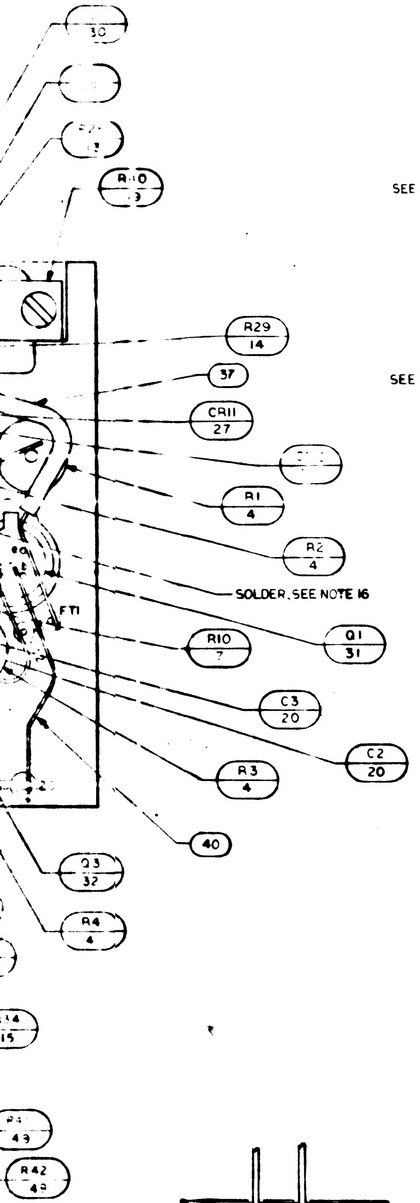
TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007016
SCALE 5/1 | WT | SHEET 1 OF 1

P 1007016 J

37/1007016

9102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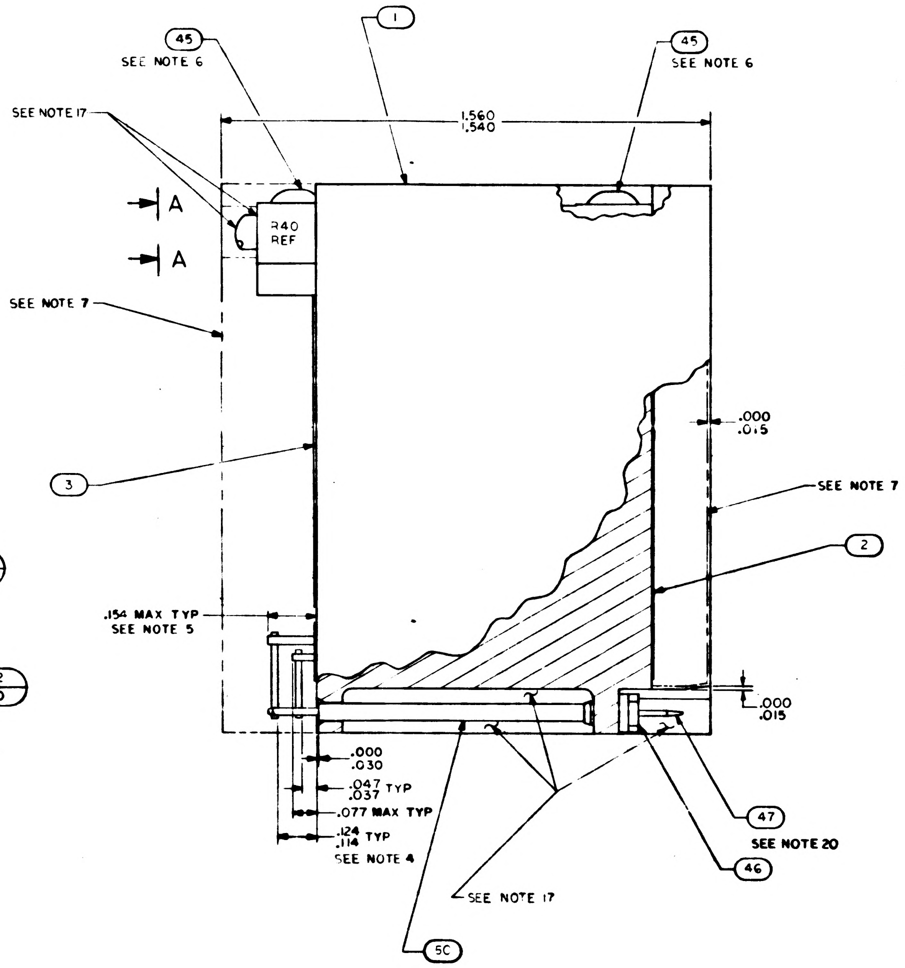
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SEE NOTE 6
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SEE NOTE 7
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SEE NOTE 17
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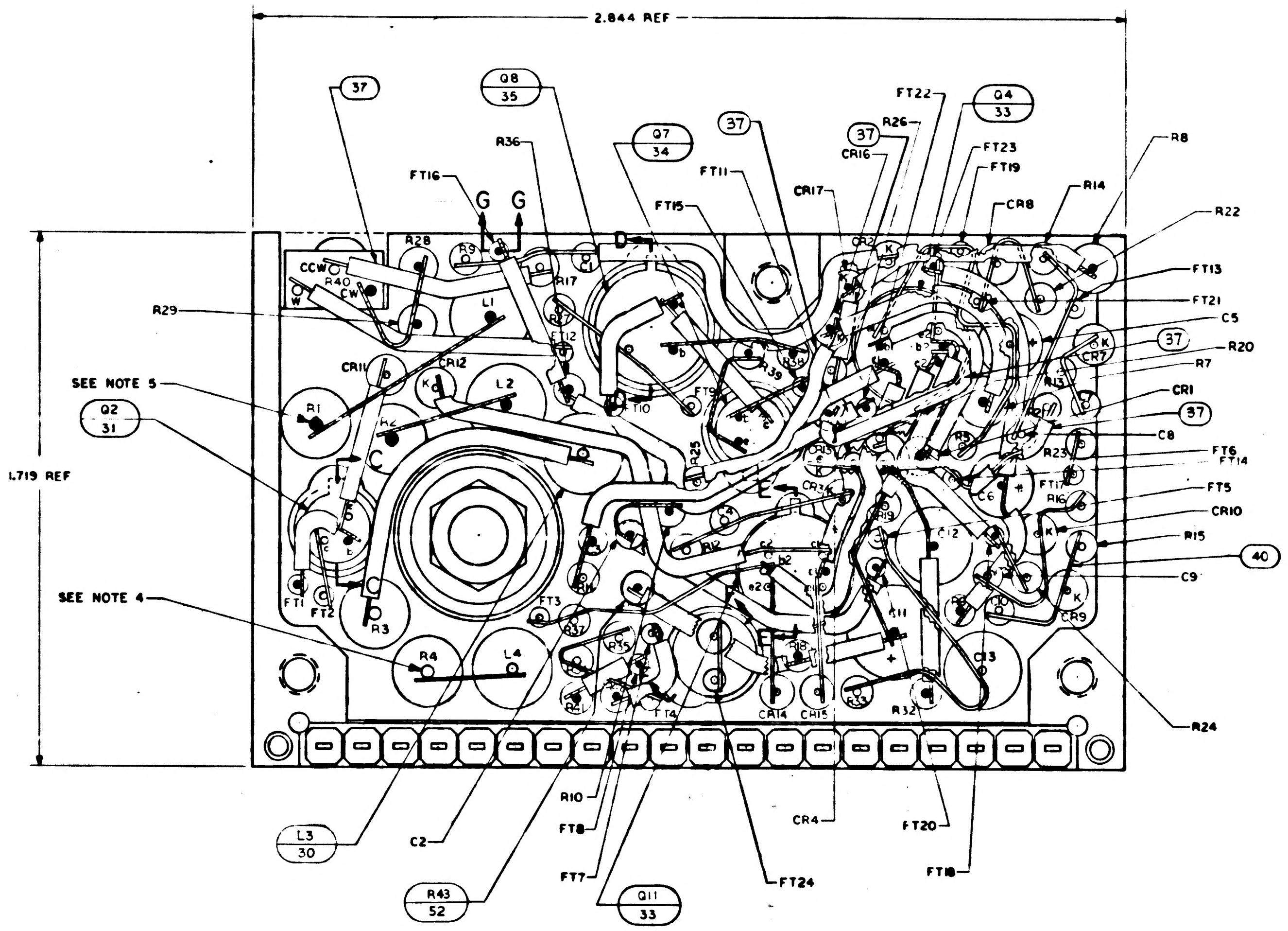
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CR12
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FT6
FT14
FT5
CR10
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C9
CR9
SEE NOTE 4
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FT2
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FT3
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CR14
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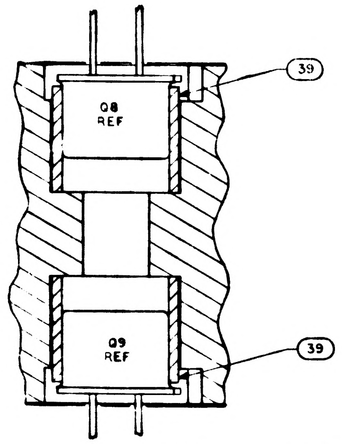
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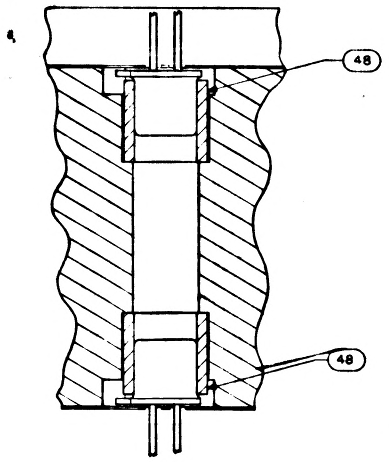
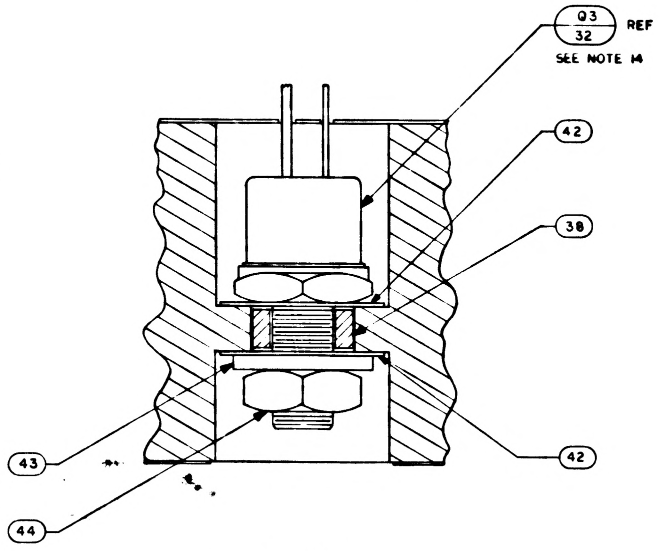
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 31 AND 34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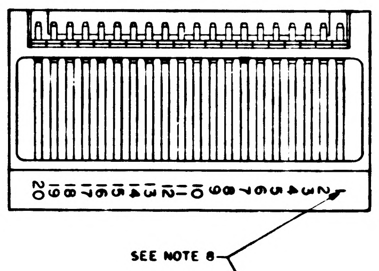
SECTION A-A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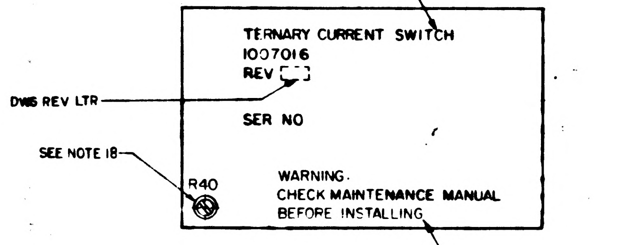
SEE NOTE 8


TERNARY CURRENT SWITCH
1007016
REV ☐

SER NO

WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

DWG REV LTR
SEE NOTE 18
R40
SEE NOTE 15

MARKING VIEW
SCALE 2/1

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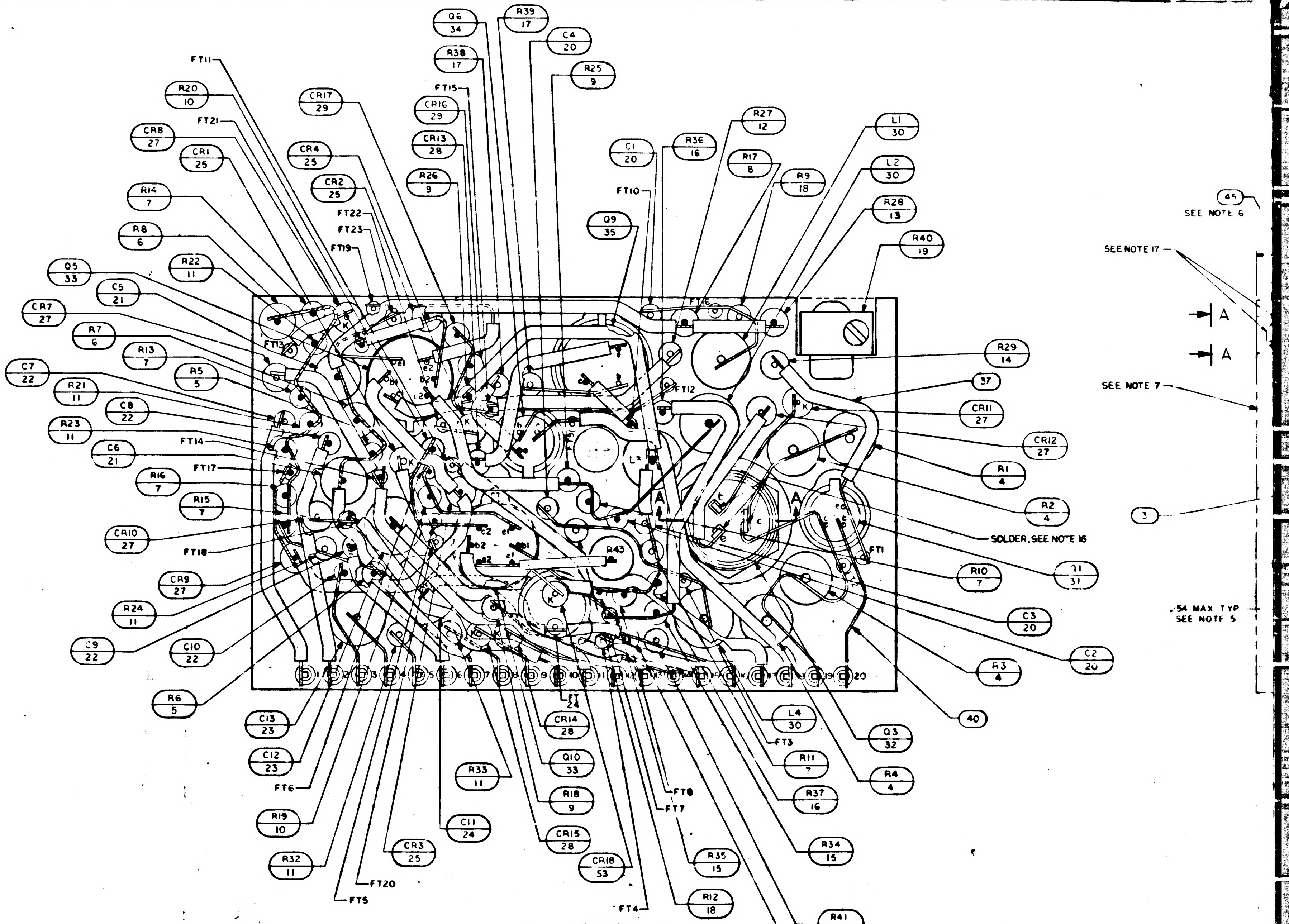
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

INSTRUMENTAT
DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
APPROVAL

2/1007016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R27 12
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C1 20
R36 16
R17 8
R9 18
L2 30
FT10
CR2 25
R14 7
FT22
FT23
Q9 35
R28 13
R8 6
FT19
R40 19
Q5 33
R22 11
C5 21
CR7 27
FT16
R7 6
FT13
R13 7
R5 5
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CR12 27
C6 21
FT17
R1 4
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R2 4
CR10 27
SOLDER, SEE NOTE 16
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R43
FT1
R10 7
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CR9 27
R24 11
C3 20
C9 22
C10 22
C2 20
R3 4
R6 5
FT24
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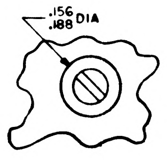
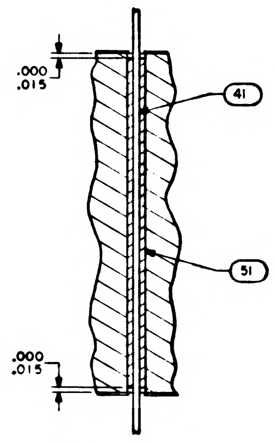


VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH~~ [illegible]
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
15. ~~[illegible]~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136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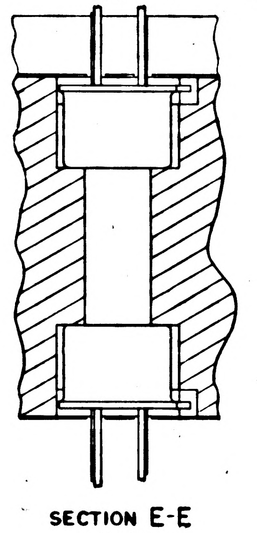
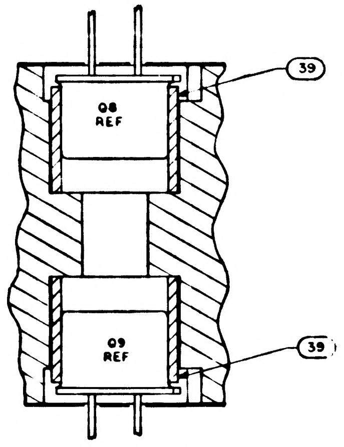
SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33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SECTION D-D

1/1007016

1007016 R

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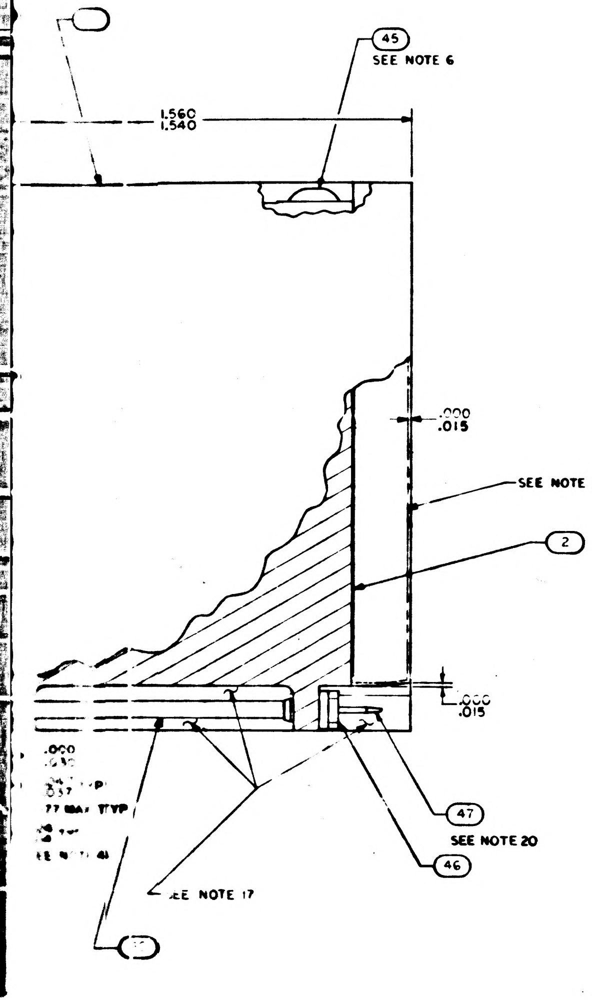
B	REVISED PER TDRR 01013	4-25-63	JT WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	DT WK
E	REVISED PER TDRR 01355	5-20-63	CT WK
F	REVISED PER TDRR 01616	6-8-63	RPK WK
G	REVISED PER TDRR 01716	6-26-63	[illegible] WK
H	REVISED PER TDRR 01868	7-2-63	JJM WK
J	REVISED PER TDRR 02169	7-31-63	JJM WK
K	REVISED PER TDRR 05276	17 OCT 63	JEW RPK WK
L	REVISED PER TDRR 05409	29 OCT 63	RPK WK
M	REVISED PER TDRR 05876	21 JAN 64	JEW RPK WK
N	REVISED PER TDRR 06639	25 FEB 64	RPK WK
P	REVISED PER TDRR 07011	30 MAR 64	JJJ
R	REVISED PER TDRR 07285	9 APR 64	JW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SEE NOTE 17
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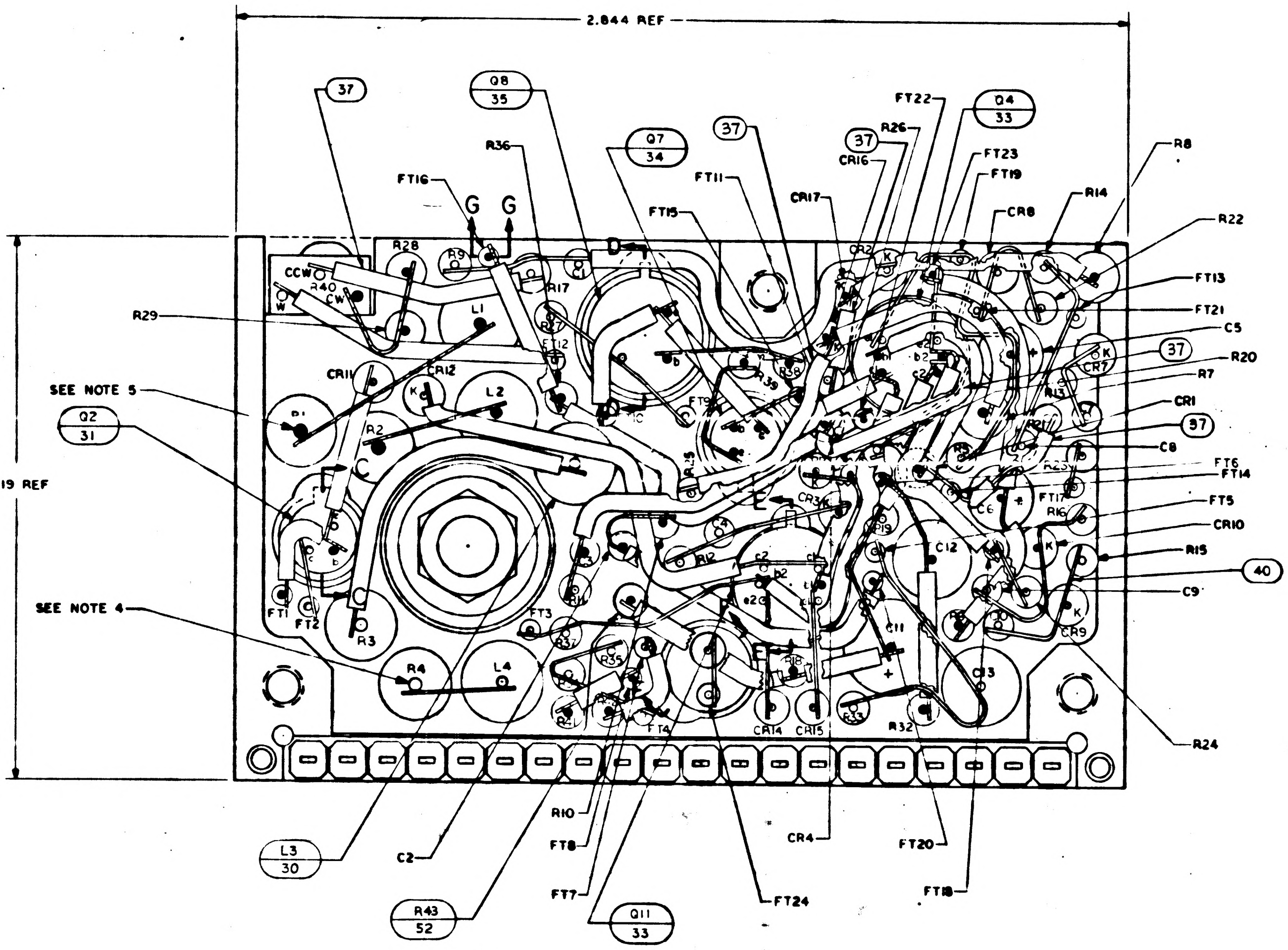
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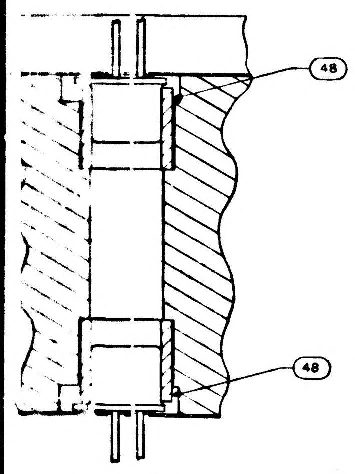
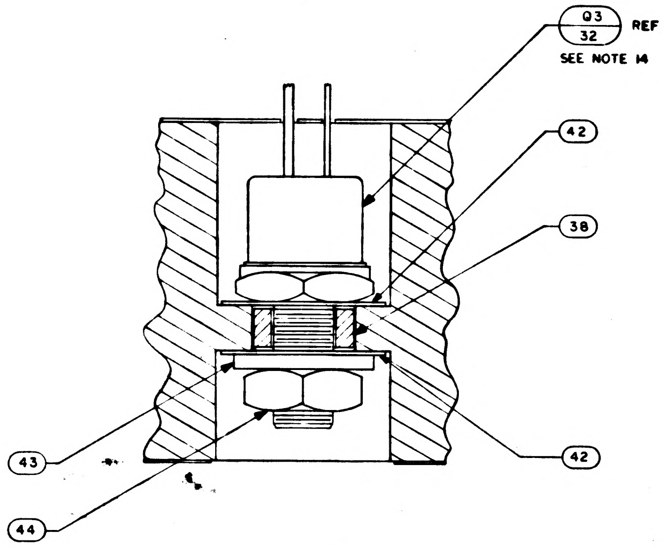


SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 31 AND 34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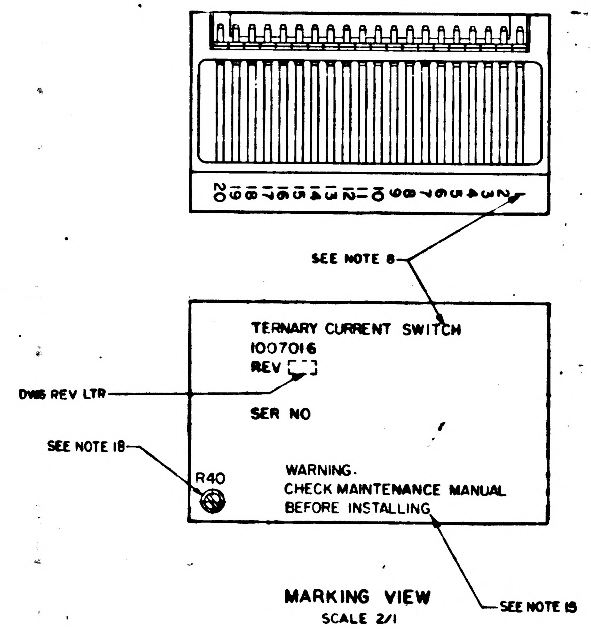
SECTION A-A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TERNARY CURRENT SWITCH
1007016
REV ☐
SER NO
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010016	SCHEMATIC	REF
1	1010372 – 6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR,FIXED MF 7.5K 1/4W ±2%	49
64	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP, FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP, FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, [illegible] 1/8W ±1%	8
6	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

1007154	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS9-497
DRAWN J. F. Sayer DATE 29 JAN 63
CHECKED R. P. Kempley 15 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

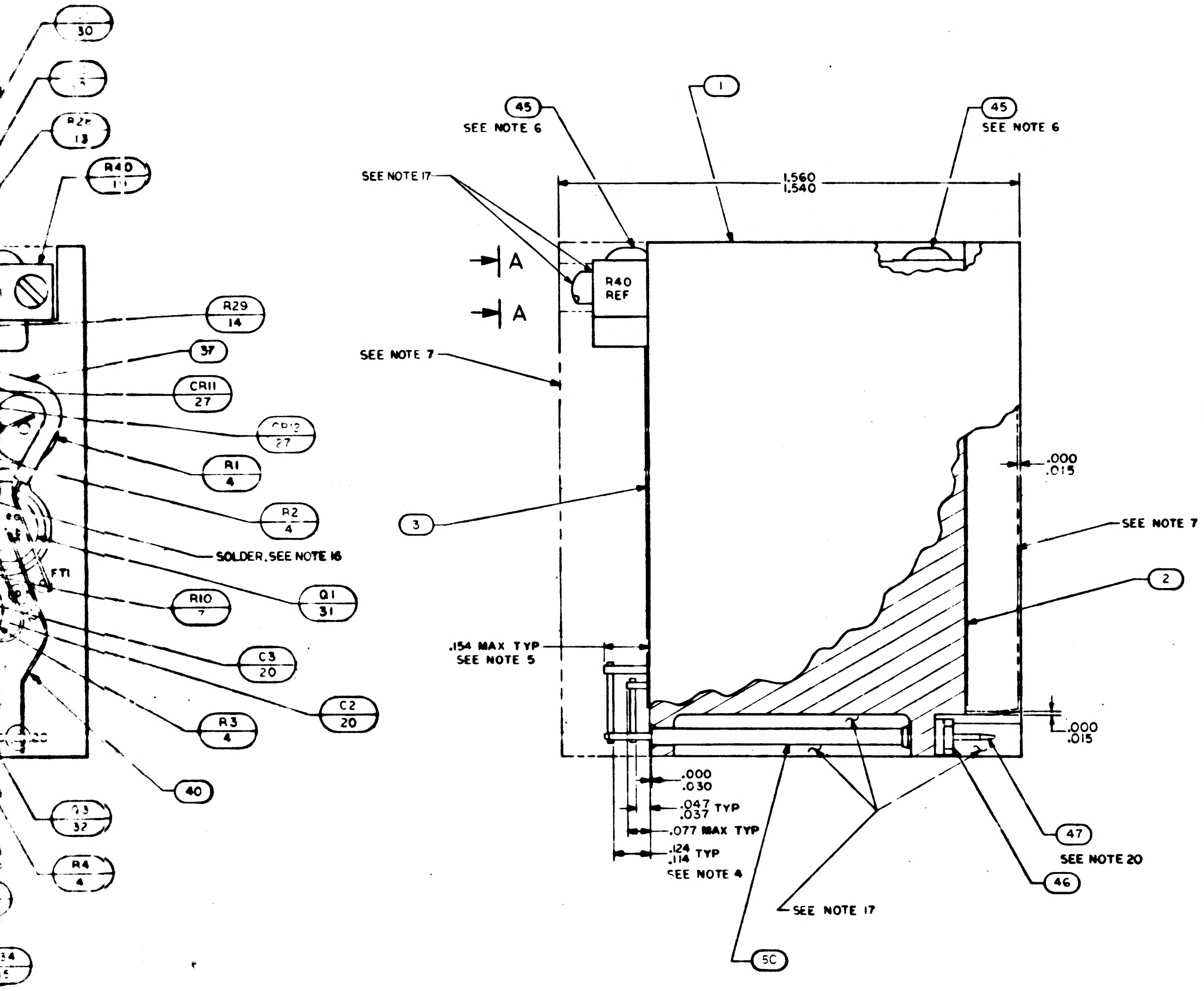
TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007016
SCALE 5/1
WT
SHEET 1 OF 1

J 1007016 K

MASTER

3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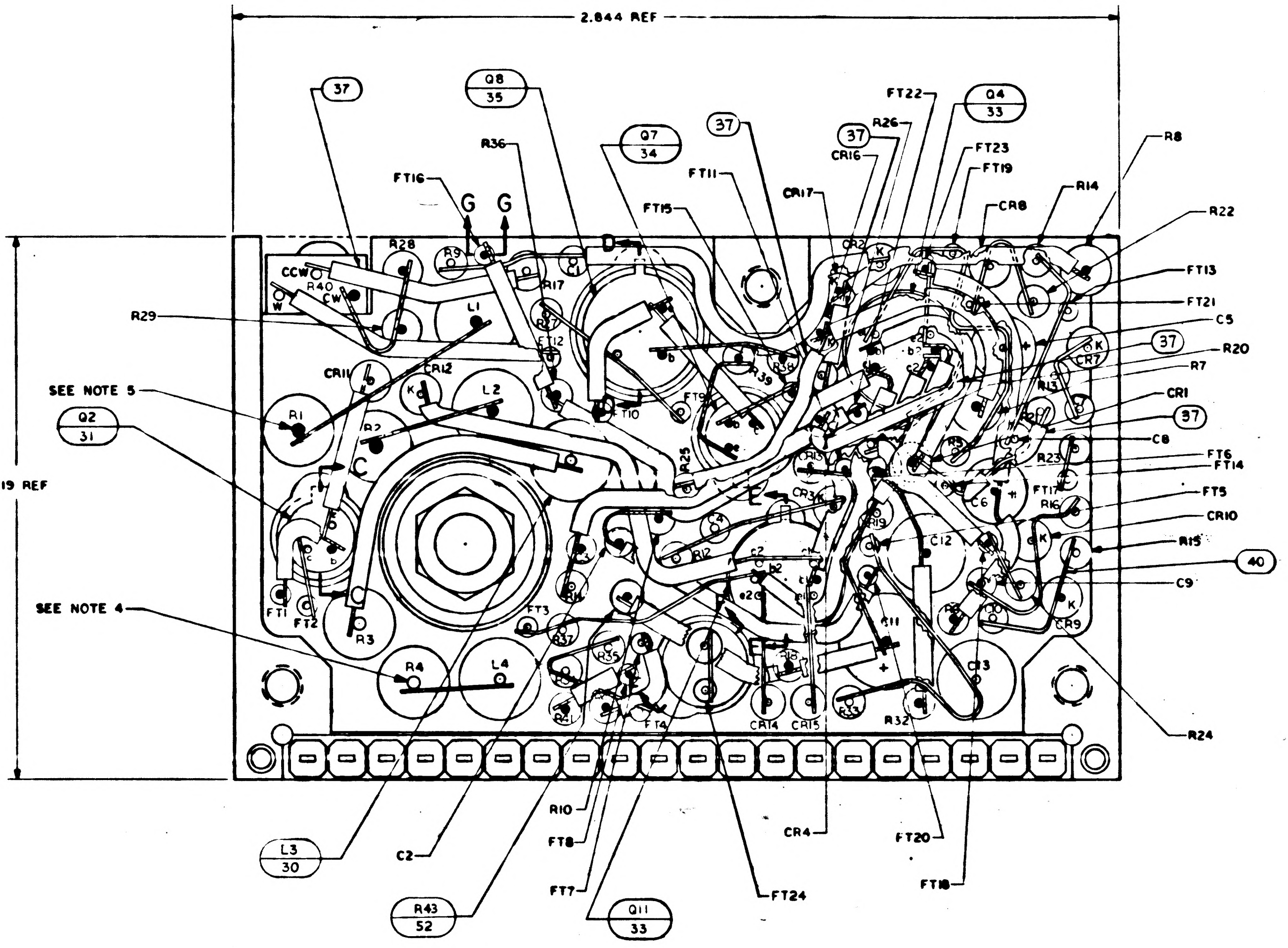
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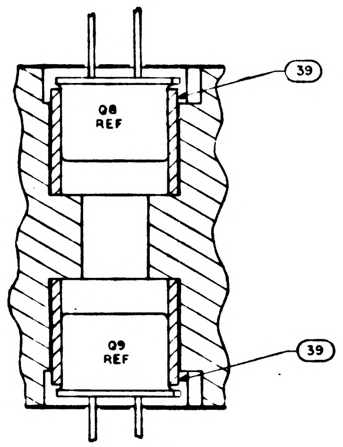
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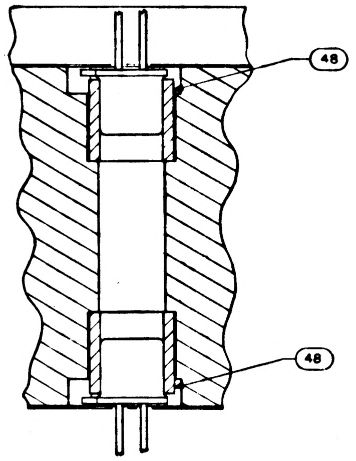
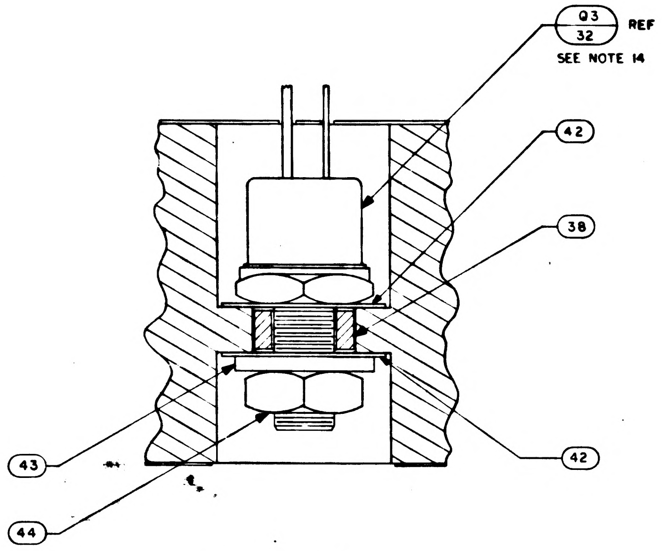
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34


Q3
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REF
SEE NOTE 14
42
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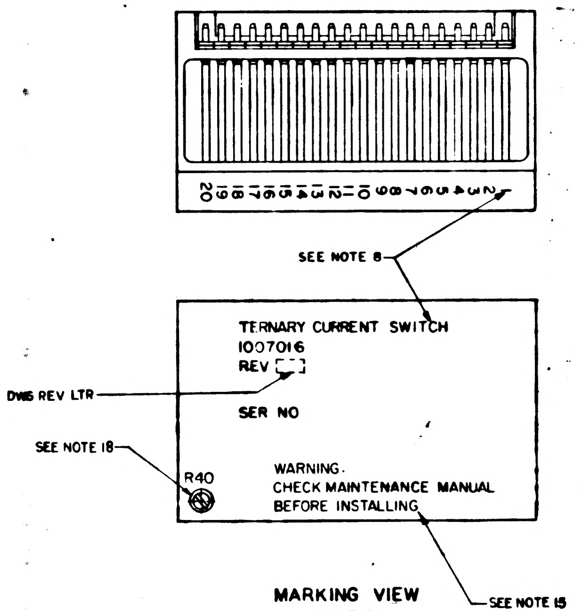
44
42

SECTION A-A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SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	IDEN
	1010016
1	1010372 –
1	1006750 -
AR	1006776-
AR	1006776-
2	1006750-
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20	1006775
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2	1008024 -
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1	10102 [illegible]
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6	1010385
4	1010462
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4	1006777
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1	1010373-K
2	
2	1010369-
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2	1006750 -
2	1006750-
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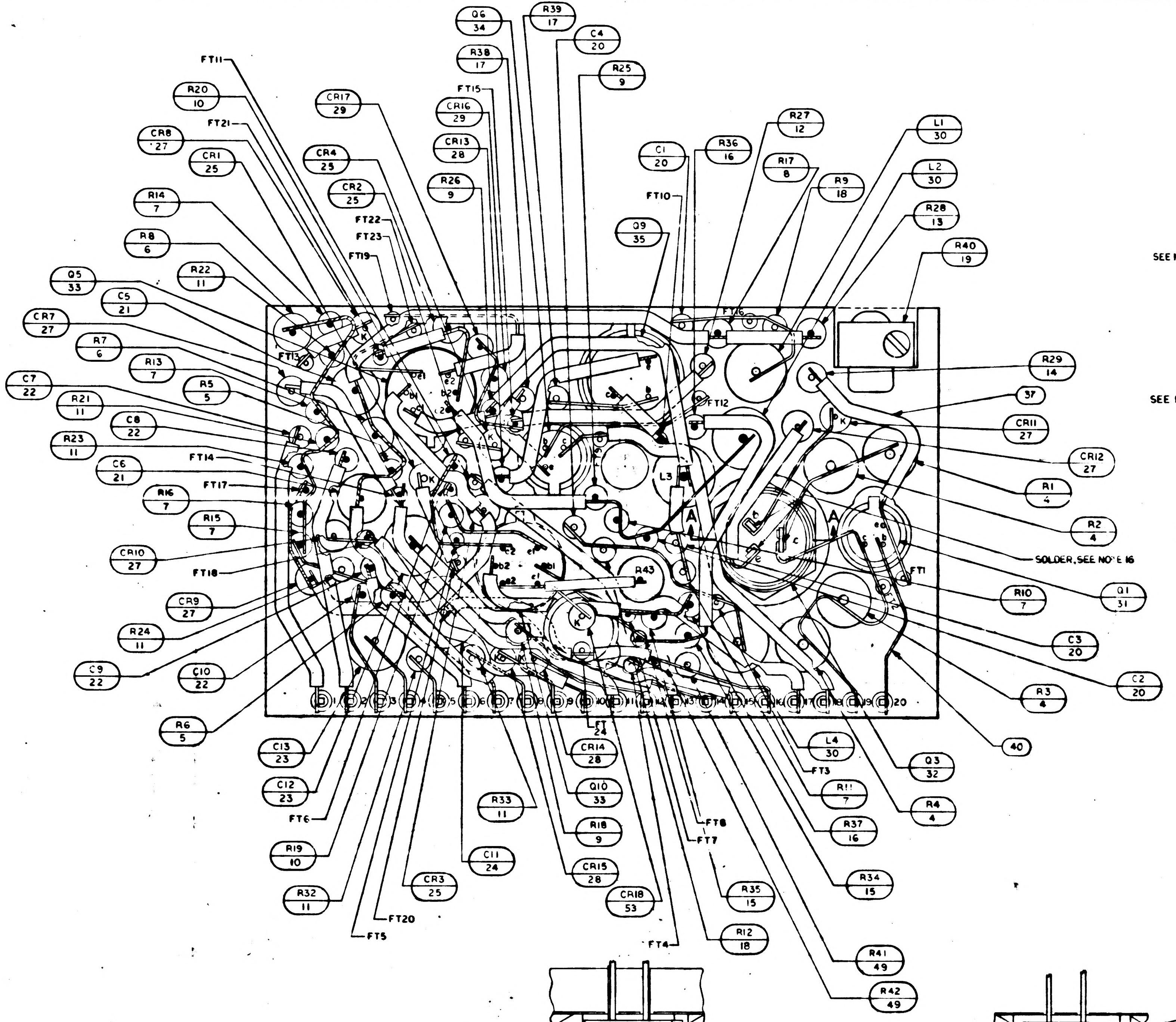
1	1007008

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

1007154
NEXT ASSY | USED ON
APPLICATION

INSTRUMENTAT
DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL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R37 16
R34 15
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R42 49
Q3 32
R4 4
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R3 4
C2 20
C3 20
R10 7
Q1 31
SOLDER, SEE NOTE 16
R2 4
R1 4
CR12 27
CR11 27
37
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R40 19
R28 13
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L1 30
R27 12
R9 18
R17 8
R36 16
C1 20
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R25 9
C4 20
R39 17
Q6 34
R38 17
FT15
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CR13 28
R26 9
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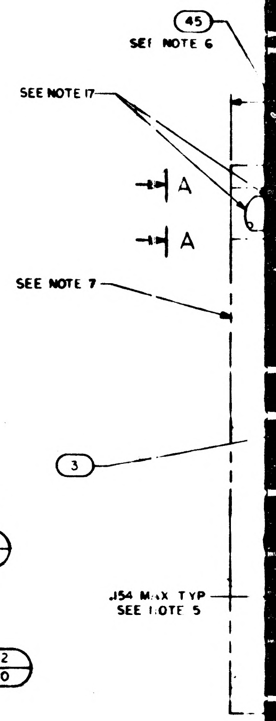
FT 24
L3
R43
A
K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SEE NOTE 6
SEE NOTE 17
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A
SEE NOTE 7
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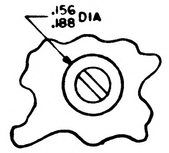
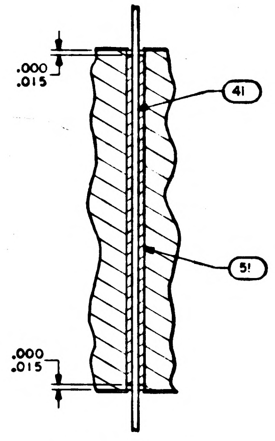
.154 MAX TYP
SEE NOTE 5



VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002008~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
~~[illegible]~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136
21. PROCURE PER PS 1007016.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51
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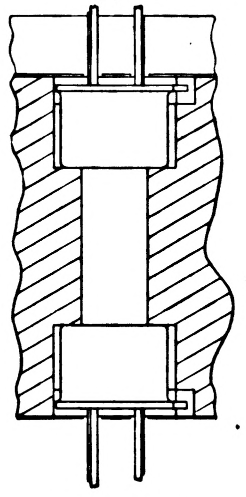
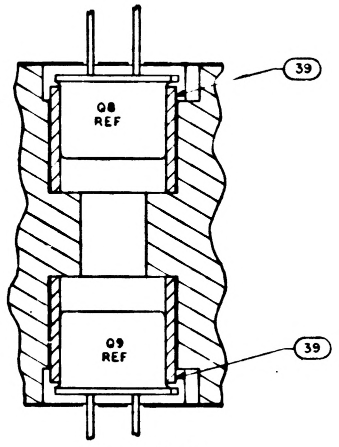
SECTION G-G



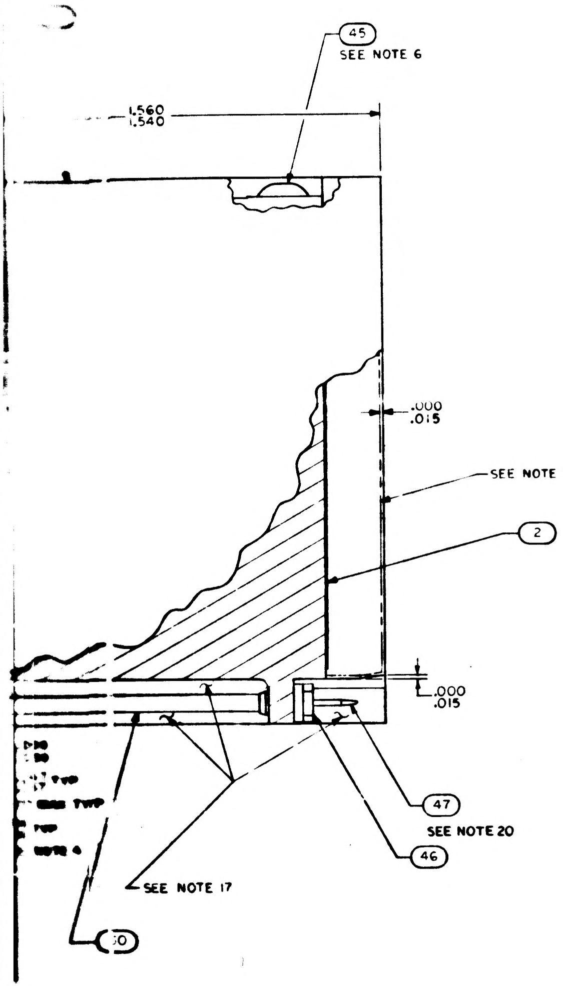
SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33


39
Q8 REF
Q9 REF
39

SECTION D-D

S | 1007016

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00 411		
A	CHANGED PER TDRR 00717	4-3-63	OT WK
B	REVISED PER TDRR 01013	4-25-63	OT WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	OT. WK
E	REVISED PER TDRR 01855	5 20 63	OT. WK
F	REVISED PER TDRR 01616	6-10-63	EPK WK
G	REVISED PER TDRR 01716	6-26-63	EPK WK
H	REVISED PER TDRR 01868	7 2 63	JJM WK
J	REVISED PER TDRR 02169	7-31-63	JJM WK
K	REVISED PER TDRR 05276	17 OCT 63	JFW EPK WK
L	REVISED PER TDRR 05409	27 NOV 63	EPK WK
M	REVISED PER TDRR 05876	21 JAN 64	JFW EPK WK
N	REVISED PER TDRR 06639	25 FEB 64	EPK WK
P	REVISED PER TDRR 07011	30 MAR 64	JJJ AU
R	REVISED PER TDRR 07285	3 APR 64	JWP
S	REVISED PER TDRR 10911	28 JUL 64	JJJ A.U.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SEE NOTE 6
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SEE NOTE 20
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SEE NOTE 17
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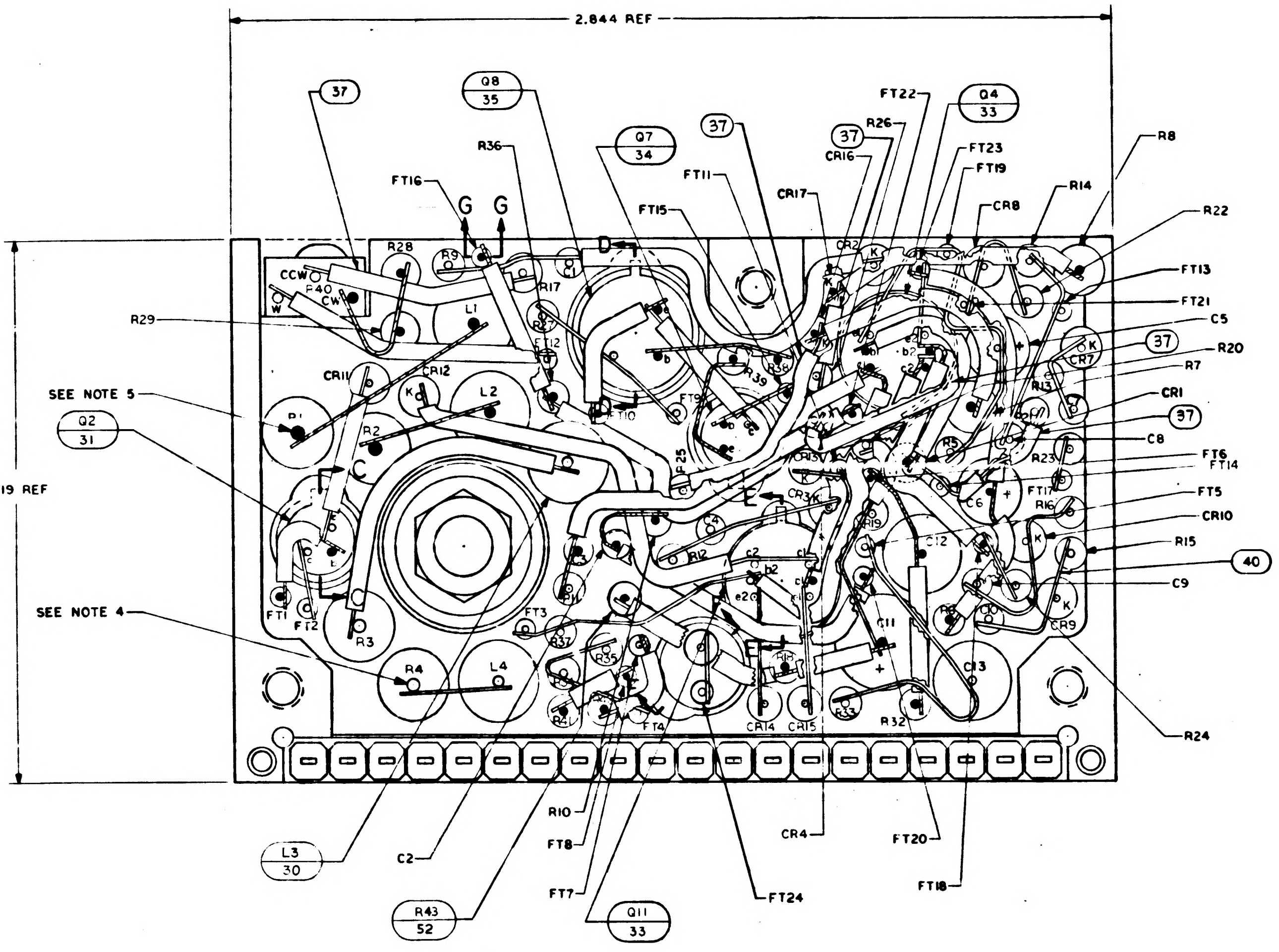
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R36
FT16
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CR8
R14
R8
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FT13
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R17
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R2
C
SEE NOTE 5
Q2
31
E
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C12
C6
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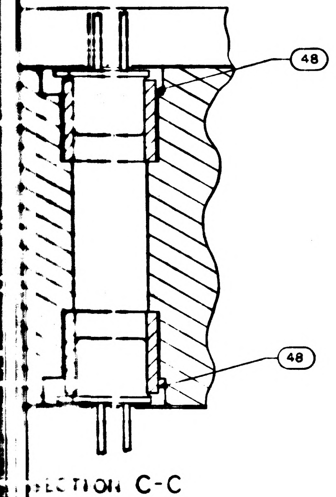
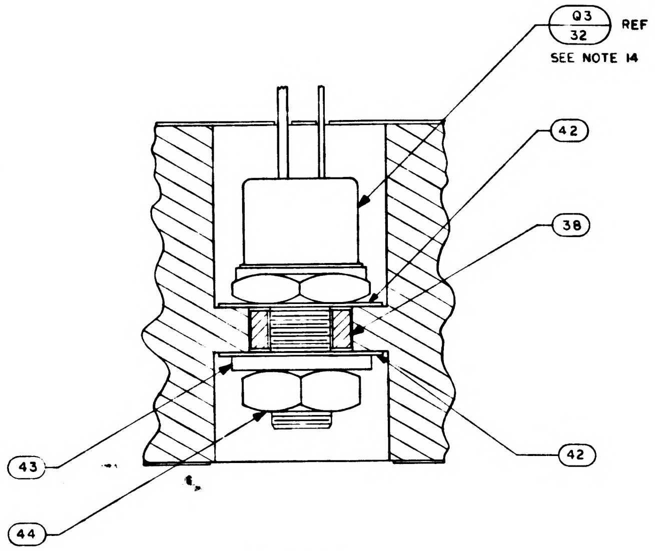


ECTION C-C
2 PLACES
AL INSTALLATION FOR
NO. 31 AND 34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SEE NOTE 14
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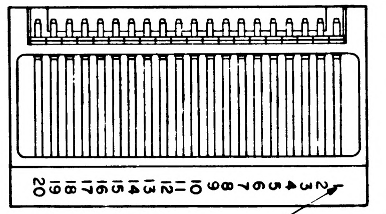
SECTION A-A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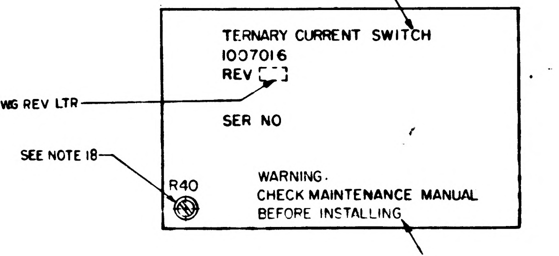
SEE NOTE 8


TERNARY CURRENT SWITCH
1007016
REV
SER NO
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
DWG REV LTR
SEE NOTE 18
R40
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010016	SCHEMATIC	REF
1	1010372 – 6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR,FIXED MF 7.5K 1/4W ± 2%	49
4	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10 K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
6	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

S | J | 1007016

NEXT ASSY	USED ON
1007154	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —"—
DECIMALS XX±.02 XXX±.005
ANGLES ± —"—
DO NOT SCALE THIS DRAWING
MATERIAL —"—
HEAT TREATMENT —"—
FINAL FINISH —"—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO.
CONTRACT NAS9-497

DRAWN J. F. [illegible] DATE 24 JAN 63
CHECKED [illegible] 15 FEB 63
APPROVAL [illegible] 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

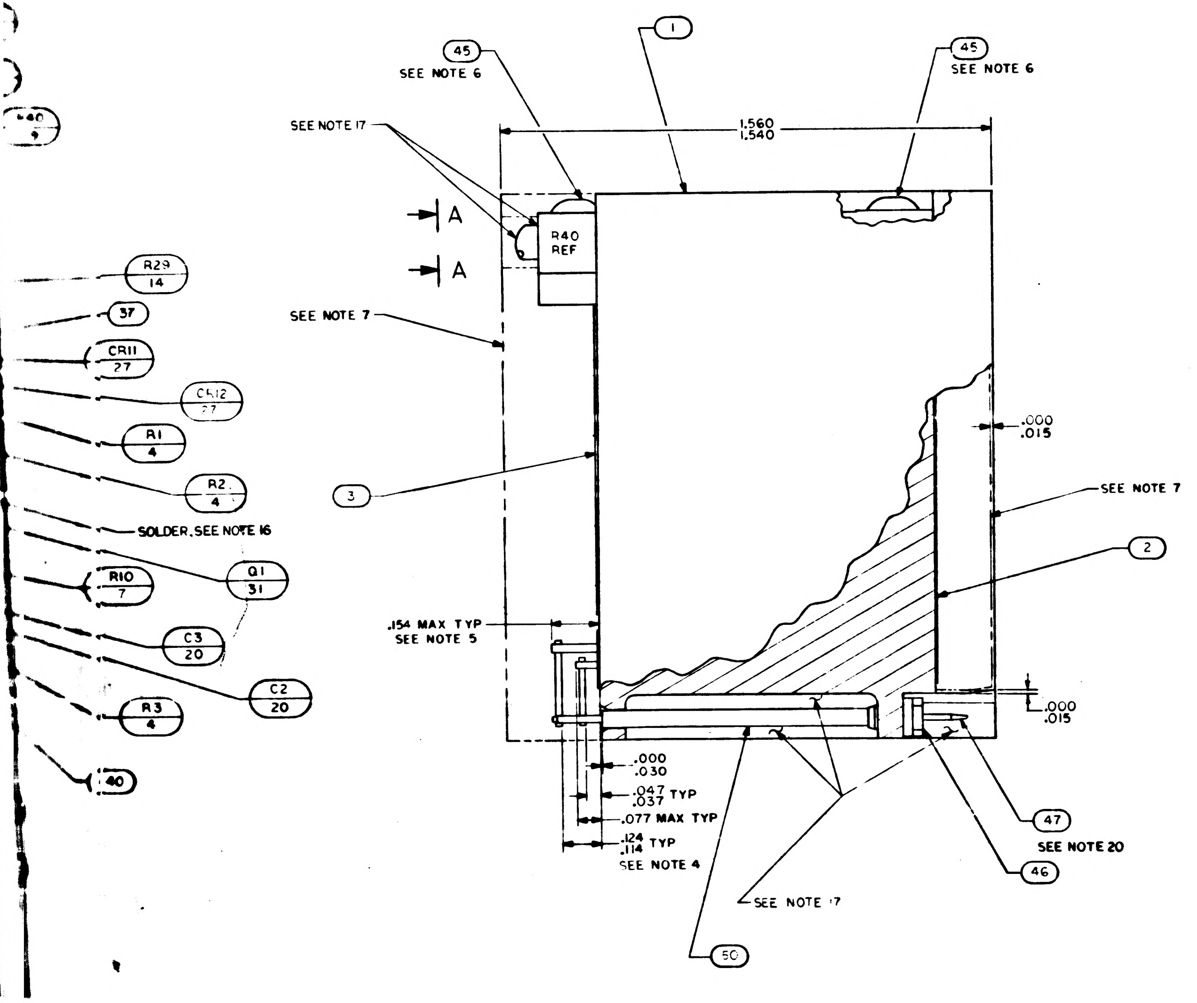
TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007016
SCALE 5/1
WT
SHEET 1 OF 1

37 1007016

5 4 3 2

1007016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C2
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R3
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SEE NOTE 6
SEE NOTE 17
A
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R40
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SEE NOTE 6
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SEE NOTE 17
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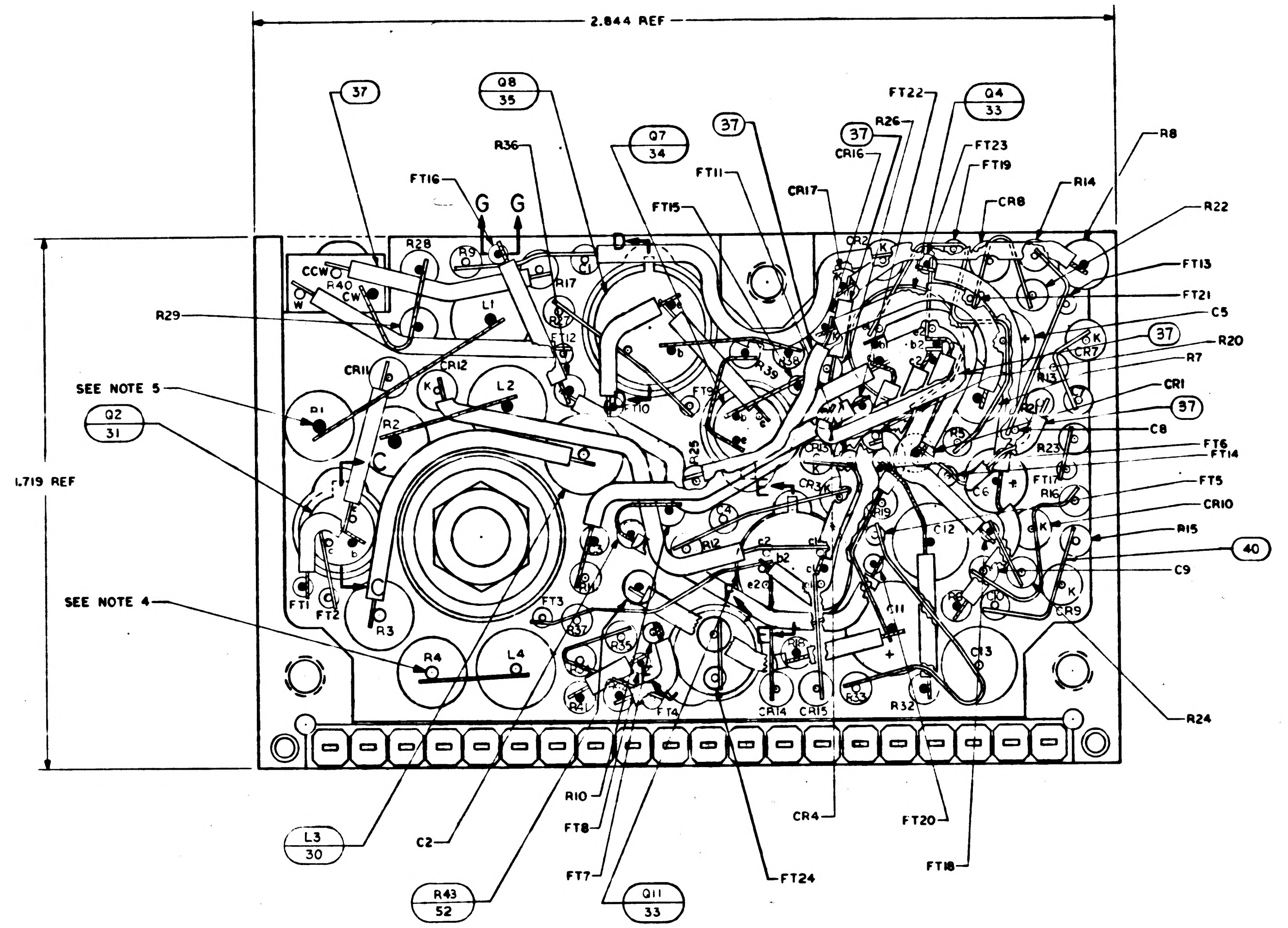
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FT22
R26
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FT23
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CR8
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FT13
FT21
C5
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R20
R7
CR1
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C8
FT6
FT14
FT5
CR10
R15
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C9
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R29
SEE NOTE 5
Q2
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R17
C1
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CR12
L2
R1
R2
C
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CR14
CR15
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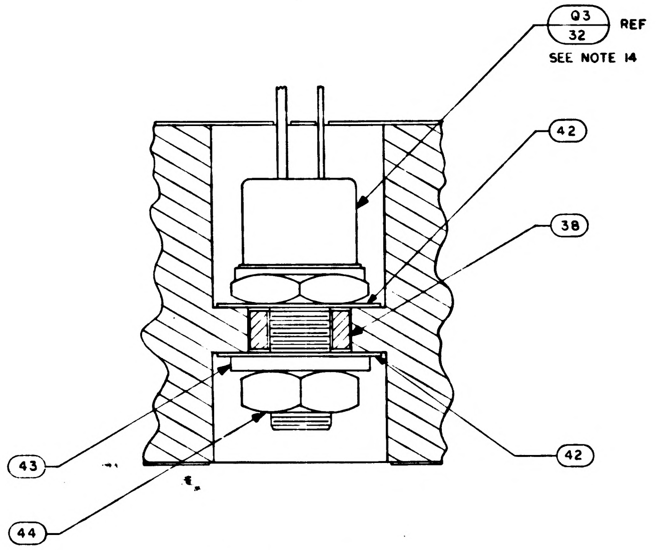
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SEE NOTE 14
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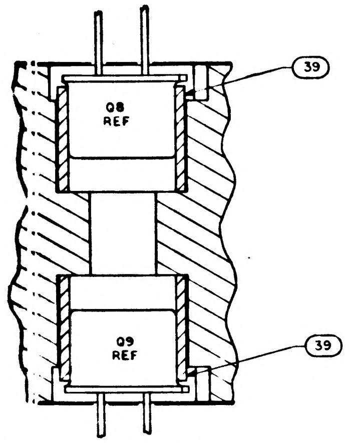
SECTION A-A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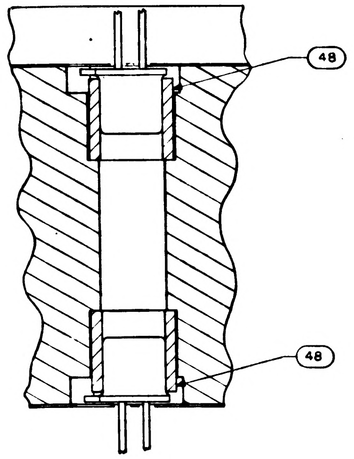
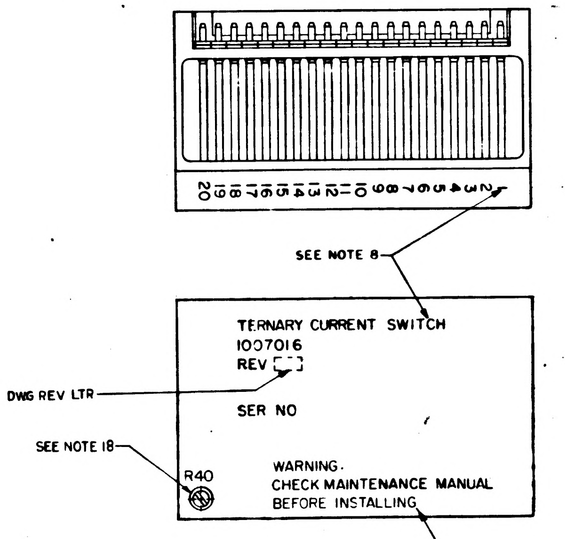
REF
39

SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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SEE NOTE 8
DWG REV LTR
SEE NOTE 18
R40

TERNARY CURRENT SWITCH
1007016
REV
SER NO
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.
	101001
1	101037 -6
1	100675 -40
AR	100671 6-22
AR	10067 6-20
2	10067 0-53
4	1008025-1
20	100678 2-4
20	100677
2	10000 3-3
1	MS356 0-104
1	10080 -1
2	10080 4-1
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AR	10067 7-1
2	10080 5-2
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AR	10067 6-21
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1	101026 -1
2	101035 7-1
4	101038 -39
2	101038
3	101039
6	101038
4	10104 2-6
1	101039 -39
2	10067 7-33
4	10067 7-20
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4	10067 7-13
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2	10067 0-53
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1	10103 4-
1	10067 0-62
6	10067 0-67
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3	10067 0-15
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6	10067 0-8
2	10067 0-56
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1	1008 9-2
1	1008 19-1
1	10070 08

1007154	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//— DECIMALS XX±.02 XXX±.005 ANGLES ± —//—
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

5 4 3 2

2/1007016

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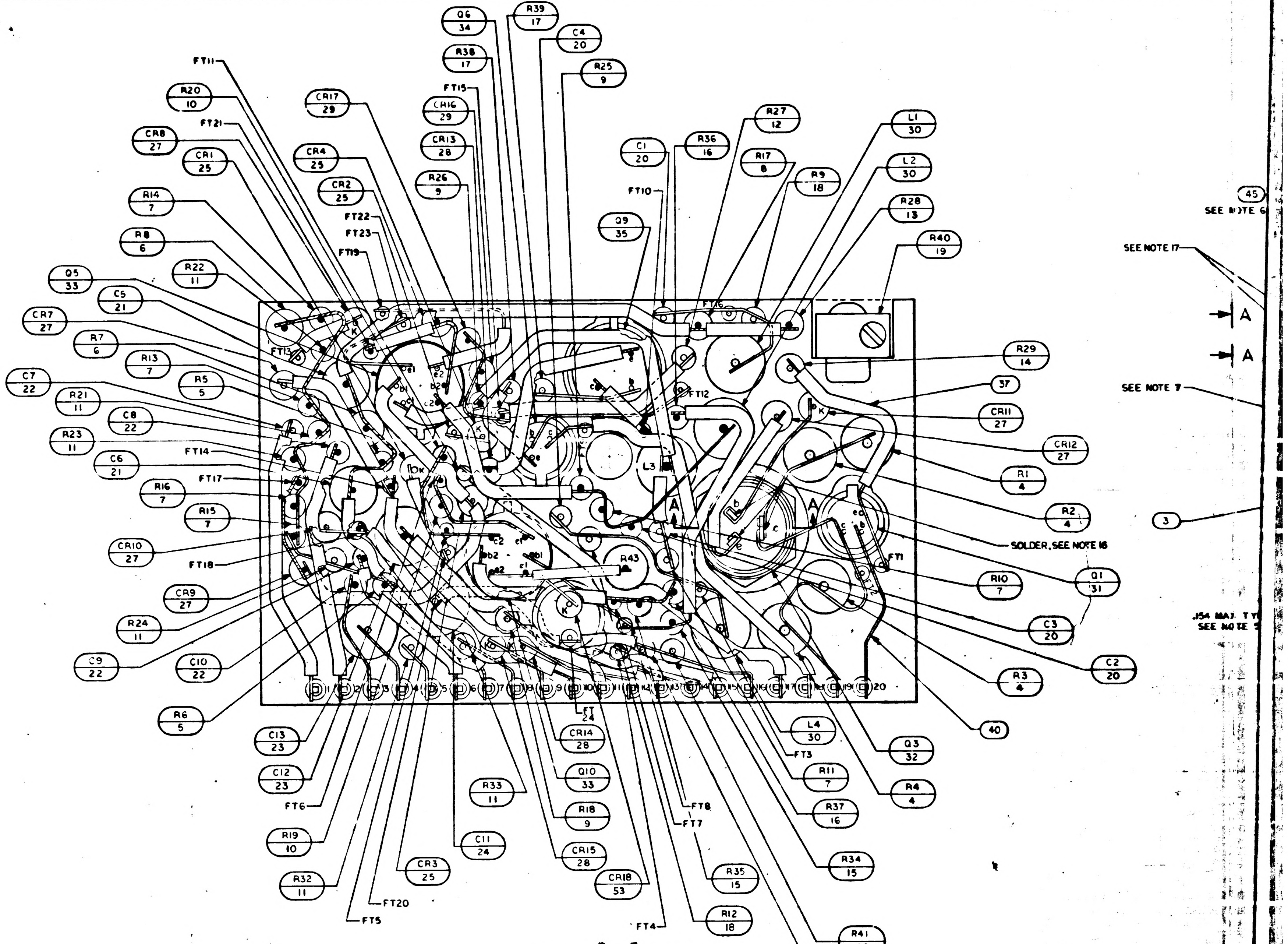
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R25
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CR17
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FT15
CR16
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CR13
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FT21
CR8
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CR1
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CR4
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CR2
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R26
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R14
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FT22
FT23
FT19
R8
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Q5
33
R22
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C5
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CR7
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R7
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R13
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R5
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C7
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R21
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C8
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R23
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FT14
C6
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FT17
R16
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R15
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CR10
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FT18
CR9
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R24
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C9
22
C10
22
R6
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FT13
C1
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R36
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R27
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R17
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R9
18
L1
30
L2
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R28
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R40
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FT10
Q9
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FT16
FT12
L3
R43
A
A
R29
14
37
CR11
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CR12
27
R1
4
R2
4
SOLDER, SEE NOTE 16
FT1
FT2
Q1
31
R10
7
C3
20
C2
20
R3
4
40
45
SEE NOTE 6
SEE NOTE 17
A
A
SEE NOTE 7
3
.154 MAX. TY
SEE NOTE 5
1
2
3
4
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8
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11
12
13
14
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16
17
18
19
20
FT
24
CR14
28
L4
30
FT3
Q3
32
C13
23
C12
23
FT6
Q10
33
R11
7
R4
4
R33
11
R18
9
FT8
R37
16
FT7
R19
10
C11
24
CR15
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R34
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CR3
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R12
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R41
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R42
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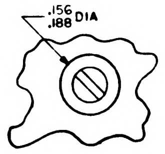
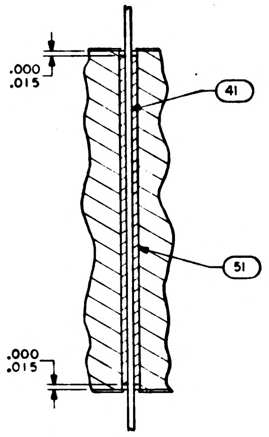


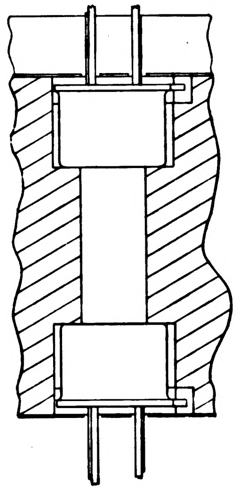
VIEW A-A

NOTES

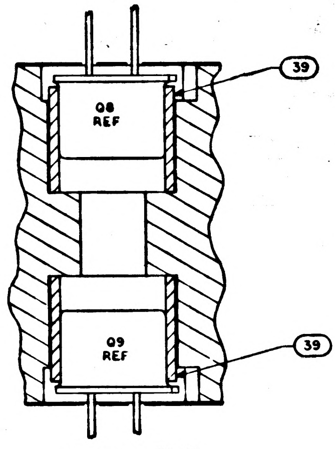
1. ~~INTERPRET DRAWING IN~~ ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002000~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
15. ~~MARK .080/.100 RED PER ND1002018~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136
21. PROCURE PER PS 1007016.


.000
.015
41
51
.000
.015

SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33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Q8
REF
Q9
REF
39

SECTION D-D

SYM	DESCRIPTION	DATE	APPROVAL
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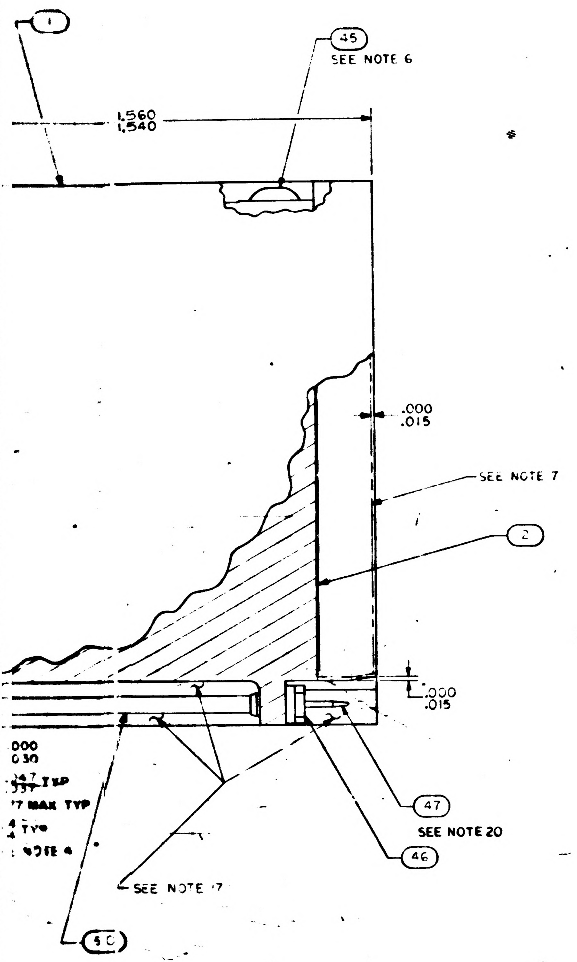
B	REVISED PER TDRR 01013	4 25 63	WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5 8 63	WK
E	REVISED PER TDRR 01355	5 20 63	WK
F	REVISED PER TDRR 01616	6-10-63	RPK WK
G	REVISED PER TDRR 01716	6 26 63	EPK WK
H	REVISED PER TDRR 01868	7 2 63	WK
J	REVISED PER TDPR 02167	7 31 63	WK
K	REVISED PER TDRR 05276		WK
L	REVISED PER TDRR 05409		WK
M	REVISED PER TDRR 05876		WK
N	REVISED PER TDRR 06639		WK
P	REVISED PER TDRR 07011	30 MAR 64	JJJ AU
R	REVISED PER TDRR 07285	3 APR 64	JWP
S	REVISED PER TDRR 10911	28 JUL 64	JJJ A.U.
T	REVISED PER TDRR 16853	3 MAR 65	JWP AU

REVISIONS — TDRR 00411

1007016 T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SEE NOTE 6
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.015
SEE NOTE 7
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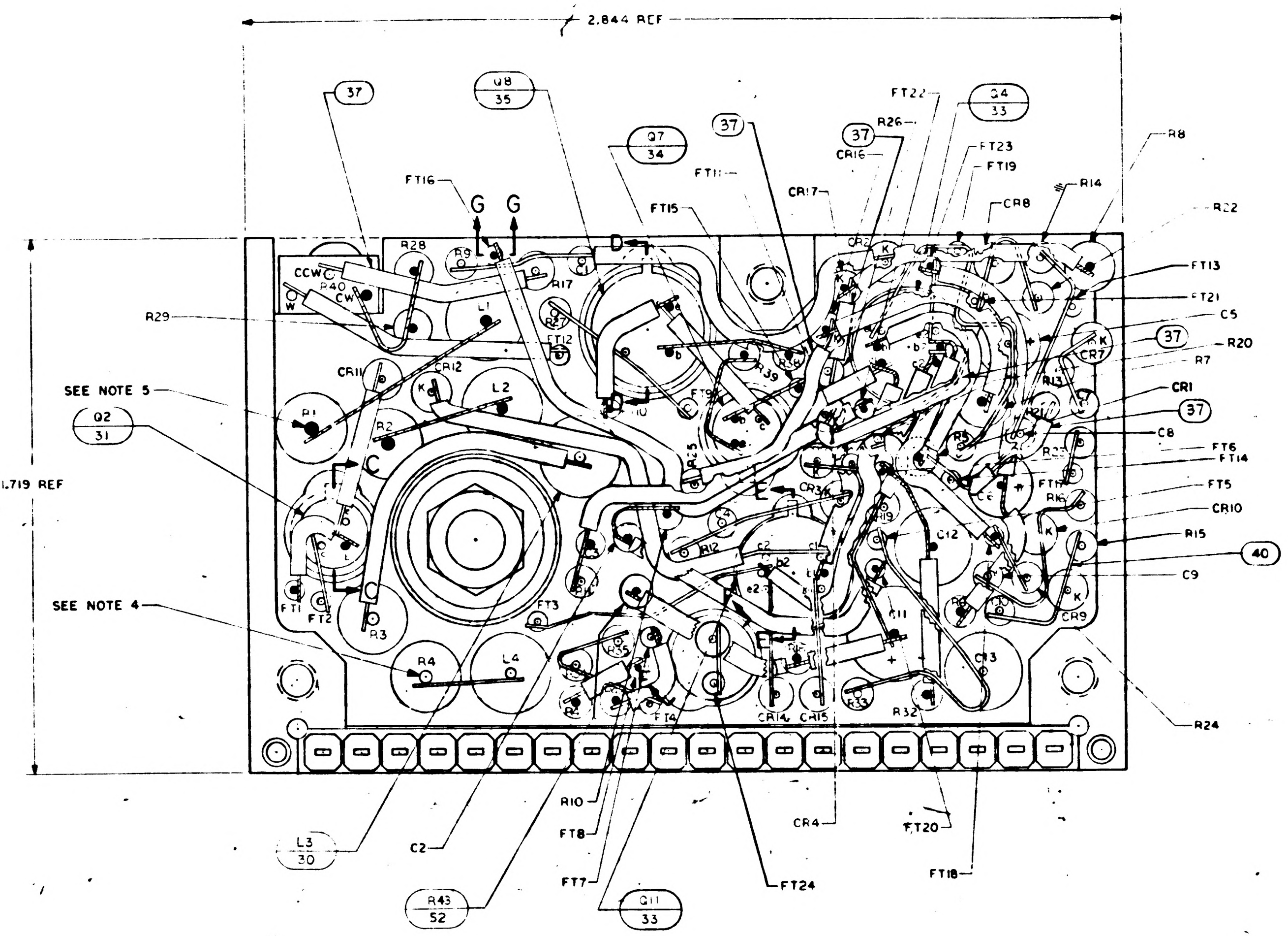
.000
.030
TYP
MAX TYP
TYP
NOTE 4
47
SEE NOTE 20
46
SEE NOTE 17
50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FT23
FT19
R8
FT16
G
G
FT11
FT15
CR17
R14
CR8
R22
D
R28
R9
R17
CCW
R40
CW
FT13
FT21
C5
R29
37
R20
R7
CR11
CR12
L2
CR1
SEE NOTE 5
Q2
31
C8
37
FT6
FT14
FT5
CR10
R15
C
E
40
C9
SEE NOTE 4
FT1
FT2
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FT3
R4
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CR14
CR15
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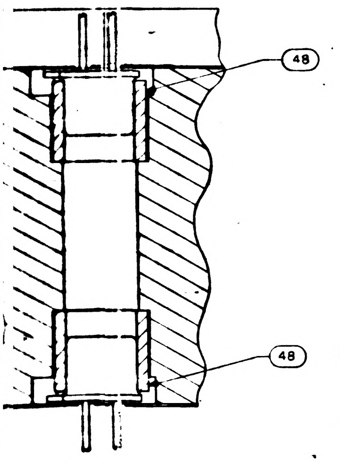
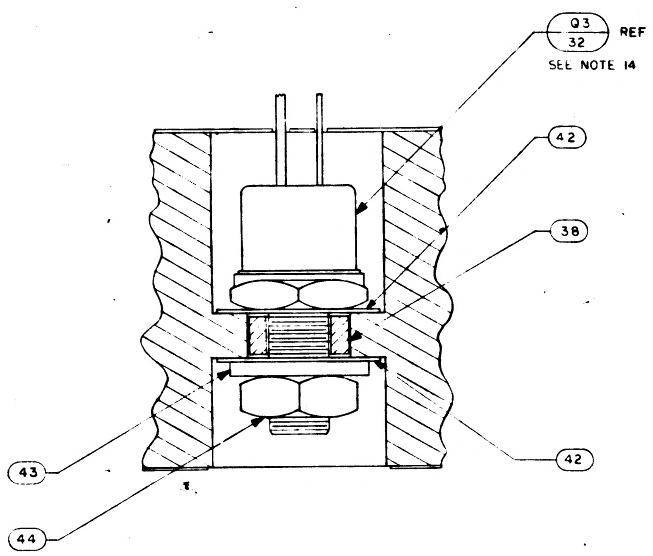
FT18
FT24



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 31 AND 34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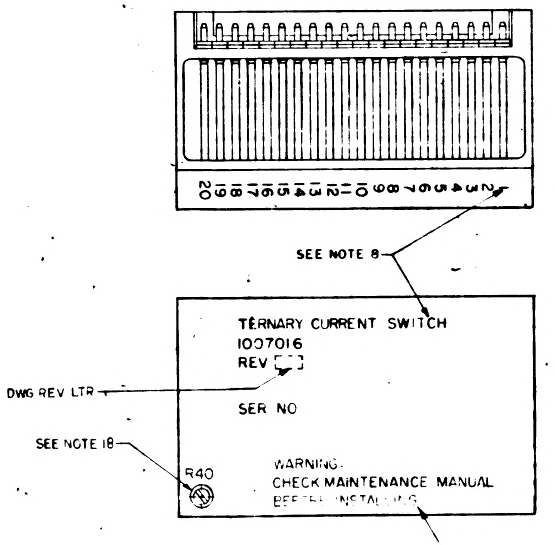
SECTION A-A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SEE NOTE 8
DWG REV LTR
SEE NOTE 18
R40
SEE NOTE 15

TERNARY CURRENT SWITCH
1007016
REV [ ]

SER NO

WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1010016	SCHEMATIC	REF
1	1010372 – 6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR, FIXED MF 7.5K 1/4W ± 2%	49
4	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP., FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
~~2~~	~~1006750-81~~	~~RESISTOR, FIXED MF, 110K 1/4W ±2%~~	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, [illegible]K 1/8W ±1%	8
6	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

1007154	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS9-497
DRAWN F. Falzone DATE 4 JAN 63
CHECKED 15 Jan 63
APPROVAL 18 Feb 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

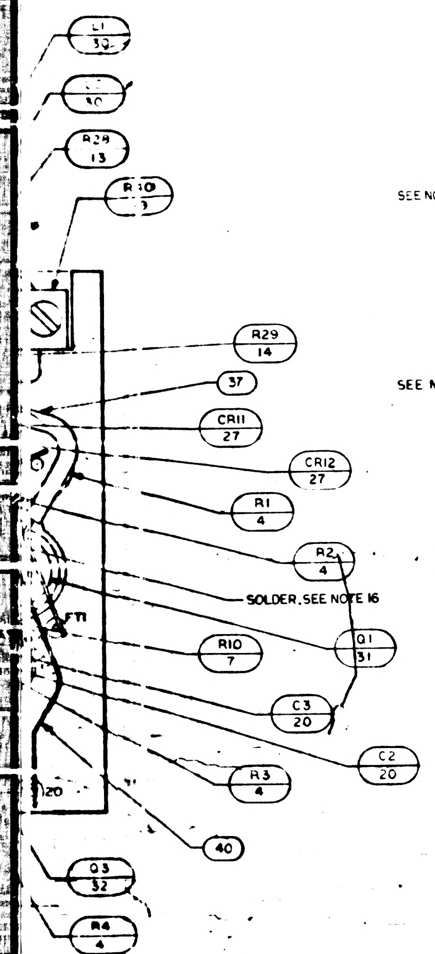
TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007016
SCALE 5/1
WT
SHEET 1 OF 1

J 1007016 T

1007016 REV LTR T SHEET 1

3/1007016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R29 13
R10 7
R29 14
37
CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
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C2 20
R3 4
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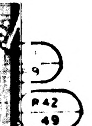
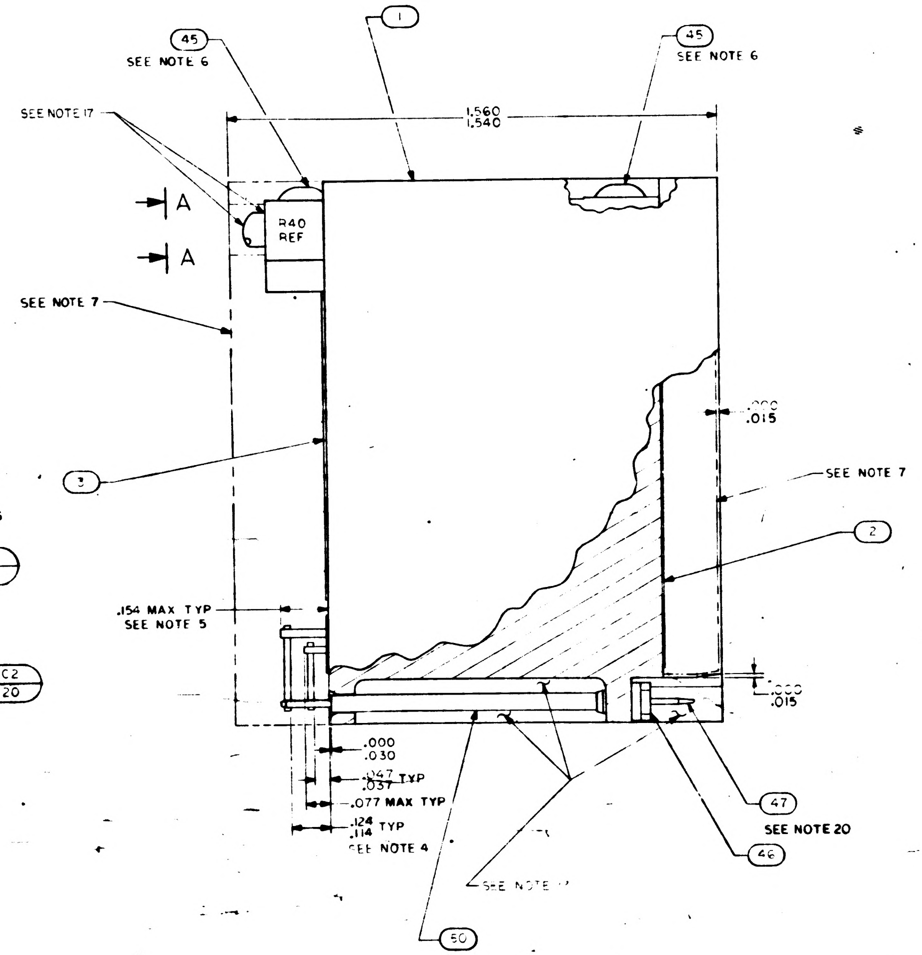
R4 4

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SEE NOTE 6
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SEE NOTE 6
SEE NOTE 17
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SEE NOTE 17
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SEE NOTE 20
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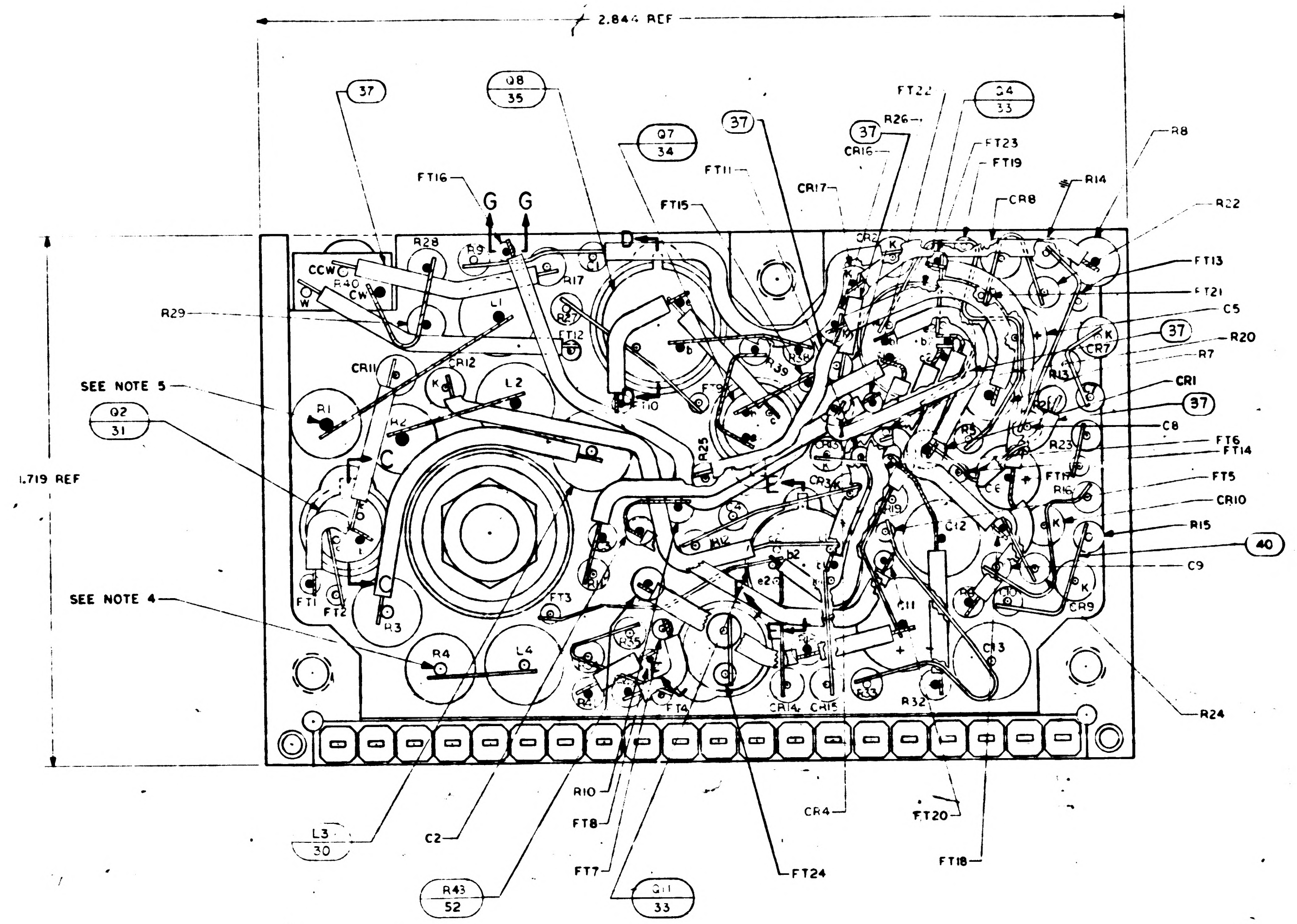
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R20
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CR1
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C8
FT6
FT14
FT5
CR10
R15
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C9
R24
R29
SEE NOTE 5
Q2 31
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R40
R28
R9
R17
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FT12
CR11
CR12
L2
R1
R2
C
D
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CR15
FT4
R35
R41
FT3
FT1
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CR4
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FT18
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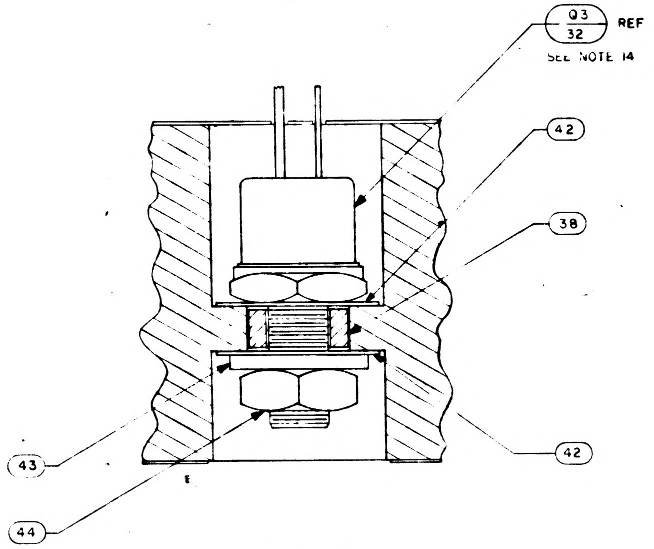
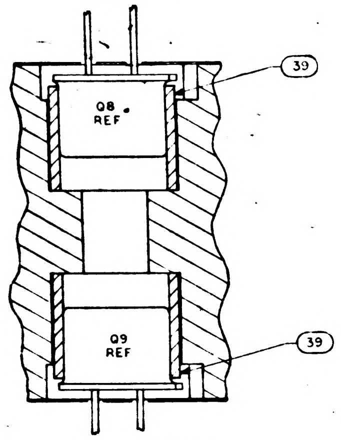
C2
R43 52
Q11 33


Q3 32 REF
SEE NOTE 14
42
38
43
42
44

SECTION A-A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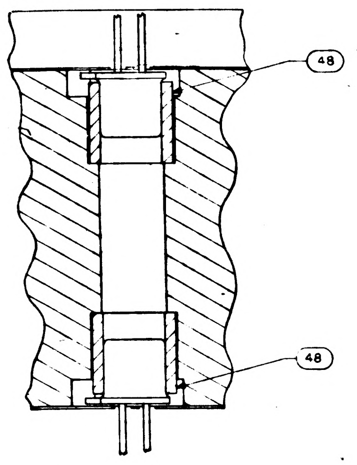
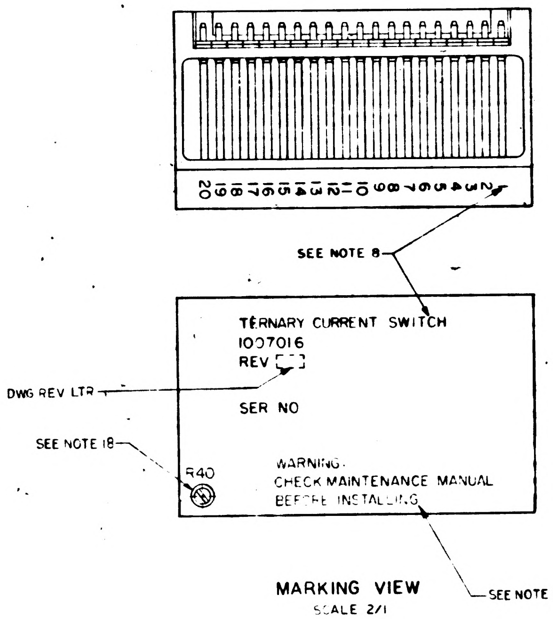
Q8 REF
Q9 REF
39

SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 31 AND 34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SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
SER NO
DWG REV LTR
SEE NOTE 18
R40
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

☒	1010016
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1	1006750
AR	1006776
AR	1006776
2	1006750
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20	1006782
20	1006775
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AR	1006787
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1	[illegible]
1	1007009
QTY REQD	

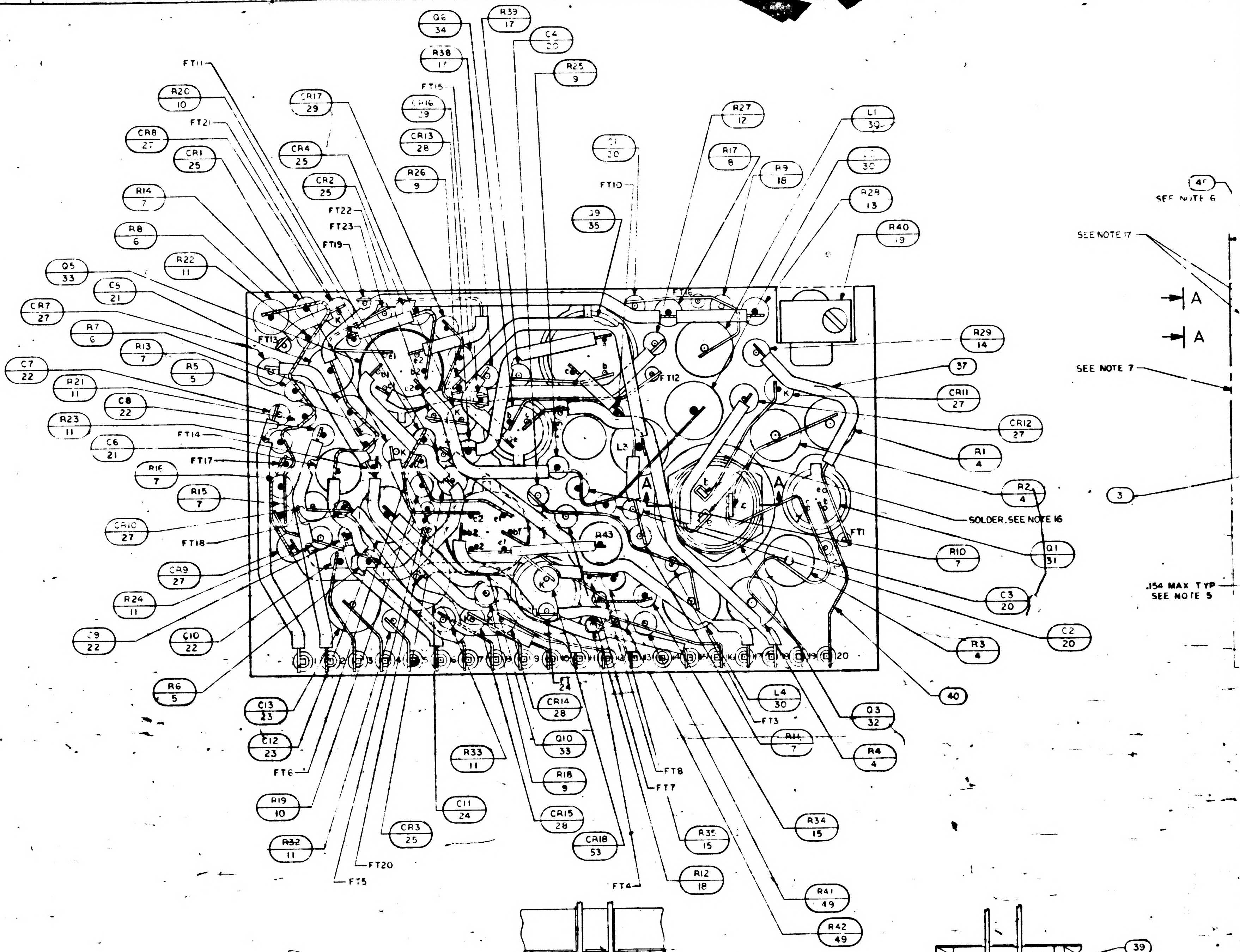
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± —//— DECIMALS XX±.02 XXX±.005 ANGLES ± —//— DO NOT SCALE THIS DRAWING
		MATERIAL —//—
1007154		HEAT TREATMENT —//—
NEXT ASSY	USED ON	FINAL FINISH —//—
APPLICATION		

MIT INSTRUMENTATION LABORATORY
DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

1007016 REV LTR T SHEET 1

27 1007016

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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R38 17
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FT15
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R26 9
C1 20
FT10
R27 12
R17 8
R9 18
L1 30
L2 30
R28 13
R14 7
CR2 25
FT22
FT23
FT19
Q9 35
R40 19
R8 6
R22 11
Q5 33
C5 21
CR7 27
R7 6
R13 7
FT13
R5 5
C7 22
R21 11
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C10 22
R6 5
FT16
FT12
L3
R43
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CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
FT1
R10 7
Q1 31
C3 20
C2 20
R3 4
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
FT 24
C13 23
C12 23
FT6
R19 10
R32 11
FT5
FT20
CR3 25
C11 24
R33 11
CR14 28
Q10 33
R18 9
CR15 28
CR18 53
FT4
FT8
FT7
R35 15
R12 18
L4 30
FT3
R11 7
Q3 32
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R42 49
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SEE NOTE 6
SEE NOTE 17
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SEE NOTE 7
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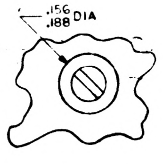
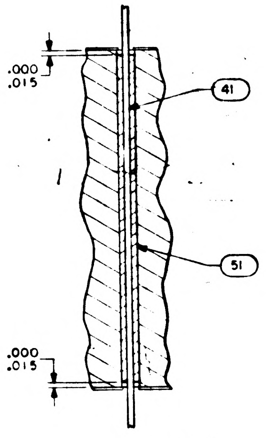
.154 MAX TYP
SEE NOTE 5



VIEW A-A

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
~~15. [illegible]~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136
21. PROCURE PER PS 1007016.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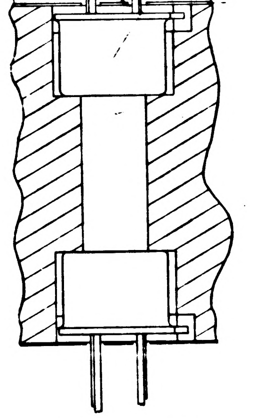
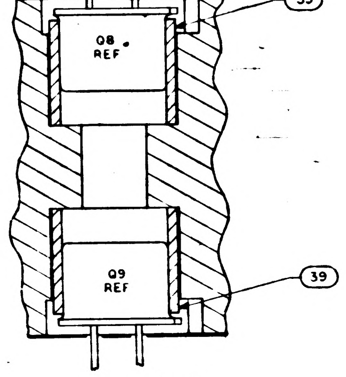
SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 33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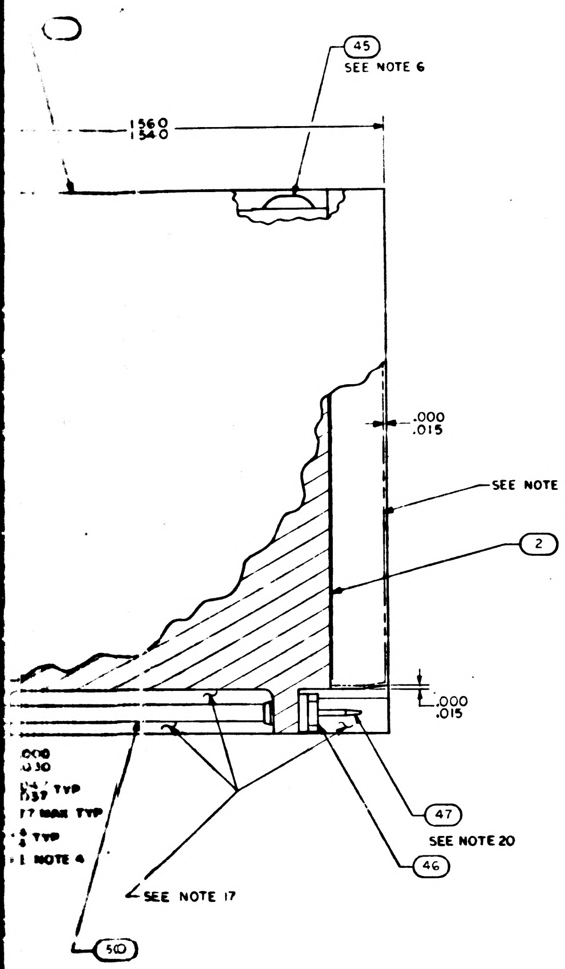
SECTION D-D

1007016	REV LTR T	SHEET 1

1007016 U

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00717	4-3-63	DT WK
B	REVISED PER TDRR 01013	4-25-63	DT WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	DT WK
E	REVISED PER TDRR 01355	5-20-63	DT WK
F	REVISED PER TDRR 01616	6-6-63	RPK WK
G	REVISED PER TDRR 01716	6-26-63	RPK WK
H	REVISED PER TDRR 01868	7-2-63	JJM WK
J	REVISED PER TDRR 02167	7-31-63	JJM WK
K	REVISED PER TDRR 05276	OCT 63	JJW RPK WK
L	REVISED PER TDRR 05409	OCT 63	RPK WK
M	REVISED PER TDRR 05876	JAN 64	JJW RPK WK
N	REVISED PER TDRR 06639	15 FEB 64	RPK WK
P	REVISED PER TDRR 07011	30 MAR 64	JJJ 4U
R	REVISED PER TDRR 07285	9 APR 64	JWP
S	REVISED PER TDRR 0911	28 JUL 64	JJ
T	REVISED PER TDRR 6853	3 MAR 65	JW
U	REVISED PER TDRR 6850	5 MAR 65	Z

REVISIONS TDRR 00411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SEE NOTE 6
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SEE NOTE 7
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.000
.030
TYP
MAX TYP
TYP
NOTE 4
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SEE NOTE 20
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SEE NOTE 17
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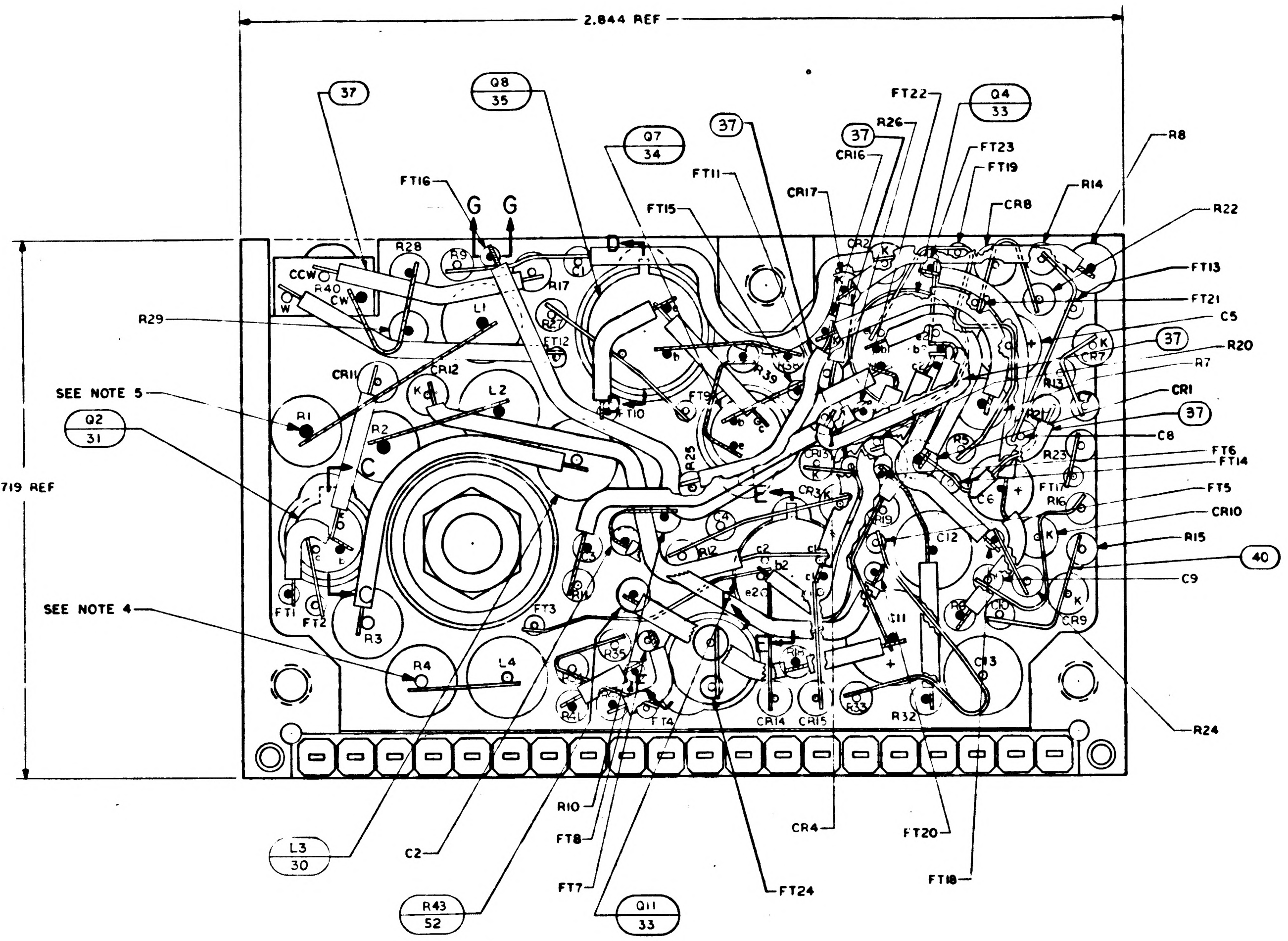
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R24
FT16
G
G
FT11
FT15
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R28
R29
R40
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CW
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CR11
CR12
L2
SEE NOTE 5
Q2
31
R1
R2
SEE NOTE 4
FT1
FT2
R3
FT3
R4
L4
R32
C13
CR14
CR15
C12
R16
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FT24
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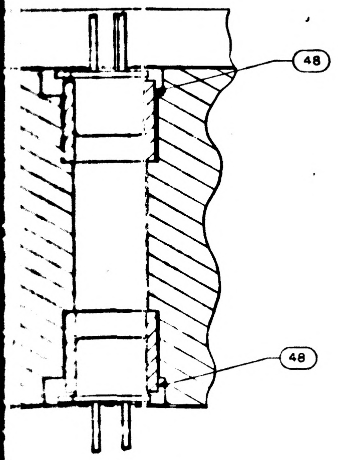
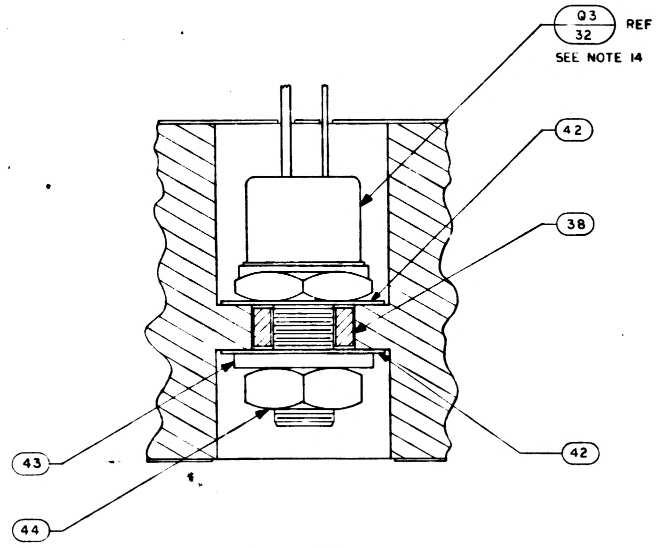
FT20
FT18



SECTION C-C
PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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SEE NOTE 14
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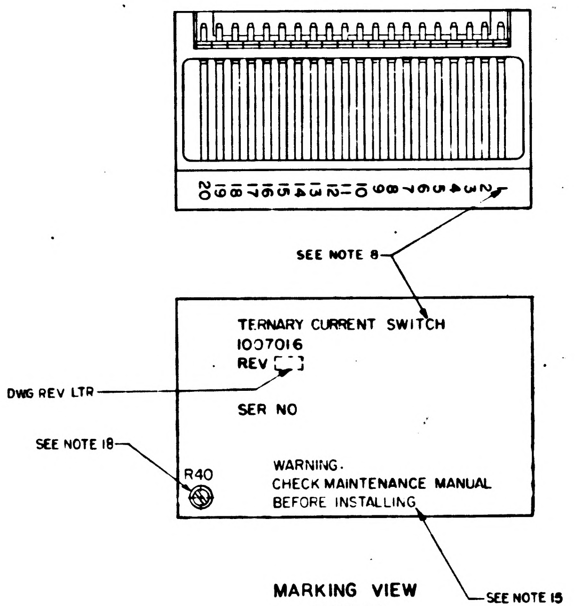
SECTION A-A


SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
SER NO
DWG REV LTR
SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
╳	1010016	SCHEMATIC	REF
1	1010372 – 6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR, FIXED MF 7.5K 1/4W ±2%	49
4	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP, FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP, FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP, FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
~~2~~	~~1006750-81~~	~~RESISTOR, FIXED MF, 110K 1/4W ±2%~~	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
6	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

1007154	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ±.02 XXX ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

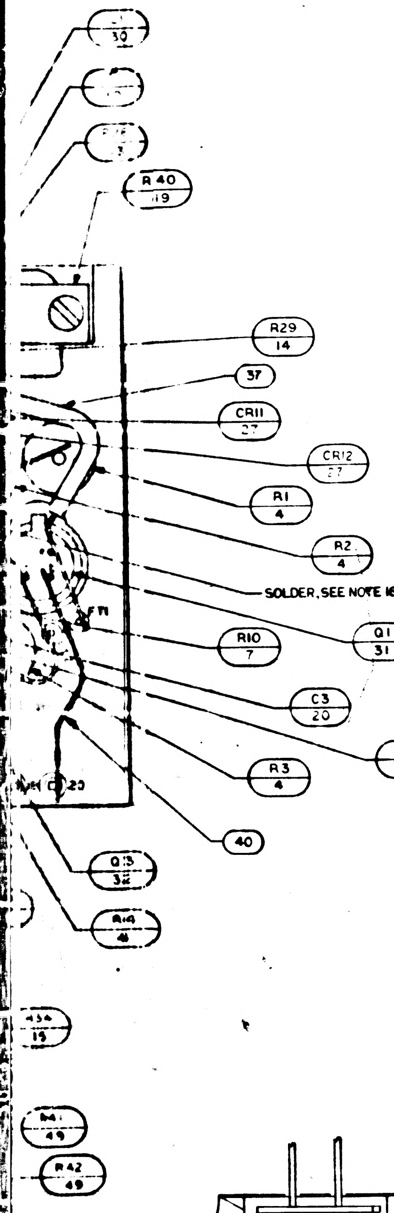
MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS9-497
DRAWN J. F. Dyer DATE 29 JAN 63
CHECKED K P Pomsley 15 FEB 63
APPROVAL D A Test 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL Eg Nielson

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

TERNARY CURRENT SWITCH,
COMPUTER OUTPUT,
ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007016
SCALE 5/1 | WT | SHEET 1 OF 1

J 1007016 U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FT1
R10
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R34
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R41
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R42
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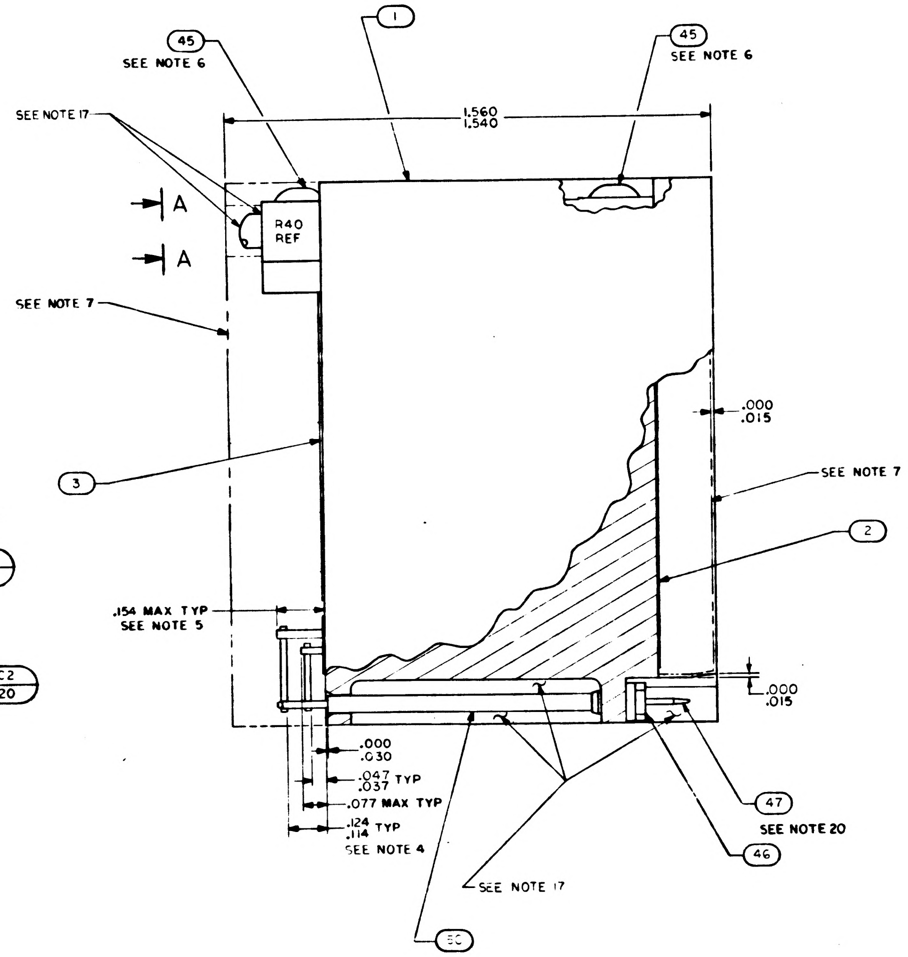
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SEE NOTE 17
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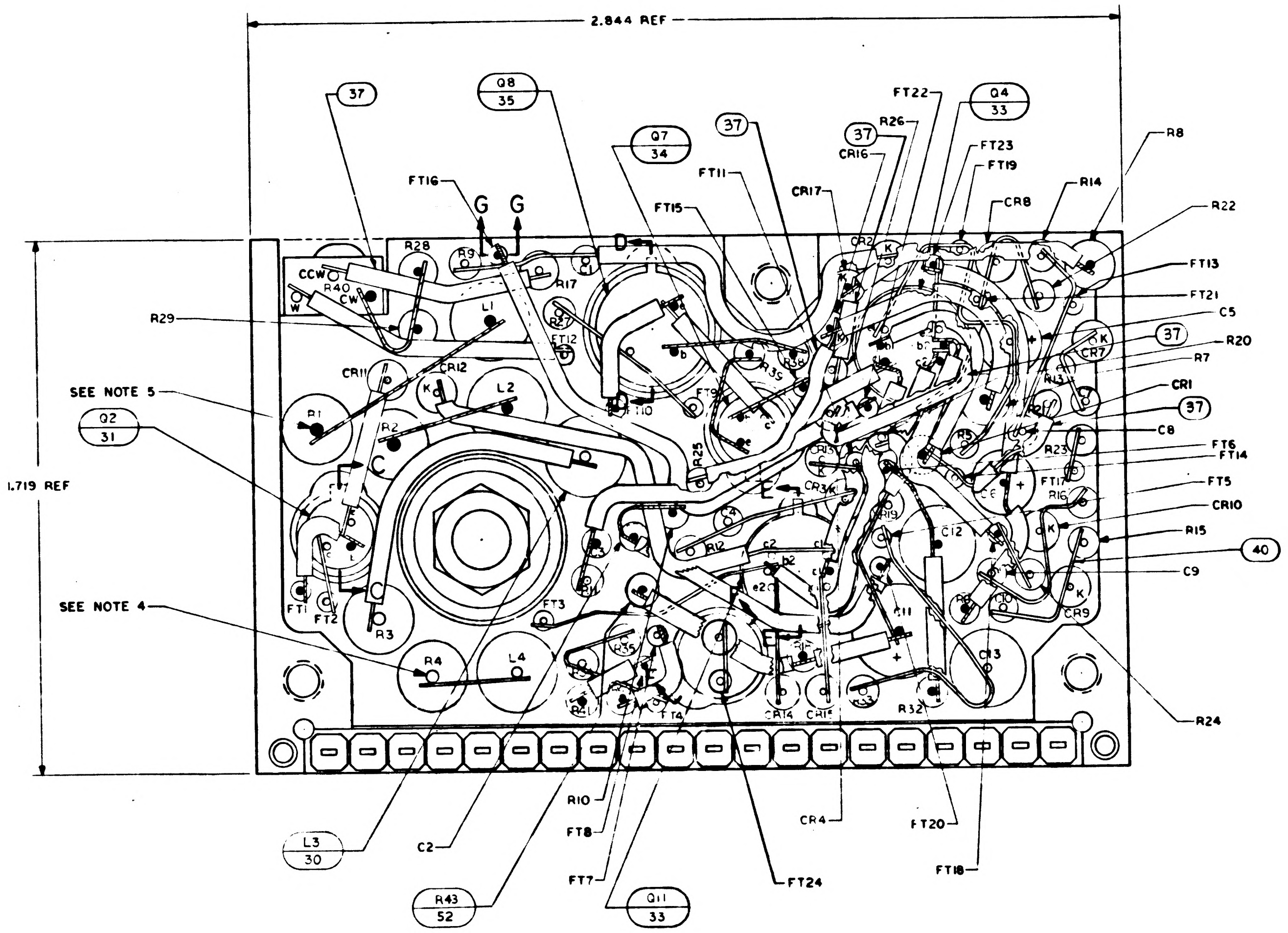
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G
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CR17
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R22
FT15
CCW
R40
CW
W
R28
R9
R17
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FT13
FT21
C5
R29
FT12
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R20
R7
CR11
CR12
L2
CR1
SEE NOTE 5
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C8
Q2
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R1
R2
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1.719 REF
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C9
CR9
R12
SEE NOTE 4
FT1
FT2
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R4
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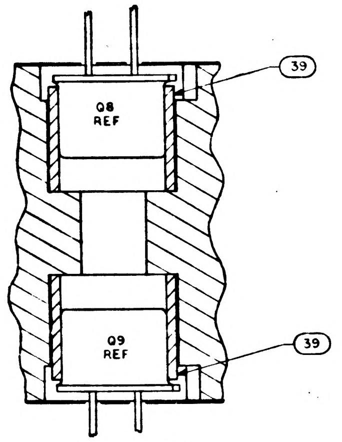
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Q9
REF
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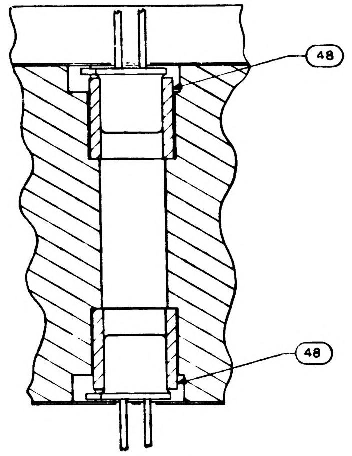
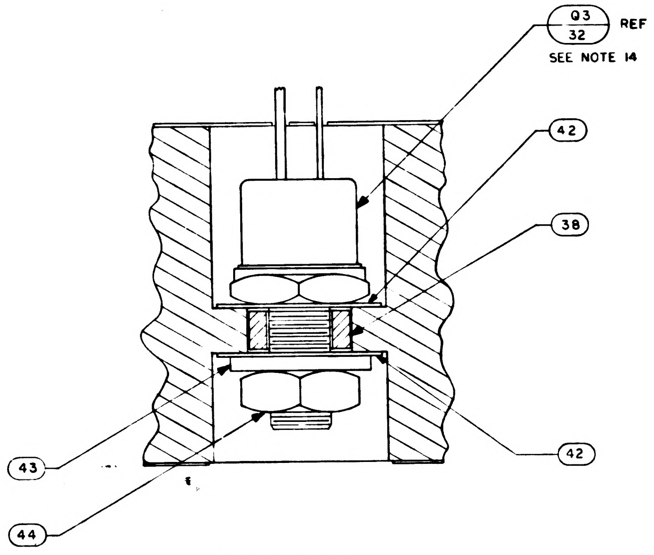
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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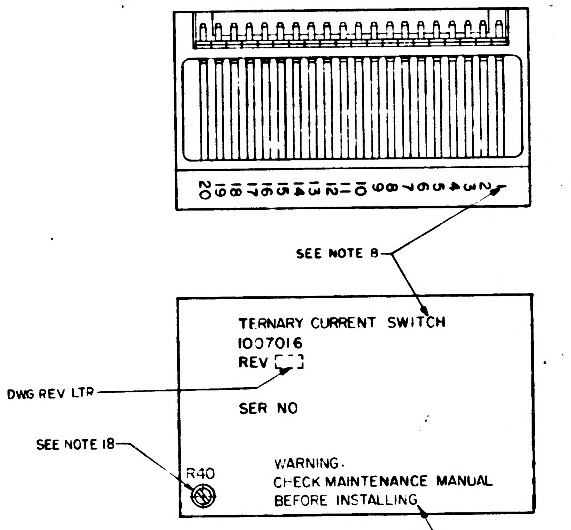
42

SECTION A-A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1
SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

1007154	
NEXT ASSY	USED ON
APPLICATION	

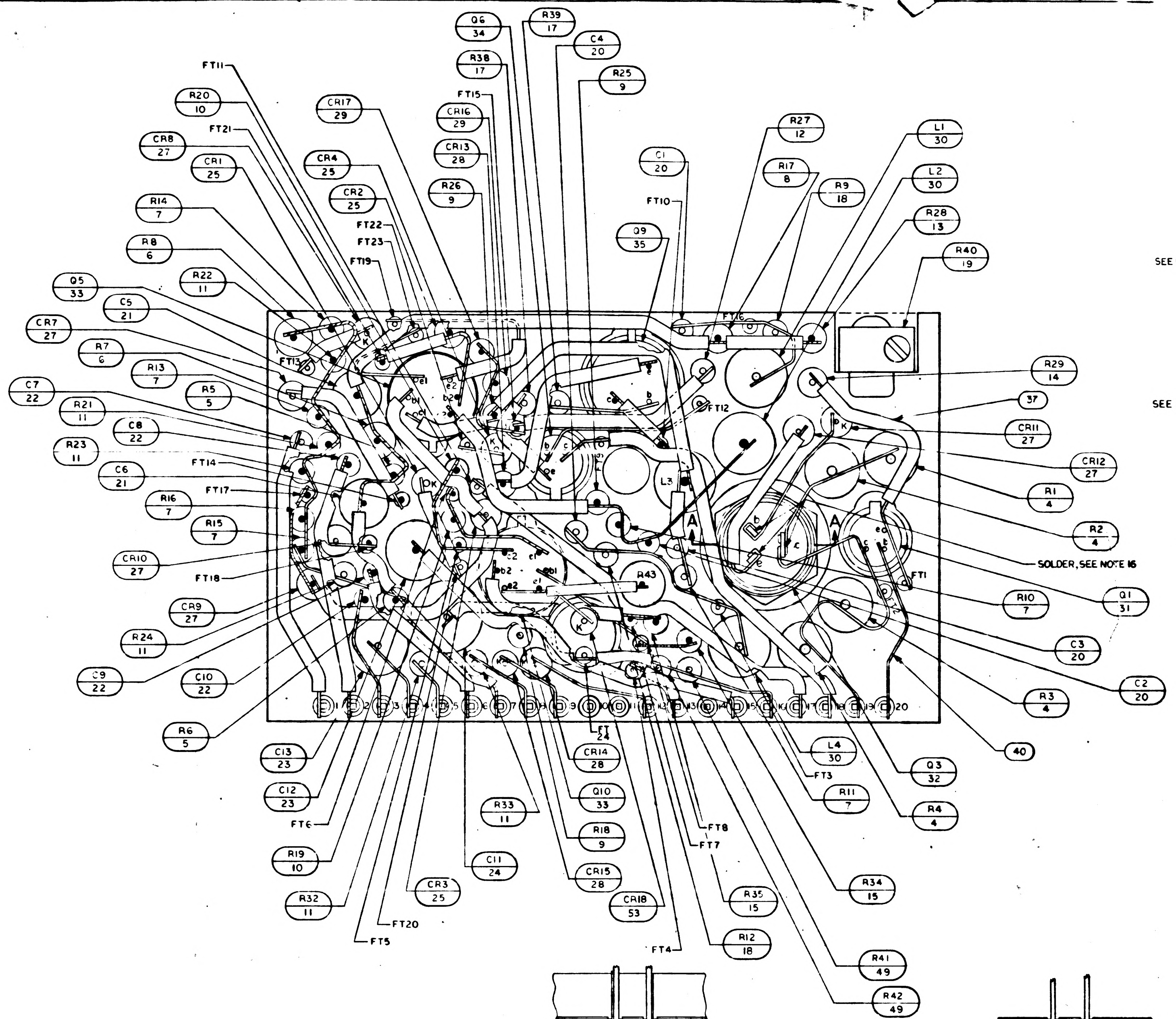
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± XX ±.02
XXX ±.005
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

QTY REQD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FT21
C1 20
CR1 25
CR4 25
R26 9
R17 8
L2 30
CR2 25
R9 18
FT10
R14 7
FT22
R28 13
FT23
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R8 6
FT19
R40 19
R22 11
Q5 33
C5 21
CR7 27
FT13
FT16
R7 6
R13 7
R29 14
C7 22
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R23 11
FT14
CR12 27
C6 21
FT17
R1 4
R16 7
L3
R15 7
A
A
R2 4
CR10 27
SOLDER, SEE NOTE 16
FT18
R43
FT1
R10 7
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CR9 27
C3 20
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C2 20
C9 22
C10 22
R3 4
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C13 23
CR14 28
FT3
Q3 32
C12 23
Q10 33
R11 7
R4 4
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FT6
R18 9
FT8
FT7
R19 10
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R12 18
FT5
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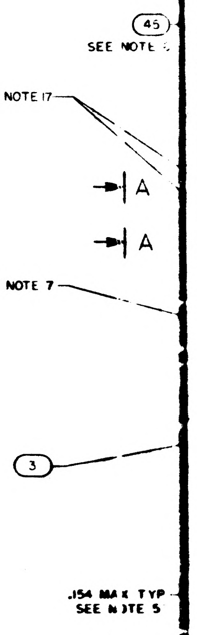
R42 49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SEE NOTE
SEE NOTE 17
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SEE NOTE 7
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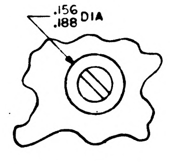
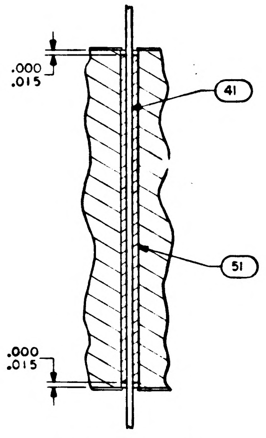
SEE NOTE 5



VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002005~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
~~15. MARK .080/.100 RED PER ND1002018~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO. 46 AND FIND NO. 47 PER ND1002136
21. PROCURE PER PS 1007016.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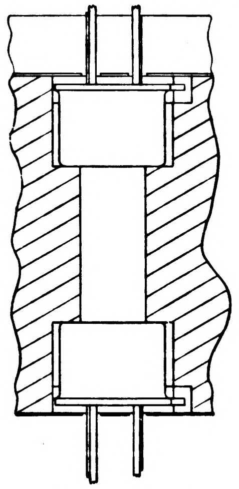
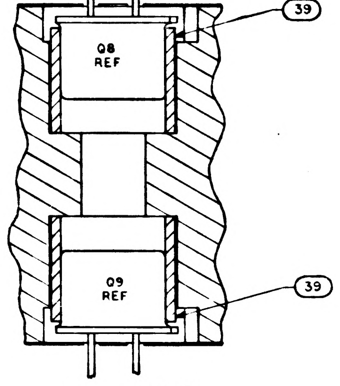
SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33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Q8 REF
Q9 REF
39

SECTION D-D

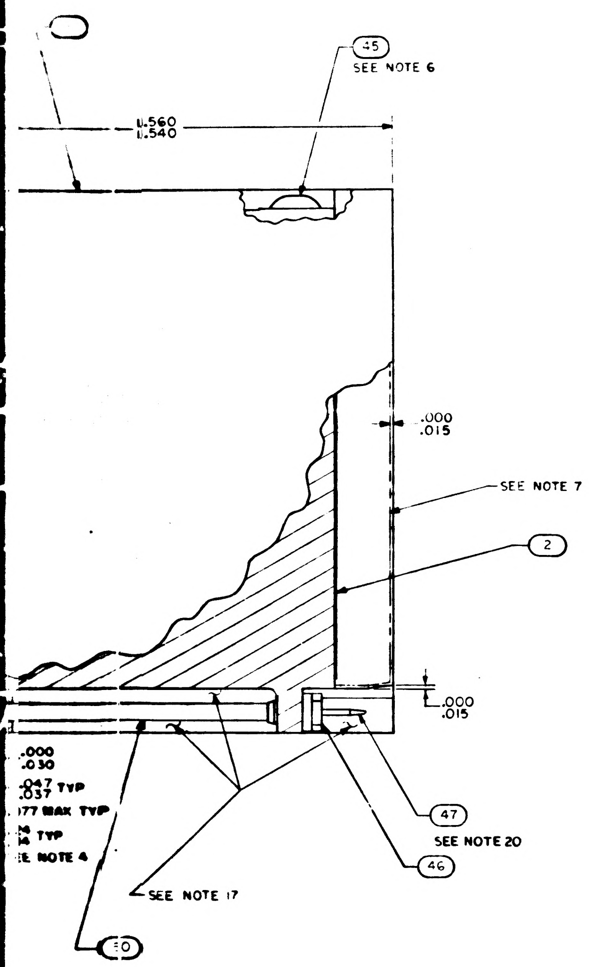
1007016	REV LTR U	SHEET 1

1/1007016

1007016 A

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00717	4-3-63	CT WK
B	REVISED PER TDRR 01013	4-25-63	JT WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	[illegible]	JT WK
E	REVISED PER TDRR 01355	5-20-63	JT WK
F	REVISED PER TDRR 01616	6-10-63	EPK WK
G	REVISED PER TDRR 01716	6-26-63	EPK WK
H	REVISED PER TDRR 01868	7-2-63	JJM
J	REVISED PER TDRR 02167	7-31-63	JJM WK
K	REVISED PER TDRR 05276	17 OCT 63	TFW EPK WK
L	REVISED PER TDRR 05409	27 NOV 63	EPK WK
M	REVISED PER TDRR 05876	14 JAN 64	TFW EPK WK
N	REVISED PER TDRR 06639	25 FEB 64	EPK WK
P	REVISED PER TDRR 07011	30 MAR 64	JJJ
R	REVISED PER TDRR 07285	3 APR 64	JWP
S	REVISED PER TDRR 0911	28 JUL 64	JJ
T	REVISED PER TDRR 6853	3 MAR 65	JWP
U	REVISED PER TDRR 16850	5 MAR 65	
V	REVISED PER TDRR 17353	MAR 65	

REVISIONS TDRR 00411



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SEE NOTE 6
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1.540
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2
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TYP
SEE NOTE 4
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SEE NOTE 20
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SEE NOTE 17
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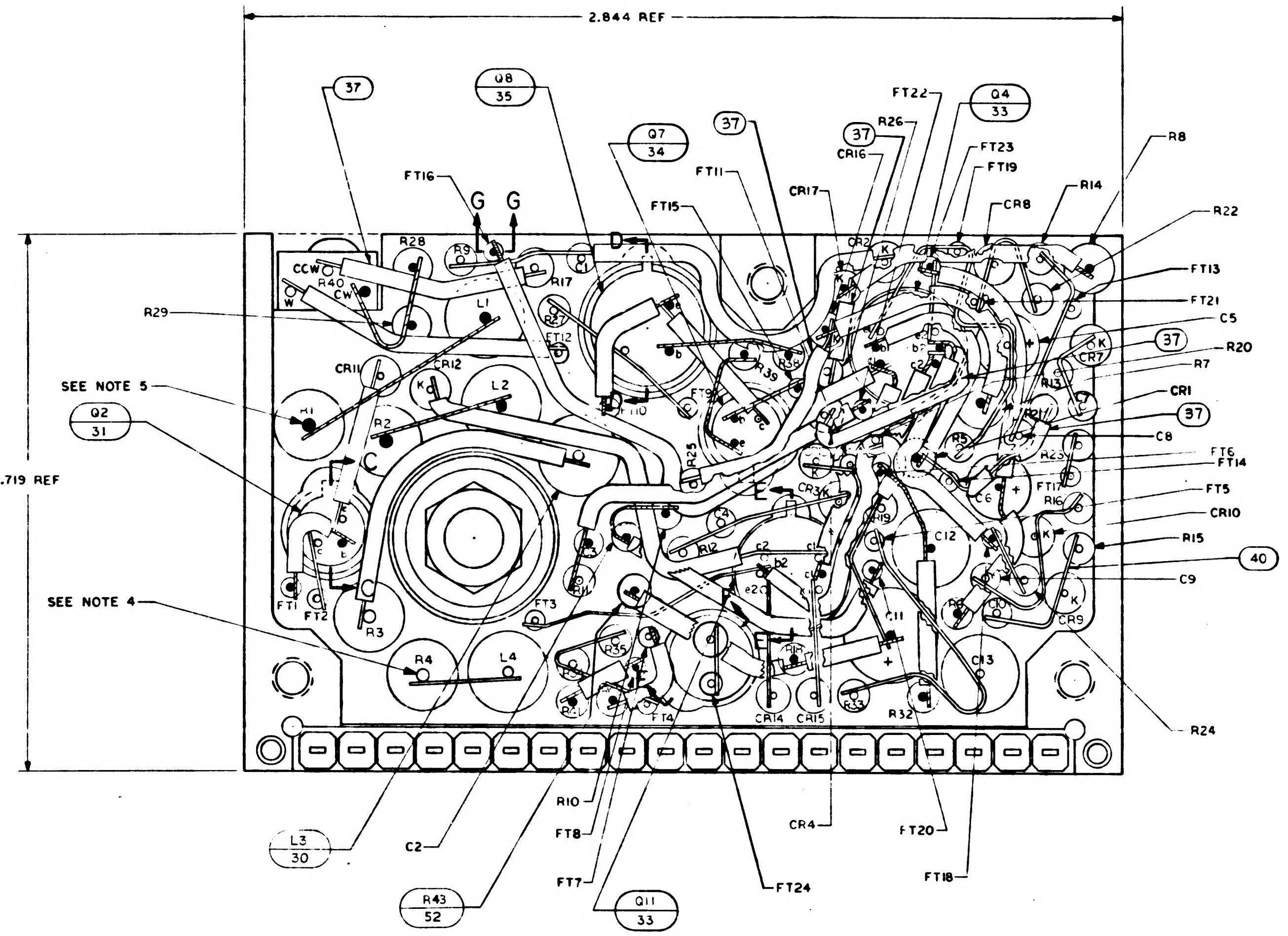

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Q7
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CR16
FT23
FT19
R8
FT16
G
G
FT11
CR17
FT15
CR2
CR8
R14
R22
R28
R9
R40
CCW
CW
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FT13
FT21
C5
R29
L1
R17
FT12
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R20
R7
CR11
CR12
L2
K
CR7
CR1
37
SEE NOTE 5
R1
R2
R25
C8
FT6
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FT5
CR10
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C9
CR9
K
R24
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C11
C3
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FT2
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FT3
R12
SEE NOTE 4
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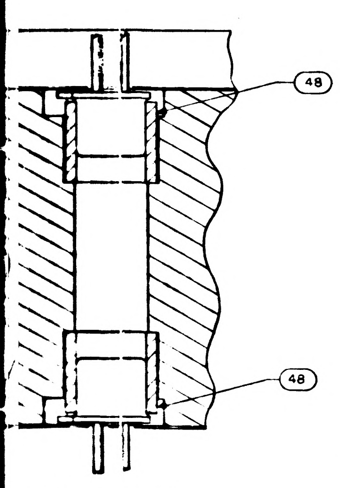
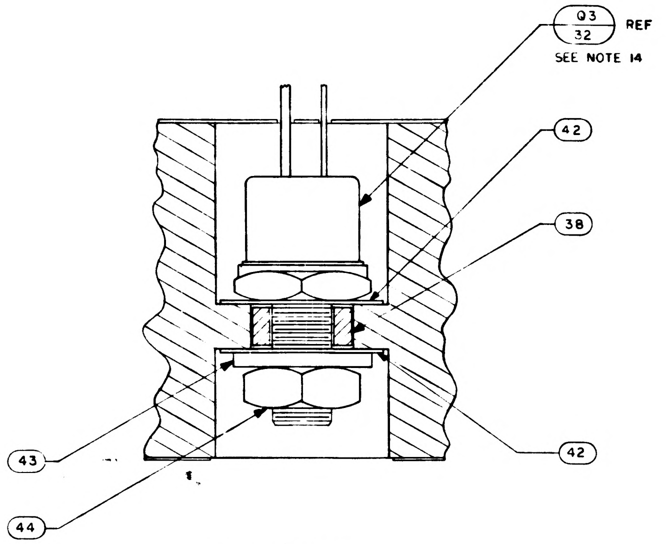


SECTION C-C
PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34



Q3
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REF
SEE NOTE 14
42
38
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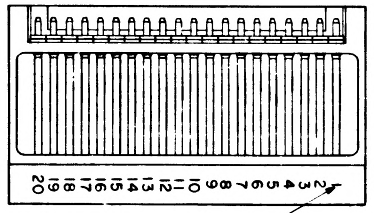
42

SECTION A-A



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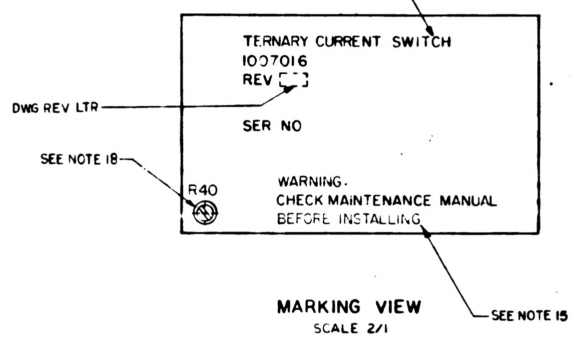
SEE NOTE 8



TERNARY CURRENT SWITCH
1007016
REV
SER NO
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
DWG REV LTR
SEE NOTE 18
R40
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010016	SCHEMATIC	REF
1	1010372 – 6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR, FIXED MF 7.5K 1/4W ± 2%	49
4	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP, FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP, FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP, FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
~~2~~	~~1006750-81~~	~~RESISTOR, FIXED MF, 110K 1/4W ±2%~~	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10 K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 332K 1/8W ±1%	8
6	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	10080[illegible]-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

1007154	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO.
CONTRACT NAS9-497
DRAWN J. F. [illegible] DATE 29 JAN 63
CHECKED [illegible] 15 FEB 63
APPROVAL [illegible] 18 FEB 63
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

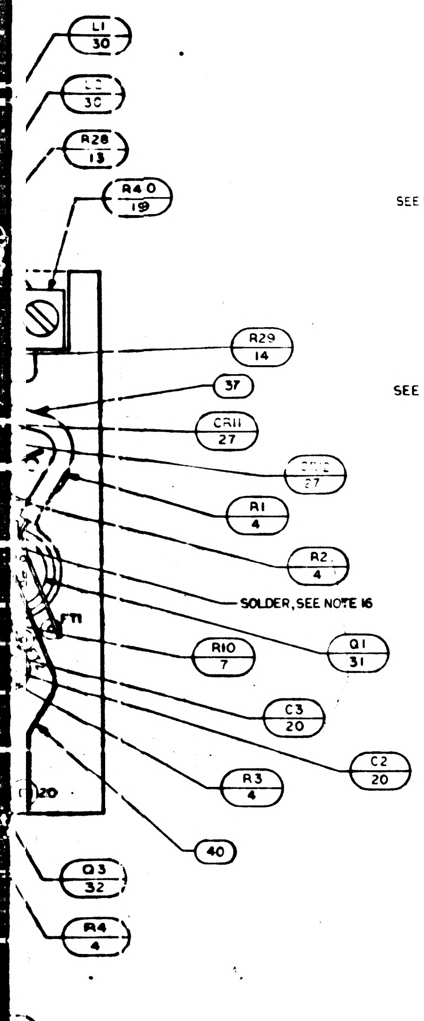
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO. 1007016
SCALE 5/1
WT
SHEET 1 OF 1

J 1007016 V

3/1007016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L2 30
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R40 19
R29 14
37
CR11 27
CR12 27
R1 4
R2 4
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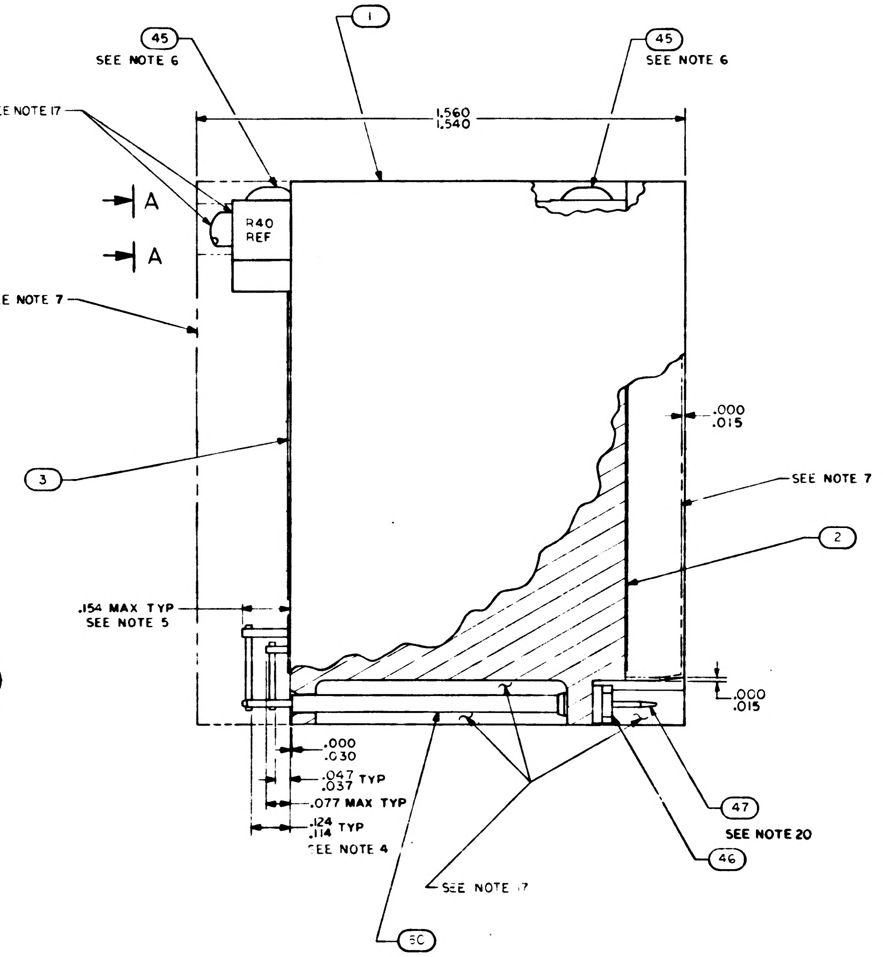
Q1 31
FT1
R10 7
C3 20
C2 20
R3 4
40
Q3 32
R4 4
20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SEE NOTE 6
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SEE NOTE 6
SEE NOTE 17
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R40 REF
SEE NOTE 7
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SEE NOTE 17
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SEE NOTE 20
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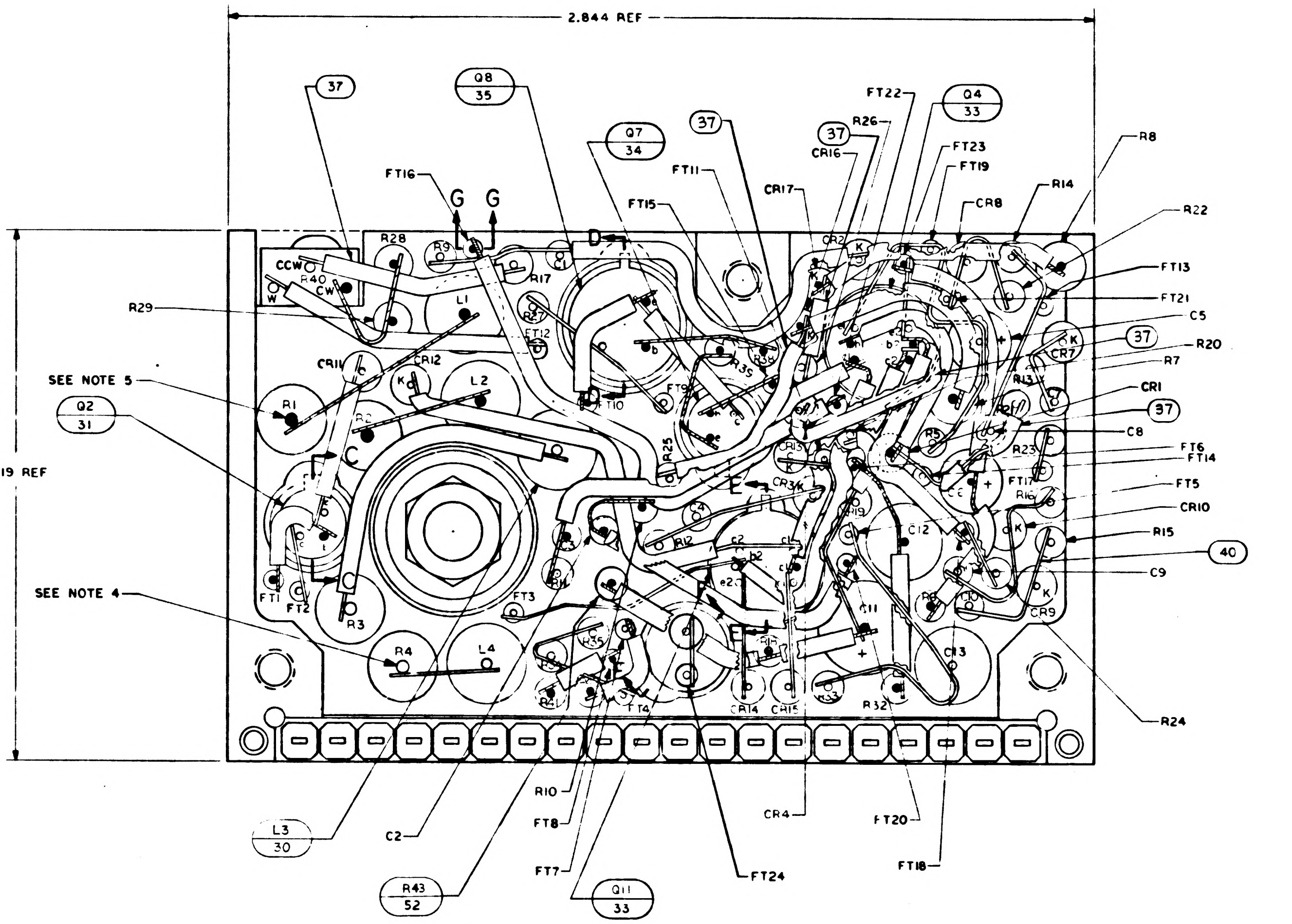
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R26
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FT23
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R8
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C5
R20
R7
CR1
37
C8
FT6
FT14
FT5
CR10
R15
40
C9
CR9
CR11
CR12
L2
SEE NOTE 5
Q2 31
R1
FT9
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FT10
R25
CR3
R23
FT17
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R13
CR7
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C
E
R12
C2
C12
R19
SEE NOTE 4
FT1
FT2
R3
FT3
R4
L4
C11
C13
FT4
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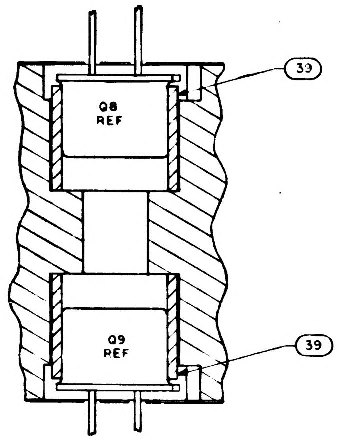
CR4
FT20
FT24
FT18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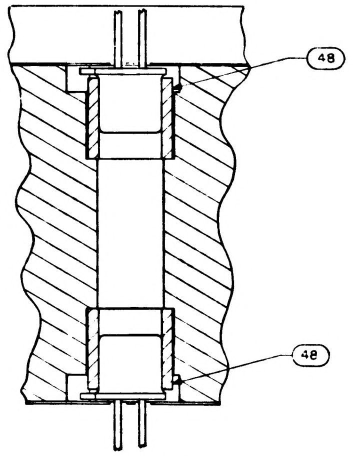
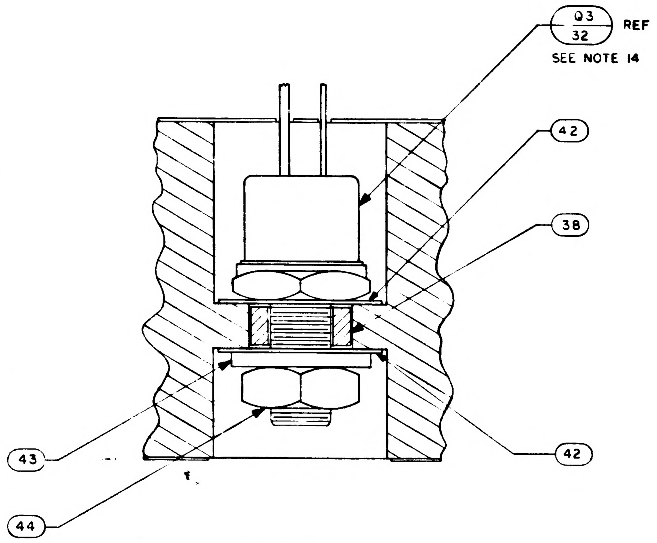
Q8 REF
Q9 REF
39

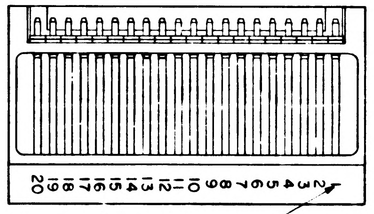
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34


Q3 32 REF
SEE NOTE 14
42
38
43
42
44

SECTION A-A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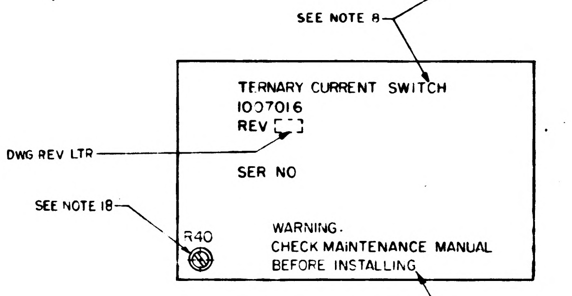
SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
SER NO
DWG REV LTR
SEE NOTE 18
R40
WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	
	1000016
	1010372
	1006750
AR	1006776
AR	1006776
	1006750
	1008025
20	1006782
20	1006775
	1000093
	MS35650
	[illegible]
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AR	1006757
	1008025
	1006021
AR	1006776
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	1006752
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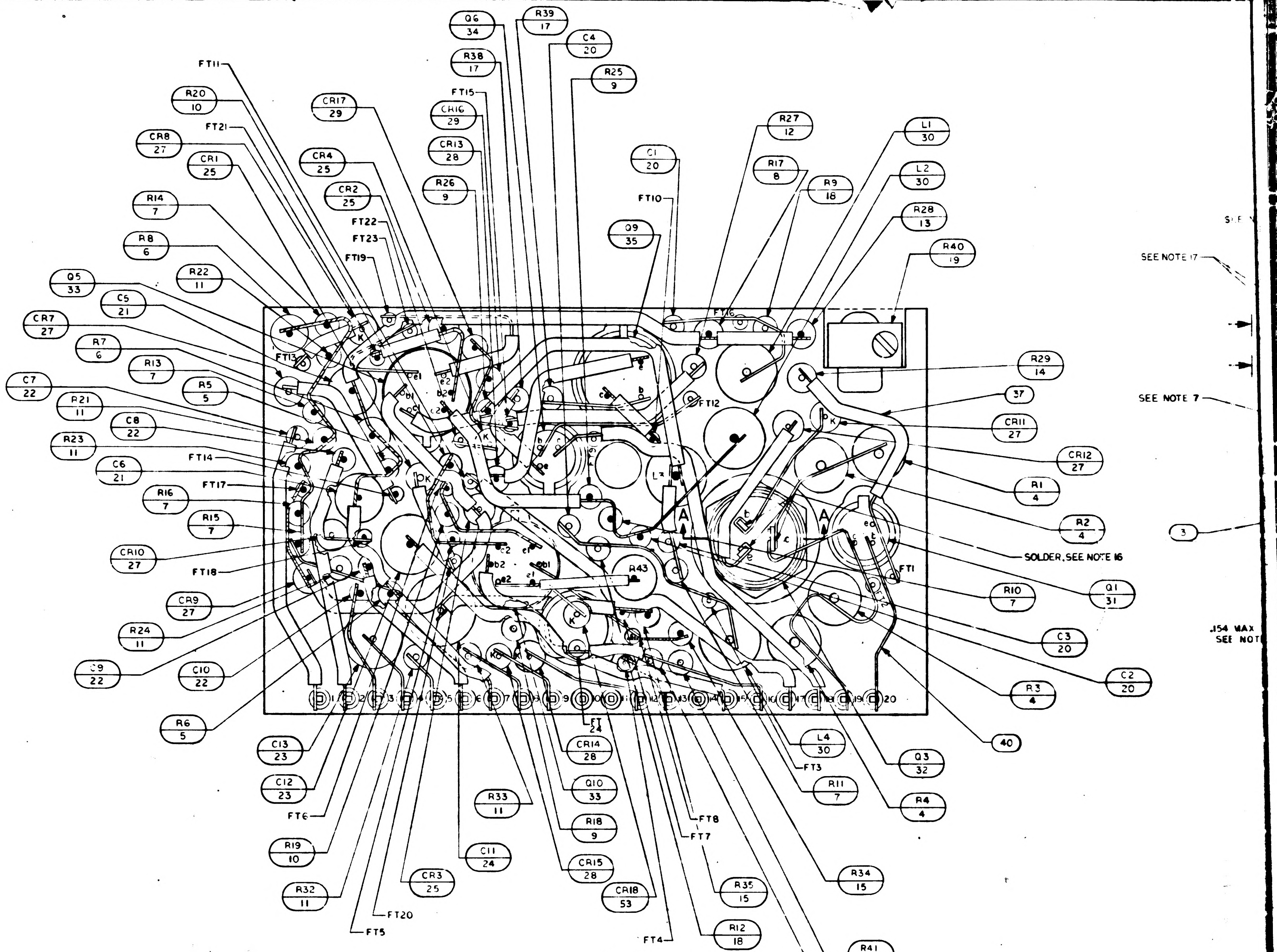
	1006750
1	1010364
	1006750
2	1006750
2	1006750
4	1010399
1	1008019
1	1008019
1	1007008

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± — DECIMALS XX ±.02 XXX ±.005 ANGLES ± — DO NOT SCALE THIS DRAWING
		MATERIAL —
1007154		HEAT TREATMENT —
NEXT ASSY	USED ON	FINAL FINISH —
APPLICATION		

INSTRUMENTATI
DRAWN
CHECKED
APPROVAL
APPROVAL
NAS APP
MIT APP

1007016	REV LTR V	SHEET 1

D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CR8 27
CR1 25
CR4 25
R26 9
C1 20
R17 8
R9 16
L2 30
CR2 25
FT10
R28 13
R14 7
FT22
FT23
Q9 35
R40 19
R8 6
FT19
R22 11
Q5 33
C5 21
CR7 27
FT13
FT16
R29 14
R7 6
R13 7
FT12
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C7 22
R5 5
P21 11
CR11 27
C8 22
R23 11
FT14
CR12 27
C6 21
FT17
R1 4
R16 7
R2 4
R15 7
SOLDER, SEE NOTE 16
3
CR10 27
FT18
R43
FT1
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R10 7
CR9 27
C3 20
R24 11
C9 22
C10 22
C2 20
R3 4
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
R6 5
FT 24
L4 30
40
C13 23
CR14 28
FT3
Q3 32
C12 23
Q10 33
R11 7
R4 4
FT6
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FT8
R18 9
FT7
R19 10
C11 24
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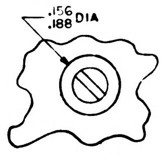
SEE NOTE 17
SEE NOTE 7
.154 MAX
SEE NOT

C

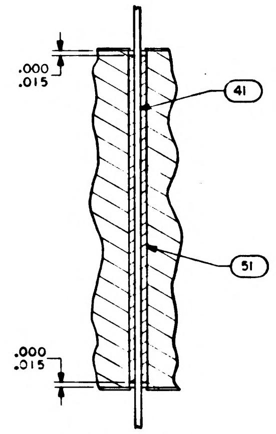


VIEW A-A

B

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002008~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
~~15. MARK .080/100 RED PER ND1002018~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136
21. PROCURE PER PS 1007016.
22. *BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.*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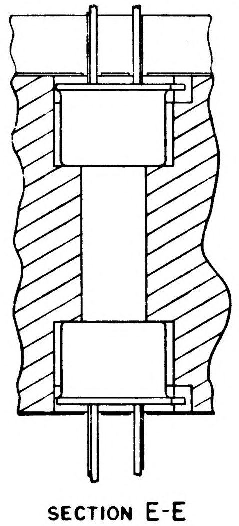
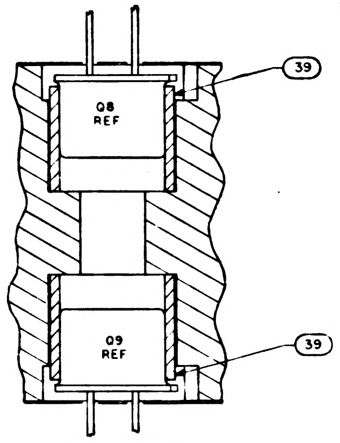
SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33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Q8
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Q9
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SECTION D-D

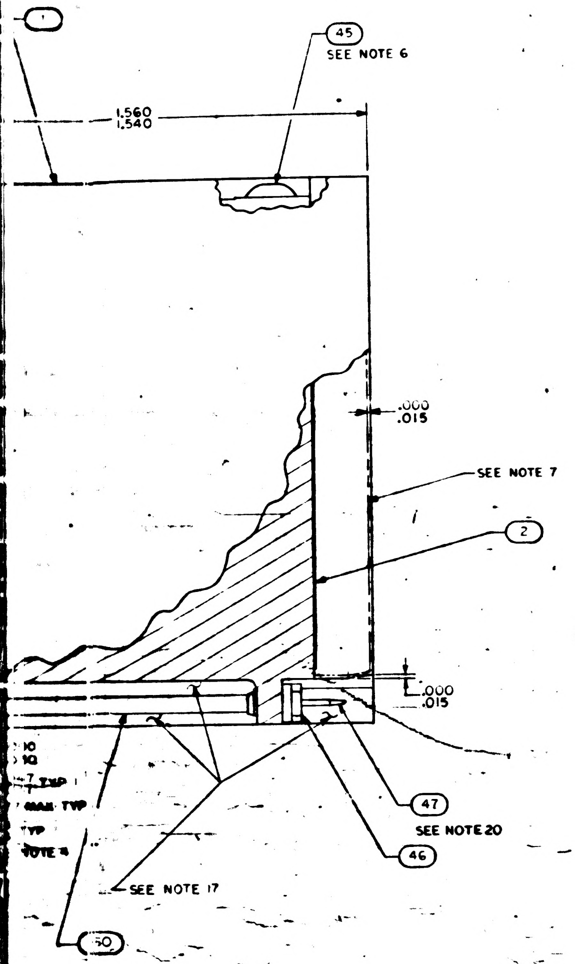
A

1007016	REV LTR V	SHEET 1

1/1007016

1007016 M

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00777	4-3-63	DT WK
B	REVISED PER TDRR 02013	4-25-63	DT WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01179	5-8-63	DT. WK
E	REVISED PER TDRR 01855	5-20-63	DT. WK
F	REVISED PER TDRR 01616	6-8-63	EPK WK
G	REVISED PER TDRR 01716	6-26-63	EPK WK
H	REVISED PER TDRR 01868	7-2-63	JJM WK
J	REVISED PER TDRR 02167	7-31-63	JJM WK
K	REVISED PER TDRR 05276	17 OCT 63	JJW EPK WK
L	REVISED PER TDRR 05409	7 NOV 63	EPK WK
M	REVISED PER TDRR 05876	21 JAN 64	JJW WK
N	REVISED PER TDRR 06639	25 FEB 64	EPK WK
P	REVISED PER TDRR 07011	30 MAR 64	JJJ AU
R	REVISED PER TDRR 07285	3 APR 64	JWP
S	REVISED PER TDRR 10911	25 JUL 64	JJJ A.U.
T	REVISED PER TDRR 16853	3 MAR 65	JWP AU
U	REVISED PER TDRR 16850	5 MAR 65	RJ AU
V	REVISED PER TDRR 17353	MAR 65	
W	REVISED PER TDRR 19408	1 JUNE 65	EN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SEE NOTE 6
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SEE NOTE 20
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SEE NOTE 17
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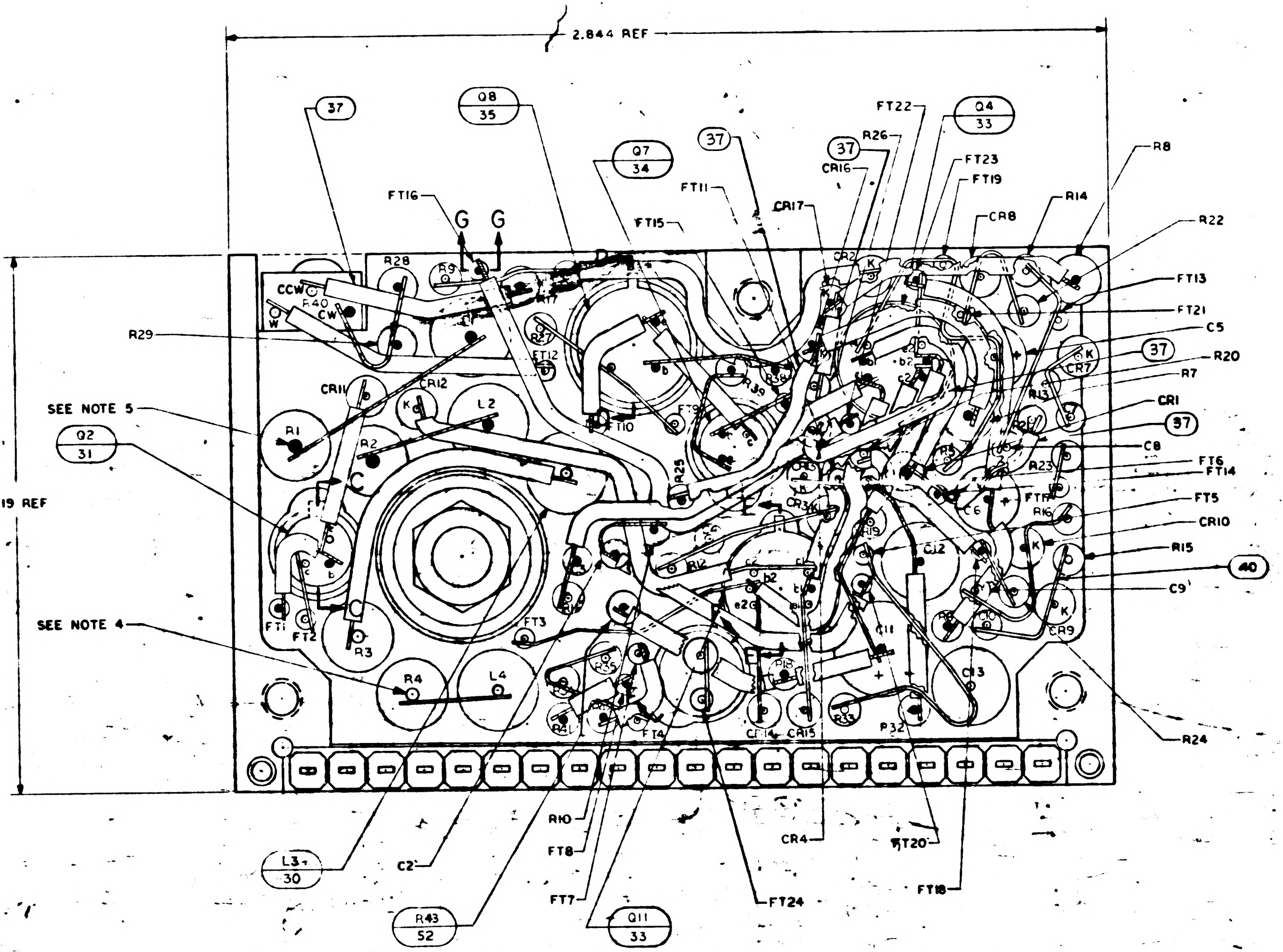
TYP
MAX TYP
TYP
NOTE 8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CR8
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R22
FT13
FT21
C5
R28
R29
CCW
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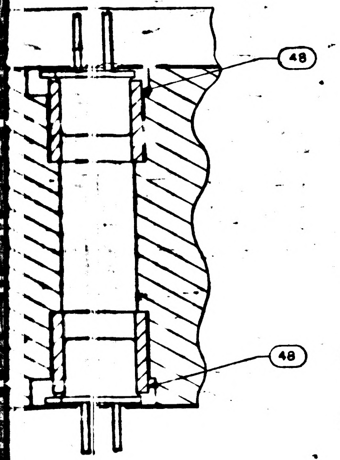
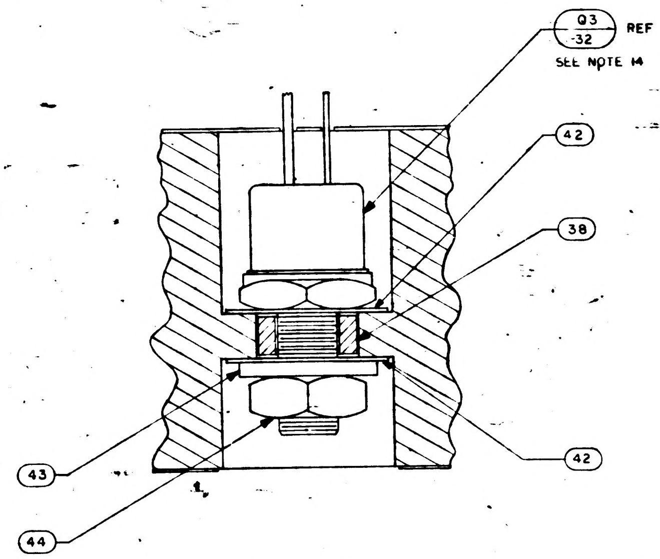
FT18



SECTION C-C
2 PLACES
·PICAL INSTALLATION FOR
FIND NO. 31 AND 34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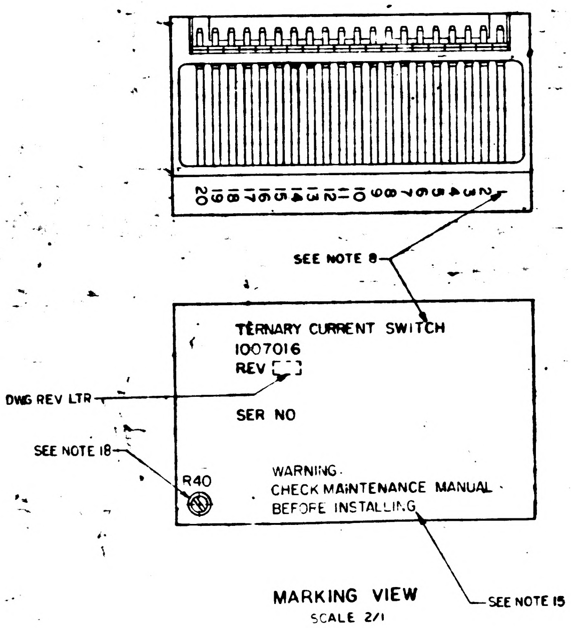
SECTION A-A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TERNARY CURRENT SWITCH
1007016
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DWG REV LTR
SEE NOTE 18
R40
WARNING
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010016	SCHEMATIC	REF
1	1010372-6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR, FIXED MF 25K 1/4W ±2%	49
4	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY-75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010462-6	DIODE	25
1	1010393-39	CAP, FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP, FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP, FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP, FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
~~2~~	~~1006750-81~~	~~RESISTOR, FIXED MF, 110K 1/4W ±2%~~	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-835	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
6	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
CONTRACT NAS9-497
DRAWN E Falzone DATE 4 JAN 63
CHECKED 15 JAN 63
APPROVAL 18 JAN 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

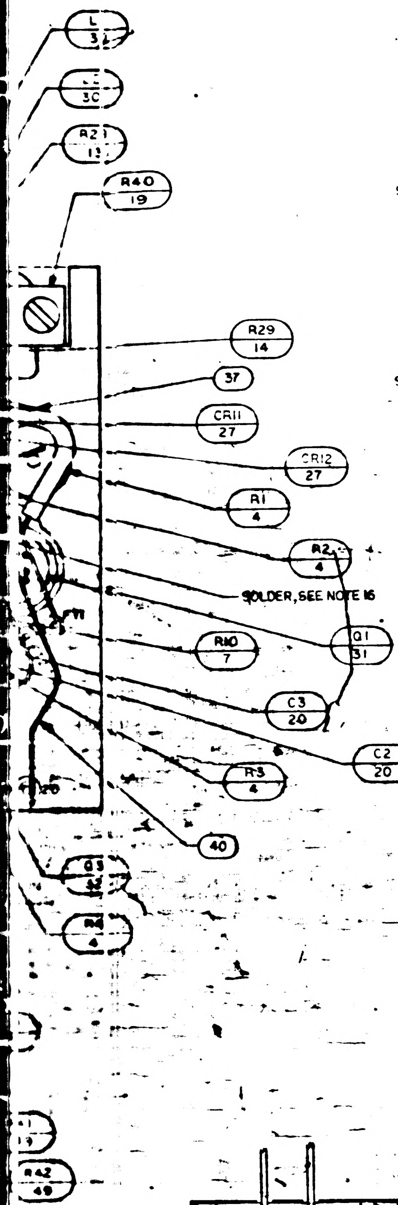
TERNARY CURRENT SWITCH,
COMPUTER OUTPUT,
ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007016
SCALE 5/1 WT SHEET 1 OF 1

J 1007016 W

7016 W 1

37-1007016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CR12 27
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R2 4
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C2 20
R3 4
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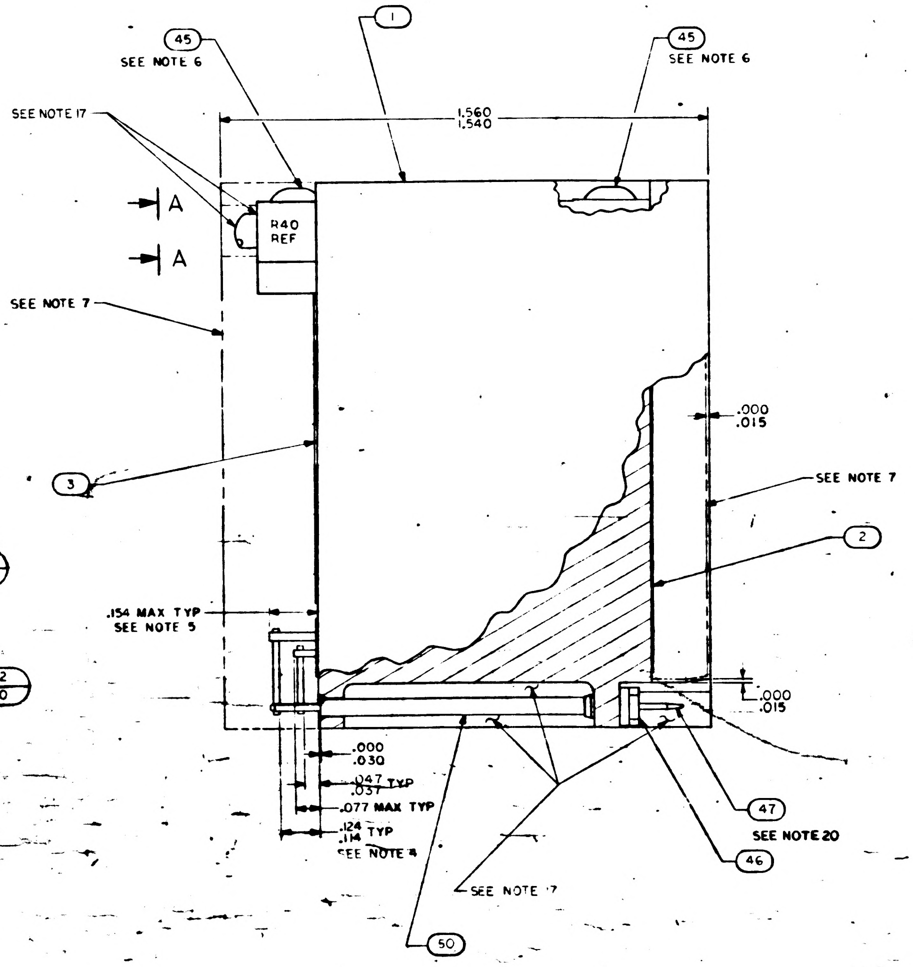
Q3
R42 4
R42 49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1.540
SEE NOTE 7
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.015
SEE NOTE 7
3
2
.154 MAX TYP
SEE NOTE 5
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SEE NOTE 20
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SEE NOTE 17
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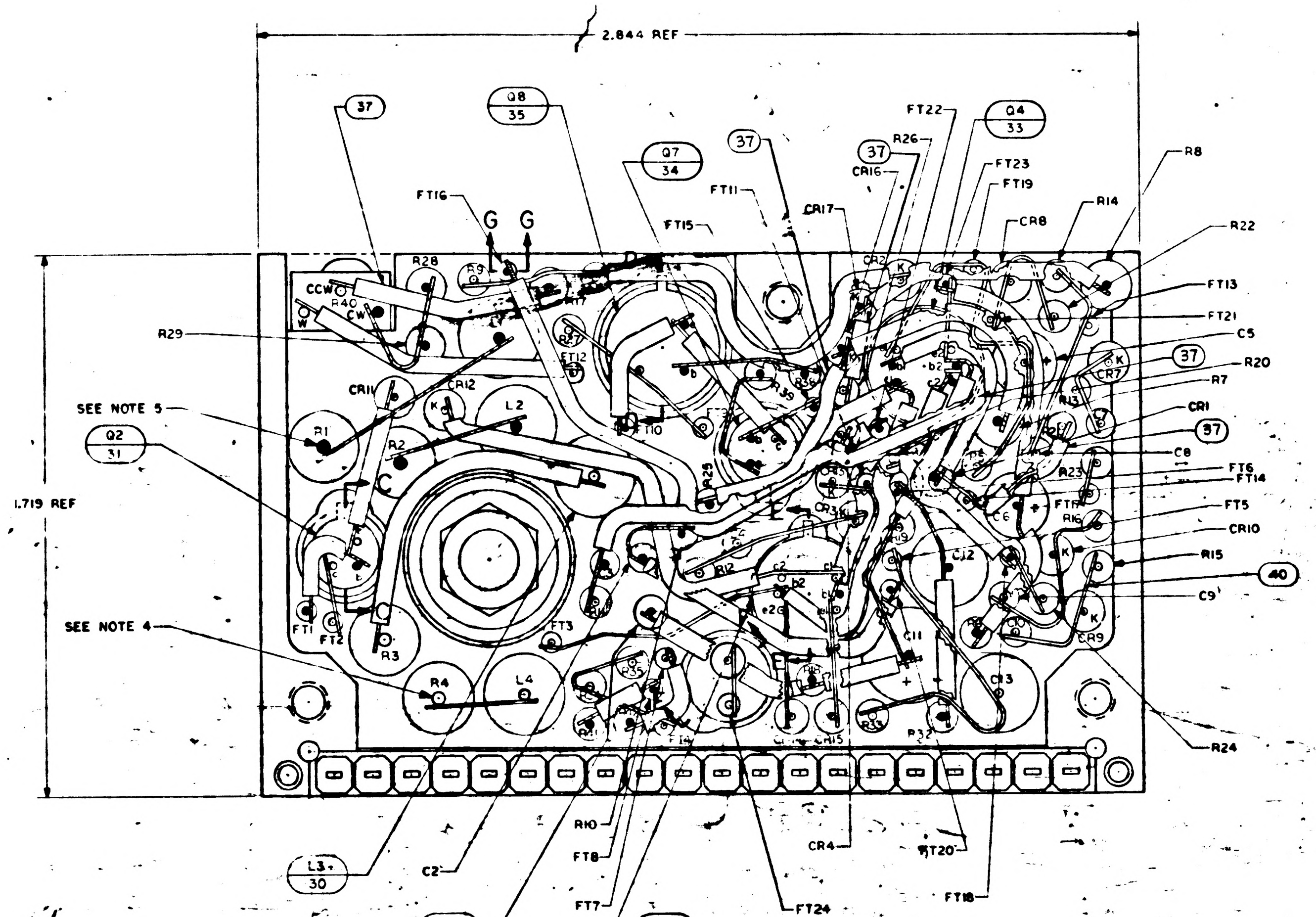
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R28
R9
CCW
R40
CW
W
FT13
FT21
C5
R29
37
R20
R7
CR11
R12
L2
CR1
SEE NOTE 5
Q2 31
R1
R2
37
C8
FT6
FT14
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FT5
CR10
R15
C9
40
SEE NOTE 4
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FT2
R3
FT3
R4
L4
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FT20
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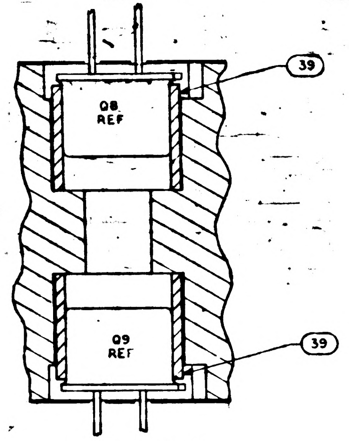
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Q9 REF
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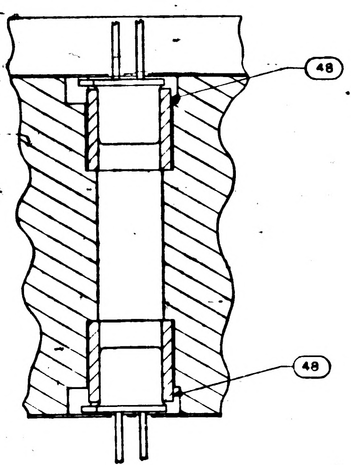
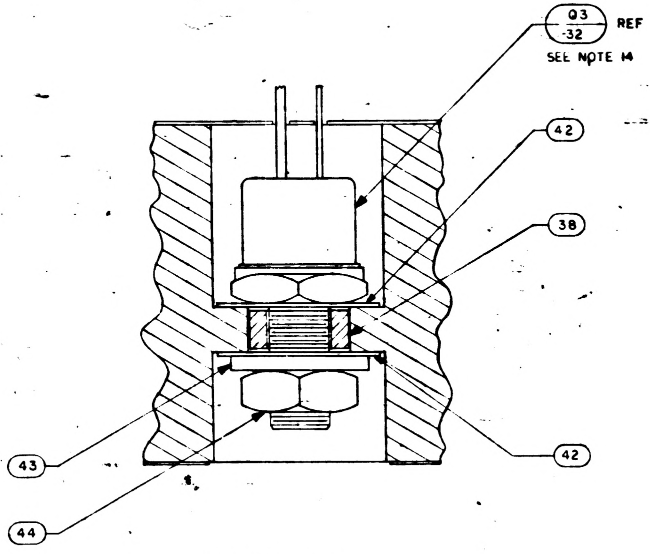
SECTION D-D



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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SEE NOTE 14
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43
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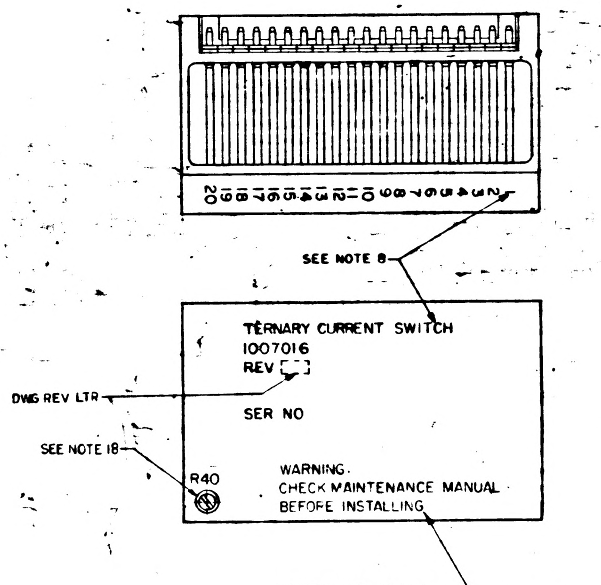
44

SECTION A-A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TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
SEE NOTE 18
R40
WARNING
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

MARKING VIEW
SCALE 2/1

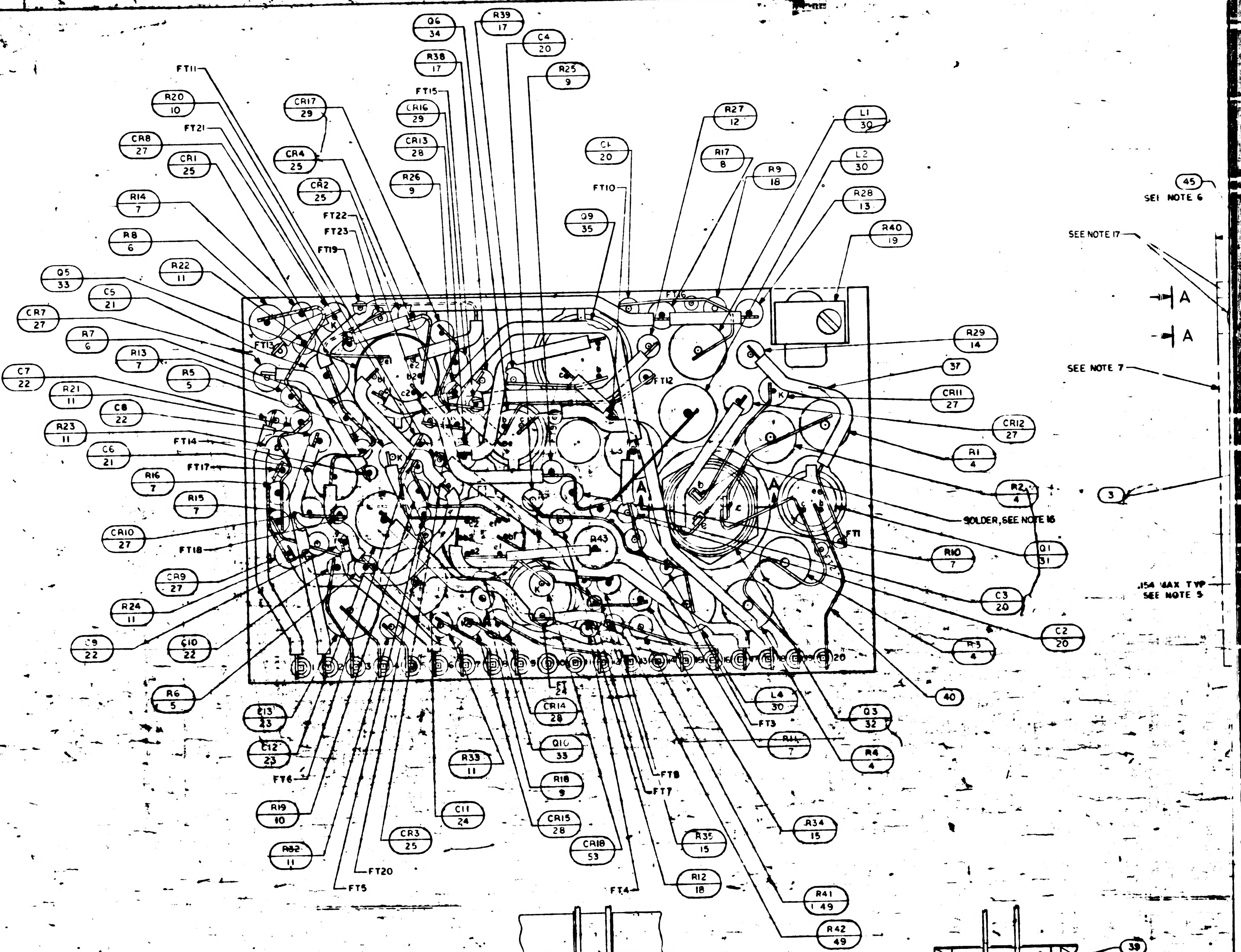
SEE NOTE 15

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± —— DECIMALS XX±.02 XXX±.005 ANGLE ± —— DO NOT SCALE THIS DRAWING
		MATERIAL ——
		HEAT TREATMENT ——
1007154		FINAL FINISH ——
NEXT ASSY	USED ON	
APPLICATION		

DRAWN
CHECKED
APPROVAL
APPROVAL
NASA
MIT

1007016 REV W SHEET 1

2/1007016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FT12
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R21 11
C8 22
CR12 27
R23 11
FT14
R1 4
C6 21
FT17
R16 7
R2 4
SOLDER, SEE NOTE 16
R15 7
CR10 27
FT18
FT1
R43
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R10 7
CR9 27
C3 20
R24 11
C2 20
C9 22
C10 22
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CR15 28
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CR3 25
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CR18 53
FT20
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SEE NOTE 7
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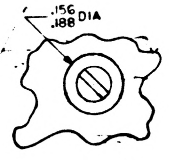
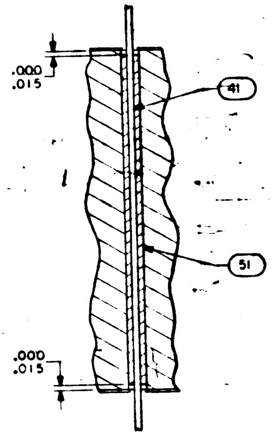
SEE NOTE 5



VIEW A-A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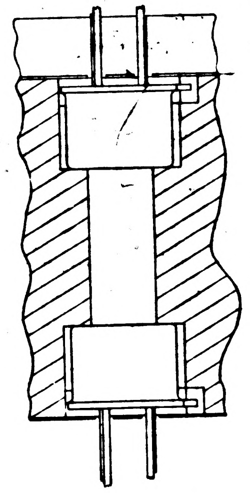
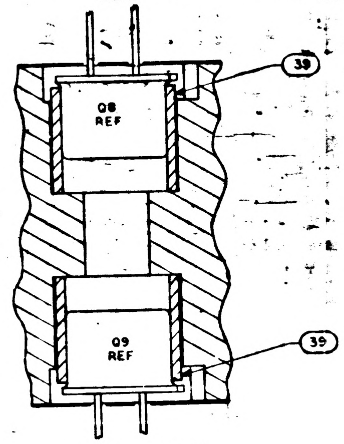
SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 33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REF
Q9
REF
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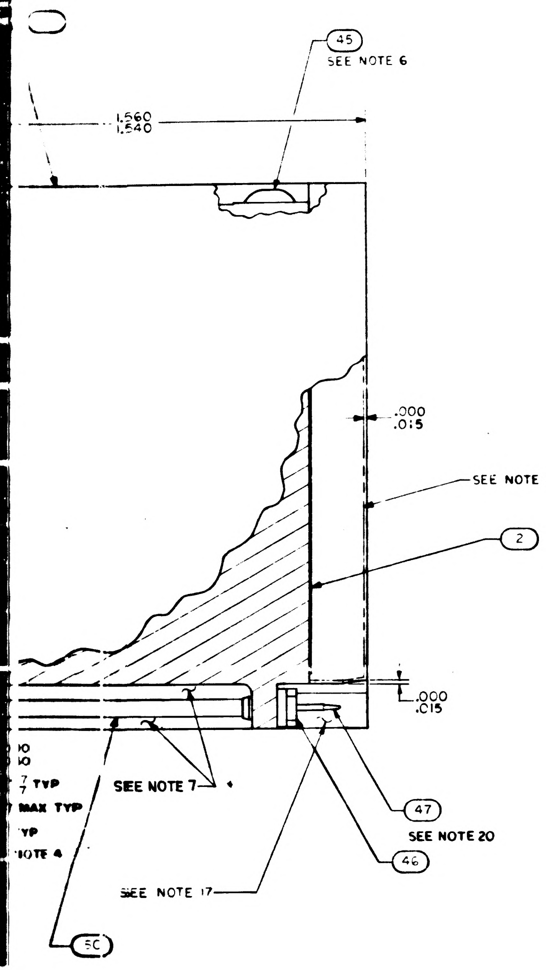
SECTION D-D

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE.	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ± .03 OF EXTERNAL EDGE

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002008~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE - THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 49 PER ND1002009
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
15. ~~[illegible]~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136
21. PROCURE PER PS 1007016.
22. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~
23. CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISOPROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.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SEE NOTE 7
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SEE NOTE 20
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SEE NOTE 17
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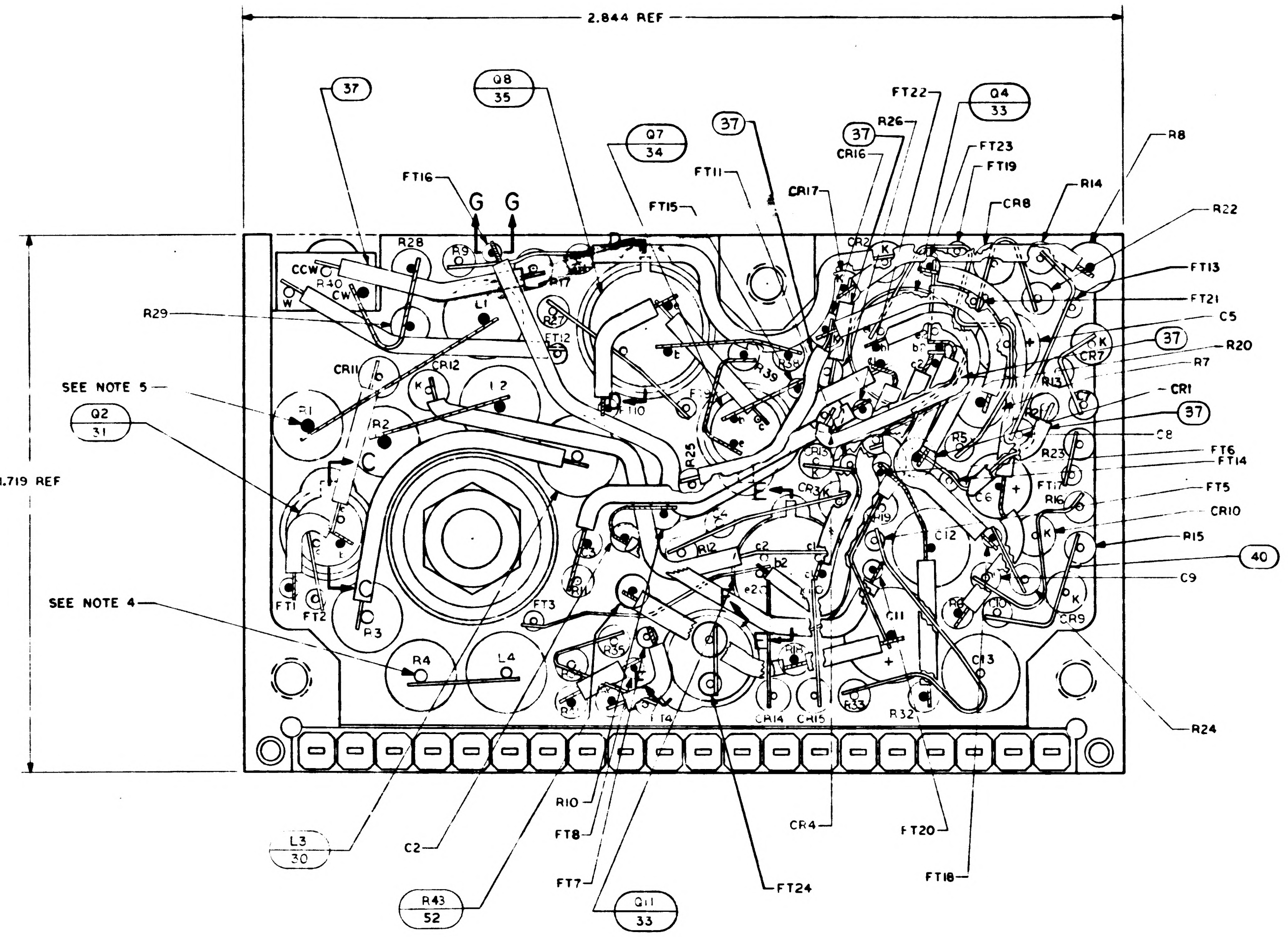
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FT13
FT21
C5
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R20
R7
CR1
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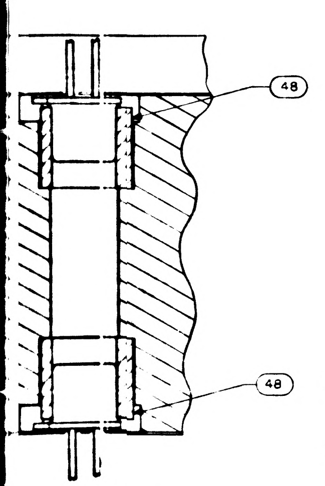
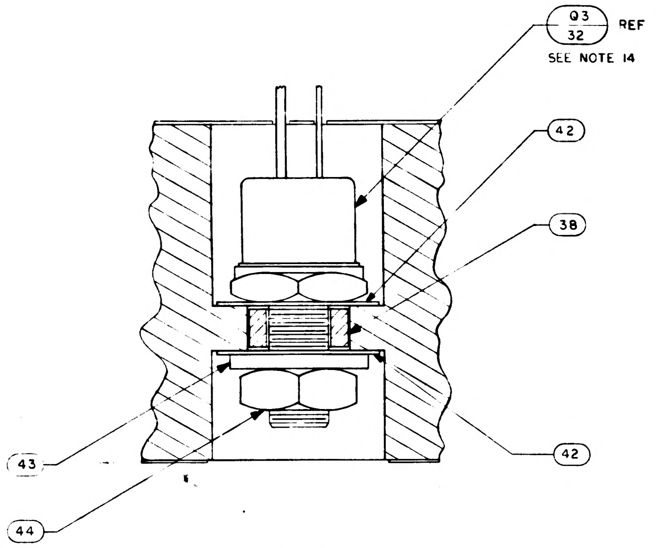


SECTION C-C
2 PLACES
CAL INSTALLATION FOR
FIND NO. 31 AND 34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SEE NOTE 14
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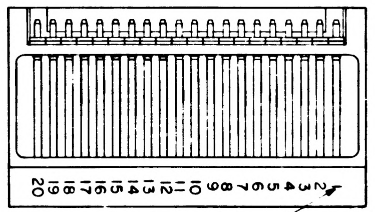
SECTION A-A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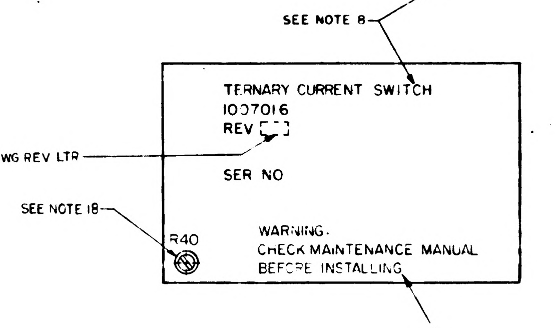
SEE NOTE 8
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
SEE NOTE 18
R40
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW
SCALE 2/1

1007016 Y

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C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	JT WK
E	REVISED PER TDRR 01355	5-20-63	JT WK
F	REVISED PER TDRR 01616	6-10-63	RPK WK
G	REVISED PER TDRR 01716	6-26-63	RPK WK
H	REVISED PER TDRR 01868	7-2-63	JJM WK
J	REVISED PER TDRR 02167	7-31-63	JJM WK
K	REVISED PER TDRR 05276	17 OCT 63	TFW RPK WK
L	REVISED PER TDRR 05409	29 OCT 63	RPK WK
M	REVISED PER TDRR 05876	[illegible]	RPK WK
N	REVISED PER TDRR 05639	[illegible]	[illegible] WK
P	REVISED PER TDRR 07011	30 MAR 64	JJ AU
R	REVISED PER TDRR 07285	3 APR 64	WP
S	REVISED PER TDRR 0911	28 JUL 64	JJ LJ
T	REVISED PER TDRR 6853	3 MAR 65	WP LU
U	REVISED PER TDRR 16850	5 MAR 65	R AU
V	REVISED PER TDRR 17353	MAR 65	JJT
W	REVISED PER TDRR 9408	1 JUNE 65	Em
Y	REVISED PER TDRR 3544	65	

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010016	SCHEMATIC	REF
1	1010372-6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR, FIXED MF 7.5K 1/4W ±2%	49
4	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010833-1	DIODE	25
1	1010393-39	CAP, FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP, FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
~~2~~	~~1006750-81~~	~~RESISTOR, FIXED MF, 110K 1/4W ±2%~~	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
6	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	7
2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

1007154	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M.I.T.
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
CONTRACT NAS9-497
DRAWN J. F. Algase DATE 29 JAN 63
CHECKED K. P. Persky 15 FEB 63
APPROVAL 18 FEB 63
APPROVAL
NASA APPROVAL
MIT APPROVAL

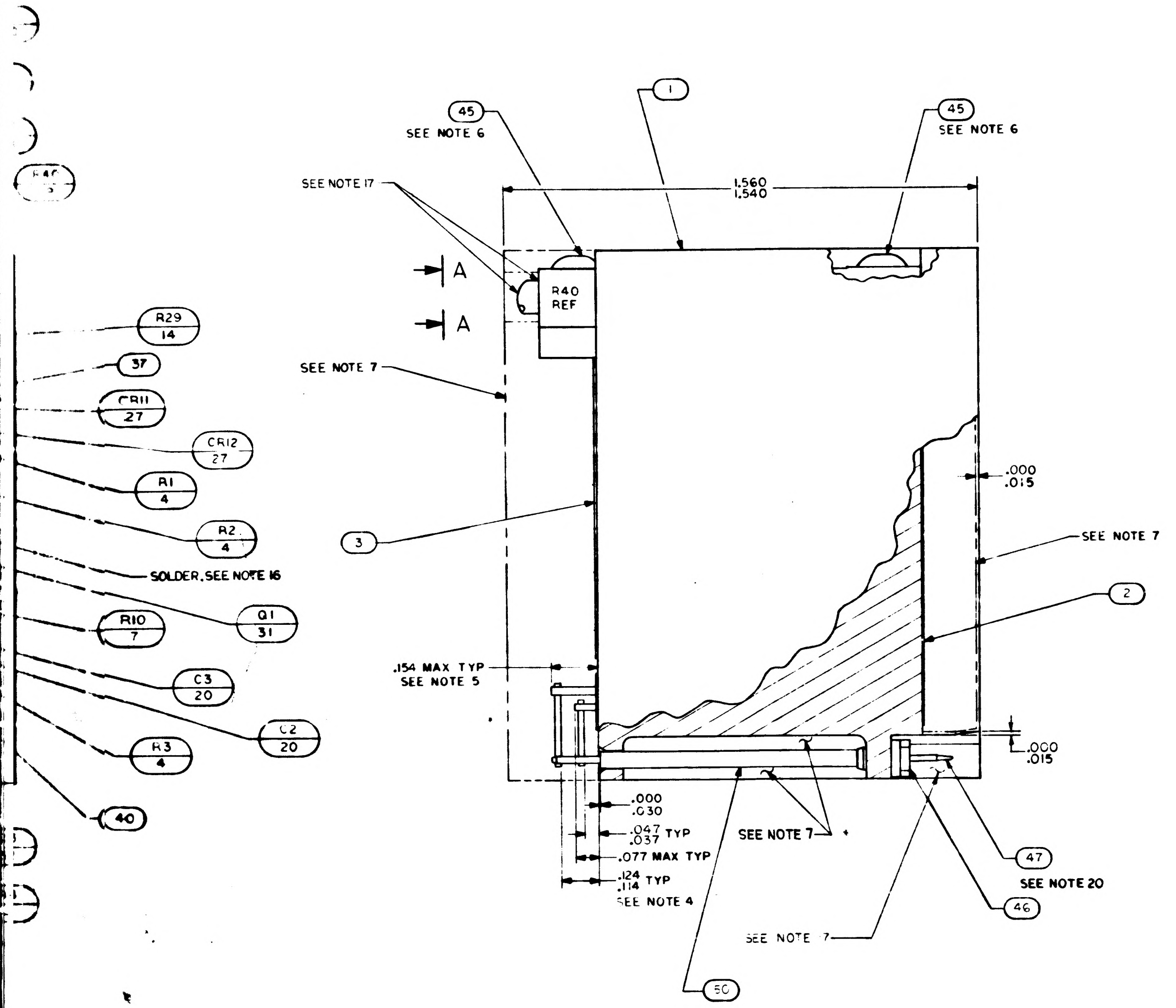
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO	SIZE	NASA DRAWING NO
80230	J	1007016
SCALE 5/1	WT	SHEET 1 OF 1

1007016 Y

3/1007016



45
SEE NOTE 6
1
45
SEE NOTE 6
SEE NOTE 17
1.560
1.540
A
A
R40 REF
SEE NOTE 7
R29 14
37
CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
Q1 31
R10 7
C3 20
C2 20
R3 4
40
3
.000
.015
SEE NOTE 7
2
.154 MAX TYP
SEE NOTE 5
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
SEE NOTE 4
SEE NOTE 7
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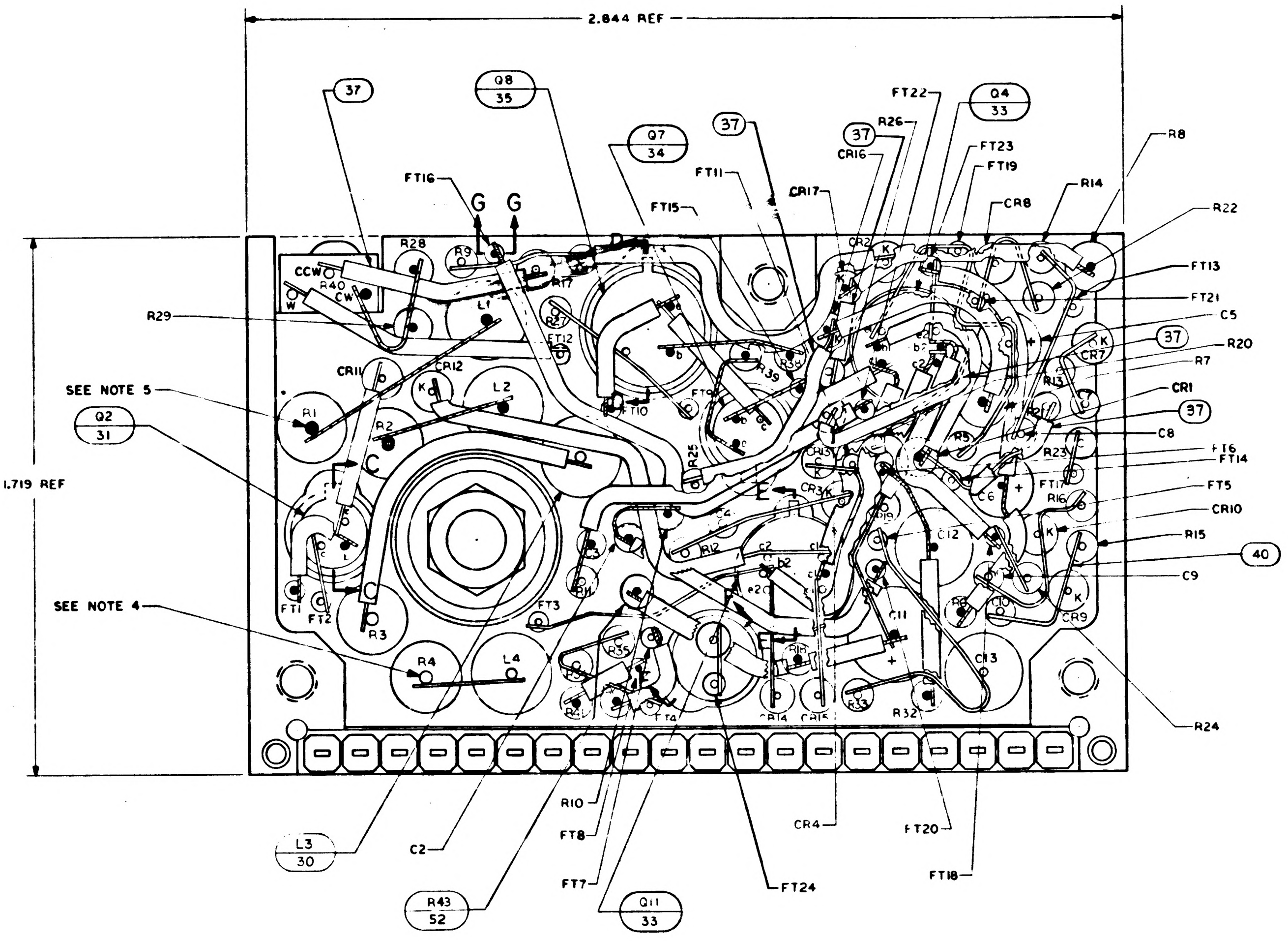
SEE NOTE 20
46
.000
.015
SEE NOTE 7
50



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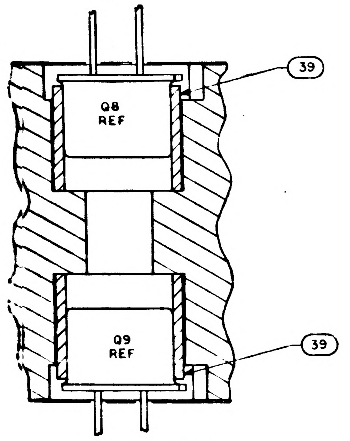
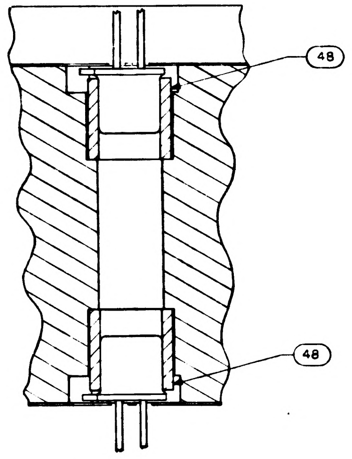
FT22
Q4 33
R26
FT23
FT19
CR16
FT11
CR17
CR8
R14
R8
FT16
G G
FT15
R22
FT13
FT21
C5
R28
R9
CCW
R40
CW
W
R29
R17
L1
FT12
37
R20
CR7
R7
CR1
37
C8
SEE NOTE 5
CR11
CR12
L2
R1
R2
Q2 31
FT10
R25
CR5
R23
FT6
FT14
FT5
CR10
R15
1.719 REF
C12
40
C9
SEE NOTE 4
FT1
FT2
R3
FT3
R12
C2
C11
CR9
R4
L4
R35
R32
C13
R24
L3 30
C2
R10
FT8
FT7
CR4
FT20
FT18
FT24
R43 52
Q11 33



39
Q8 REF
Q9 REF
39

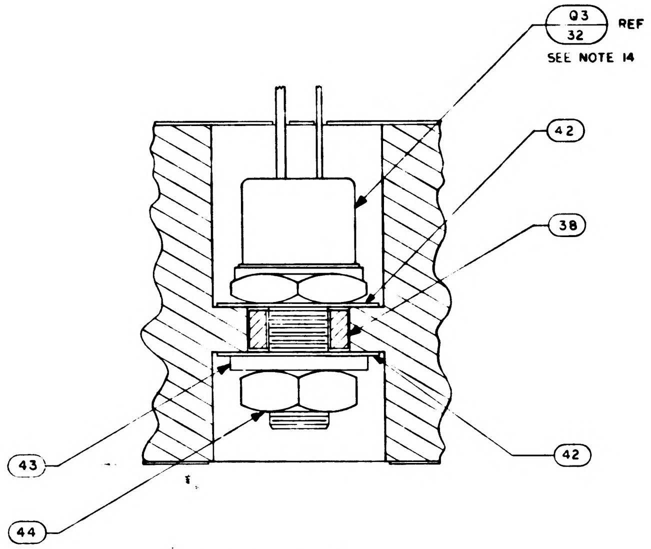
SECTION D-D



SECTION C-C

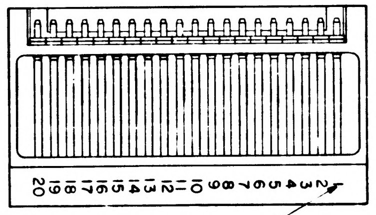
2 PLACES

TYPICAL INSTALLATION FOR FIND NO. 31 AND 34



Q3 32 REF
SEE NOTE 14
42
38
43
44
42

SECTION A-A



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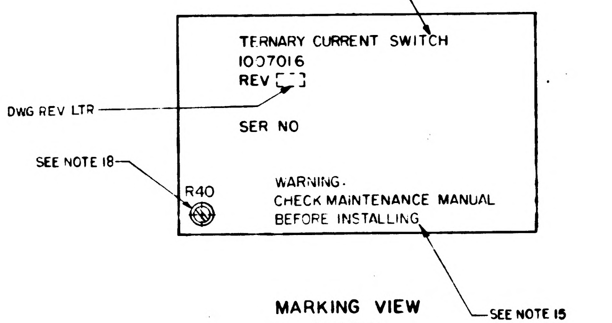
SEE NOTE 8



TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
SEE NOTE 18
R40
WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
SEE NOTE 15

MARKING VIEW

SCALE 2/1

QTY REQD	PART IDENTIFYING NO.
	1010 16
1	1010 172-6
1	1006 750-40
AR	1006 776-22
AR	1006 776-20
2	1006 750-53
4	1008 025-1
20	1006 782-4
20	1006 775
2	1000 093-3
1	MS3 650-104
1	1008 020-1
2	1008 024-1
AR	1006 787-2
AR	1006 757-1
2	1008 025-2
1	1008 021-1
AR	1006 776-21
2	1010 500
2	1005 752
4	1010 376-4
1	1010 369-1
2	1010 357-1
4	1010 388-39
2	1010 384
3	1010 394
6	1010 385
4	1010 333-1
1	1010 393-39
2	1006 777-33
4	1006 777-20
2	1006 755-73
4	1006 777-13
1	1010 373-10
2	1010 369-87
2	1010 369-148
~~2~~	~~1006 750-81~~
2	1006 750-53
1	1010 364-[illegible]
1	1010 [illegible]
1	1006 750-62
6	1006 750-67
2	1006 750-56
3	1006 750-15
1	1010 364-557
6	1006 750-81
2	1006 760-56
2	1006 750-8
4	1010 389-50
1	1008 019-2
1	1008 019-1
1	1007 008

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

NEXT ASSY	USED ON
1007154	

APPLICATION

M.I.T.
INSTRUMENTATION
CAMBRIDGE MASS

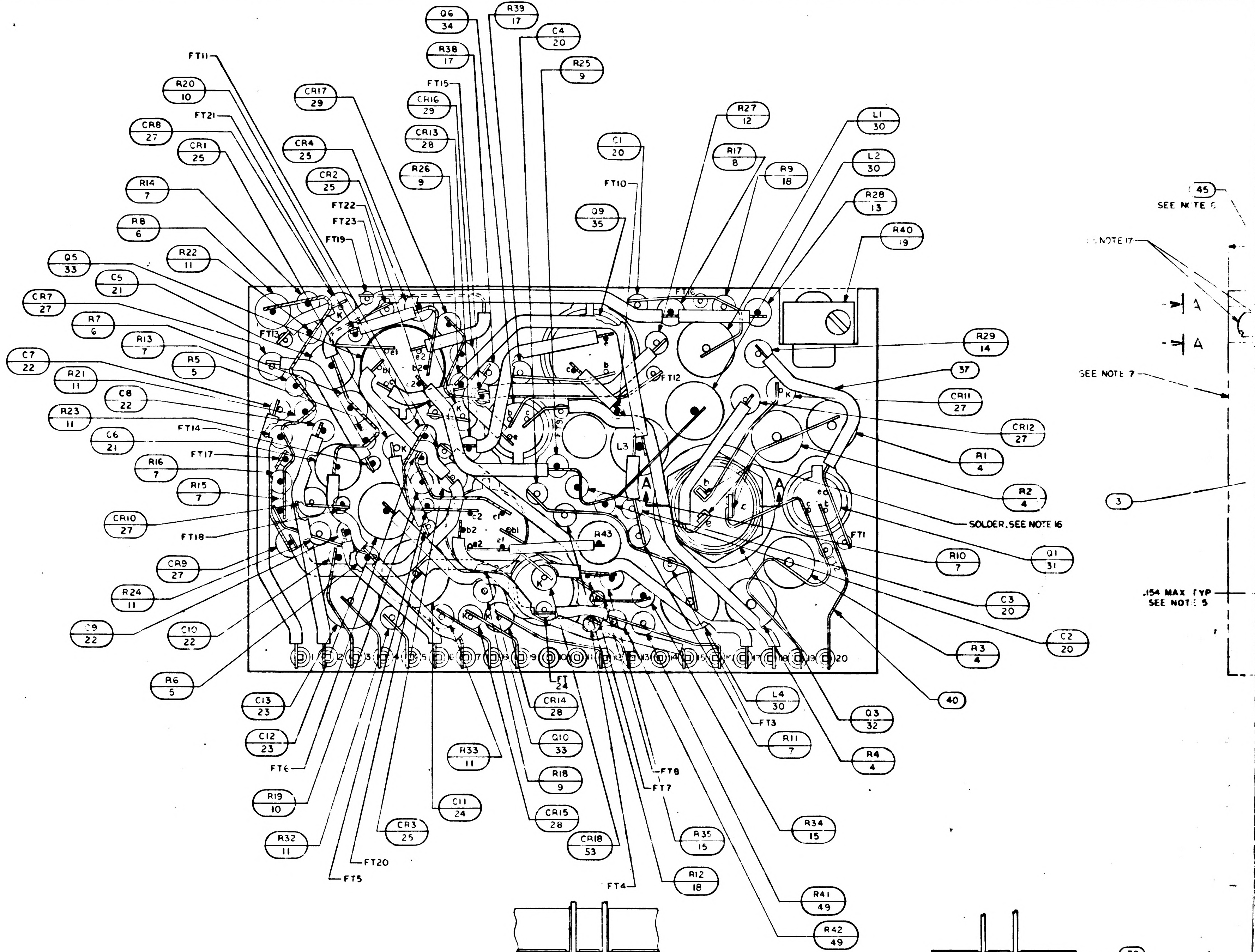
DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

1007016	REV LTR Y	SHEET 1

2/1007016

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE.	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 80% OF PERIMETER TO WITHIN .03 ±.03 OF EXTERNAL EDGE


Q6 34
R39 17
C4 20
R38 17
R25 9
FT11
FT15
R20 10
CR17 29
CR16 29
FT21
CR13 28
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L1 30
CR8 27
CR1 25
CR4 25
C1 20
R17 8
L2 30
R26 9
R9 18
CR2 25
FT10
R28 13
R14 7
FT22
Q9 35
FT23
R40 19
R8 6
FT19
R22 11
Q5 33
C5 21
CR7 27
FT13
R7 6
R13 7
R29 14
C7 22
R5 5
FT12
37
R21 11
CR11 27
C8 22
R23 11
CR12 27
FT14
C6 21
R1 4
FT17
L3
R16 7
R2 4
3
R15 7
SOLDER, SEE NOTE 16
CR10 27
FT18
R43
FT1
Q1 31
R10 7
CR9 27
C3 20
R24 11
C2 20
C9 22
C10 22
R3 4
40
R6 5
FT 24
L4 30
C13 23
CR14 28
FT3
Q3 32
R11 7
C12 23
Q10 33
R4 4
R33 11
FT6
R18 9
FT8
FT7
R19 10
C11 24
CR15 28
R34 15
R32 11
CR3 25
CR18 53
R35 15
FT20
R12 18
FT5
FT4
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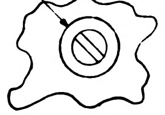
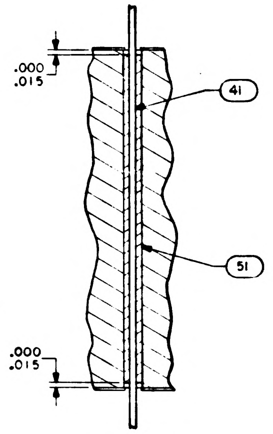
R42 49
45 SEE NOTE 6
SEE NOTE 17
A
A
SEE NOTE 7
.154 MAX TYP SEE NOTE 5



VIEW A-A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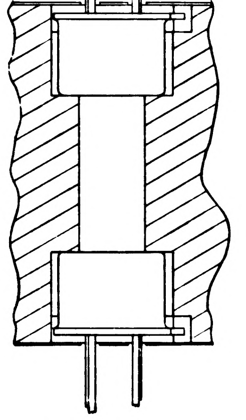
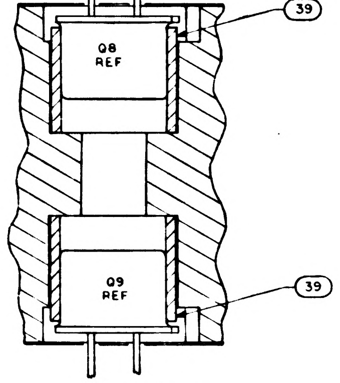
51
.000
.015

SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33


39
Q8 REF
Q9 REF
39

SECTION D-D

NOTES

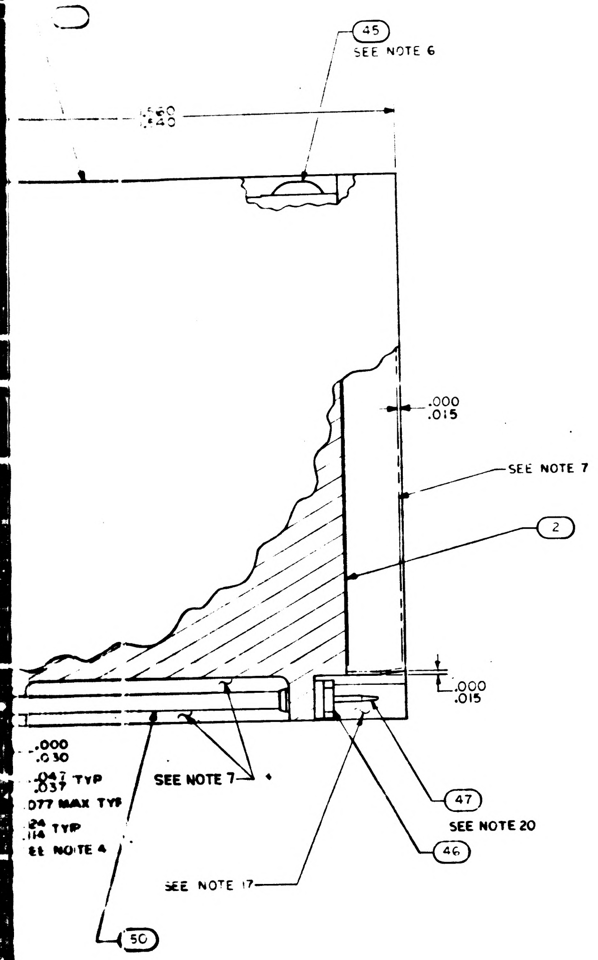
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002008~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 48 AND FIND NO.49 PER ND 1002001 METHOD H.
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
~~15. MARK .080/.100 RED PER ND1002018~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136
21. PROCURE PER PS 1007016.
~~22. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~
~~23. CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~
24. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION
25. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND 1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.

1007016	REV Y	SHEET 1

Z 1007016

SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGED PER TDRR 00717	4-3-63	DT WK
B	REVISED PER TDRR 01013	4-25-63	DT WK
C	REVISED PER TDRR		
D	REVISED PER TDRR 01177	5-8-63	DT WK
E	REVISED PER TDRR 01355	5-20-63	DT WK
F	REVISED PER TDRR 01616	6-10-63	RPK WK
G	REVISED PER TDRR 01716	6-26-63	EPK WK
H	REVISED PER TDRR 01868	7-2-63	JJM WK
J	REVISED PER TDRR 02167	7-31-63	JJM WK
K	REVISED PER TDRR 05276	[illegible] 63	EPK WK
L	REVISED PER TDRR 05409	[illegible] 63	EPK WK
M	REVISED PER TDRR 05876	[illegible] 64	EPK WK
N	REVISED PER TDRR 06639	25 FEB 64	EPK WK
P	REVISED PER TDRR 07011	30 MAR 64	JJJ AU
R	REVISED PER TDRR 07285	9 APR 64	WP
S	REVISED PER TDRR 0911	23 JUL 64	JJJ AU
T	REVISED PER TDRR 6853	3 MAR 65	WP AU
U	REVISED PER TDRR 16850	5 MAR 65	RJJ AU
V	REVISED PER TDRR 17353	MAR 65	[illegible]
W	REVISED PER TDRR 19408	JUNE 65	EH
Y	REVISED PER TDRR 19544	65	[illegible]
Z	REVISED PER TDRR 21279	30 JUL 65	RCP

REVISIONS TCRR 00411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SEE NOTE 6
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SEE NOTE 7
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.24 TYP
.14
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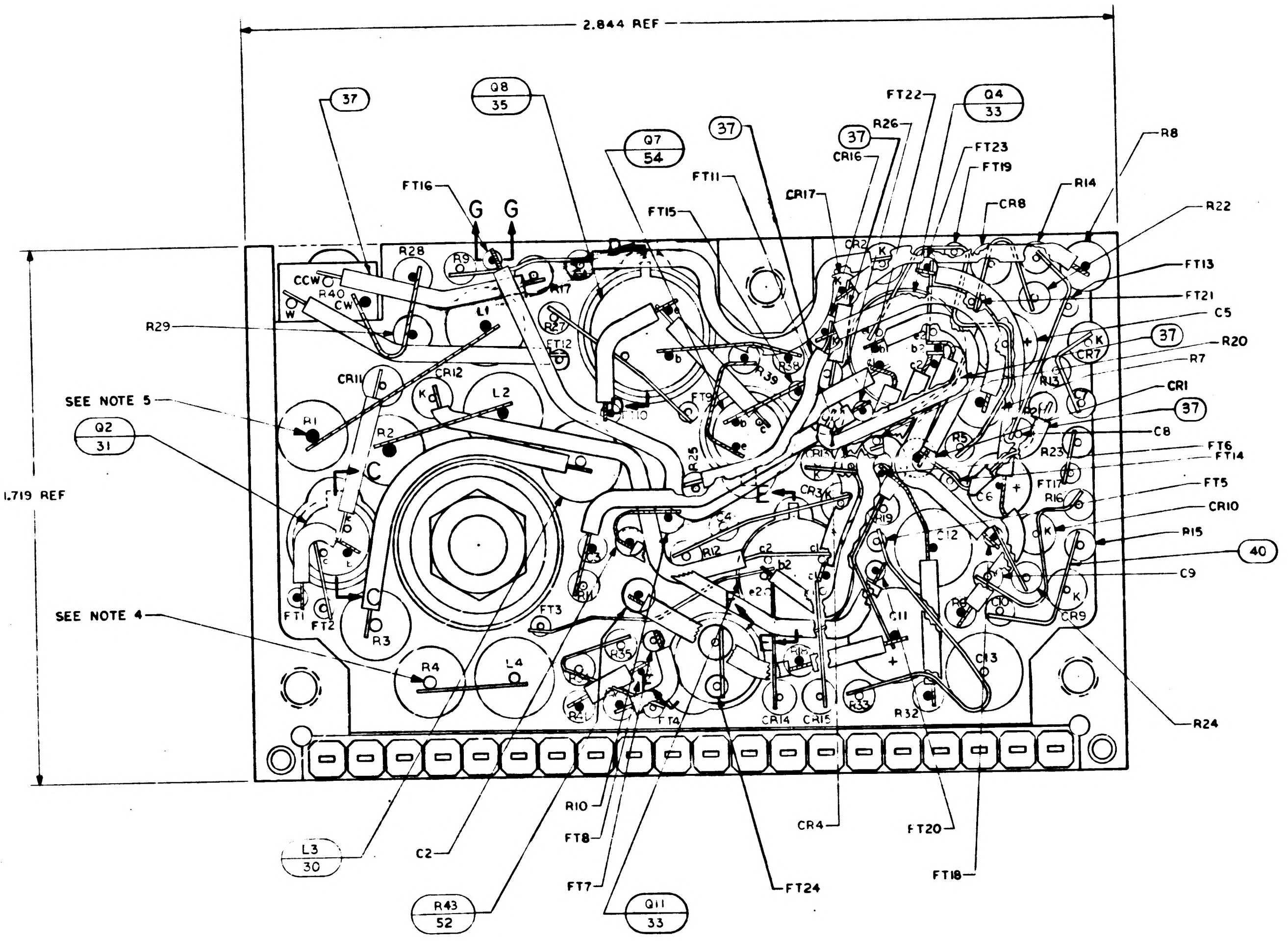
SEE NOTE 7
47
SEE NOTE 20
46
SEE NOTE 17
50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FT23
FT19
R8
FT16
G
G
FT11
CR17
CR8
R14
FT15
R22
R28
R9
R40
CCW
CW
R17
FT13
FT21
C5
R29
L1
FT12
37
R20
R7
CR11
CR12
L2
K
CR1
37
SEE NOTE 5
R1
R2
C8
FT6
FT14
Q2
31
R23
FT17
R16
FT5
CR10
C
R25
CR3
R19
R15
40
R12
C2
C1
C9
FT1
FT2
FT3
SEE NOTE 4
R3
R4
L4
C11
C13
CR9
CR14
C4
R32
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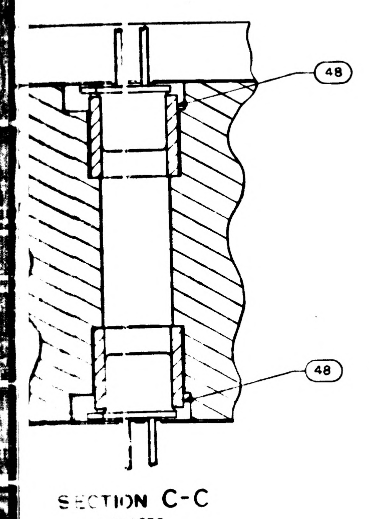
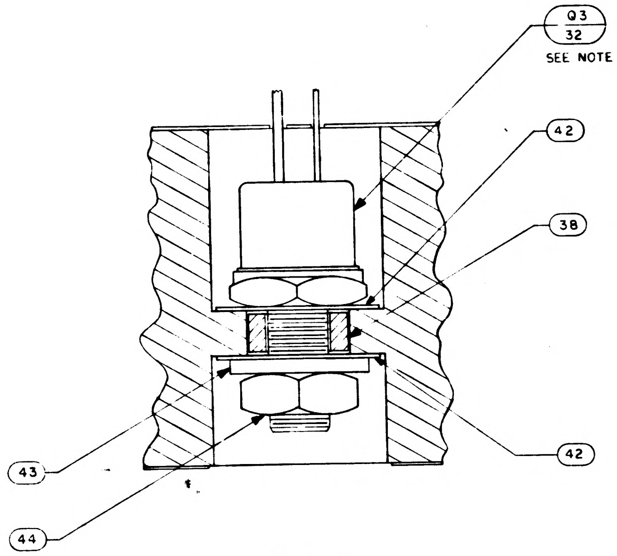
33



SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34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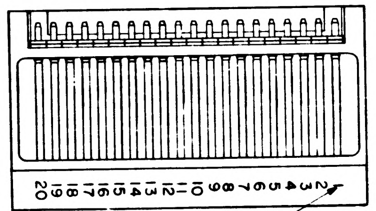
REF
SEE NOTE 14
42
38
43
44
42

SECTION A-A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SEE NOTE 8

TERNARY CURRENT SWITCH
1007016
REV ☐

SER NO

R40

WARNING:
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

DWG REV LTR

SEE NOTE 18

SEE NOTE 15

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
	1010016	SCHEMATIC	REF
2	1010966-1	TRANSISTOR	54
1	1010372-6	DIODE	53
1	1006750-40	RESISTOR	52
AR	1006776-22	INSULATION SLEEVING	51
AR	1006776-20	INSULATION SLEEVING	50
2	1006750-53	RESISTOR, FIXED MF 7.5K 1/4W ±2%	49
4	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010600	TRANSISTOR	35
~~2~~	~~1006752~~	~~TRANSISTOR~~	34
4	1010376-4	TRANSISTOR	33
1	1010269-1	TRANSISTOR SP322	32
2	1010357-1	TRANSISTOR	31
4	1010388-39	INDUCTOR .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
4	1010833-1	DIODE	25
1	1010393-39	CAP, FIXED TANT, 6.8UF 50V ±10%	24
2	1006777-33	CAP, FIXED CER, .022UF 100V ±10%	23
4	1006777-20	CAP., FIXED CER, 470UUF 100V ±10%	22
2	1006755-73	CAP, FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1010369-87	RESISTOR	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±2%	17
~~2~~	~~1006750-81~~	~~RESISTOR, FIXED MF, 110K 1/4W ±2%~~	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±2%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±2%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±2%	11
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±2%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±2%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
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2	1006760-56	RESISTOR, FIXED MF, 10K 1/2W ±2%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±2%	5
4	1010389-80	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

1007154		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± — DO NOT SCALE THIS DRAWING	M I T INSTRUMENTATION LAB CAMBRIDGE MASS NAS9-497 CONTRACT DWG NO
NEXT ASSY	USED ON	MATERIAL —	DRAWN Z. F. [illegible] DATE 29 JAN 63 CHECKED [illegible] 15 FEB 63 APPROVAL [illegible] 18 FEB 63 APPROVAL
APPLICATION		HEAT TREATMENT —	NASA APPROVAL [illegible]
		FINAL FINISH —	MIT APPROVAL [illegible] 3-15-63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

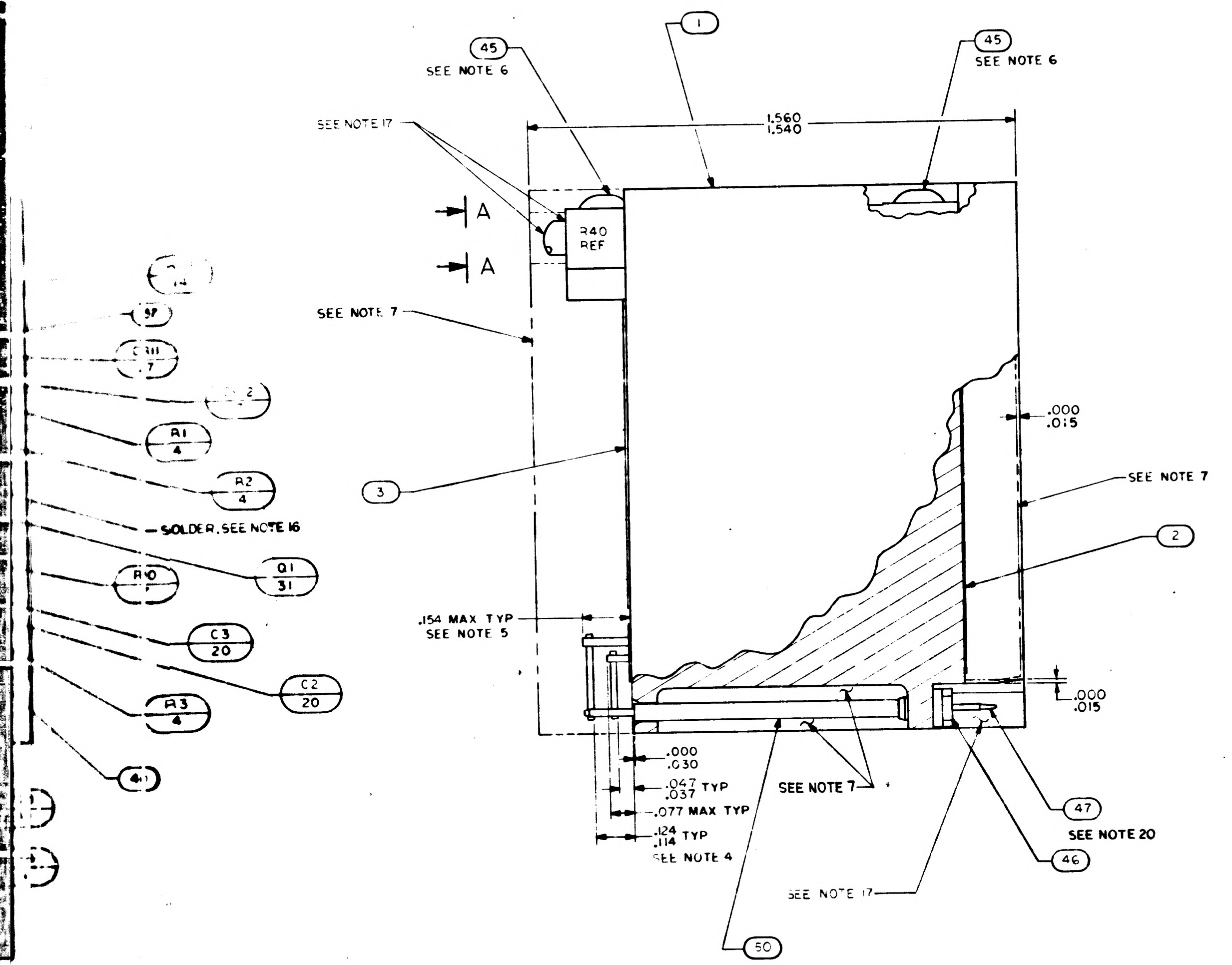
TERNARY CURRENT SWITCH, COMPUTER OUTPUT, ASSEMBLY

CODE IDENT NO	SIZE	NASA DRAWING NO.
80230	J	1007016
SCALE 5/1	WT	SHEET 1 OF 1

Z 1007016

1007016 REV Z SHEET 1

3/1007016



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SEE NOTE 6
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SEE NOTE 6
SEE NOTE 17
1.560
1.540
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R40
REF
SEE NOTE 7
R1
4
R2
4
SOLDER, SEE NOTE 16
Q1
31
C3
20
C2
20
R3
4
3
.000
.015
SEE NOTE 7
2
.154 MAX TYP
SEE NOTE 5
.000
.030
.047
.037 TYP
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.124
.114 TYP
SEE NOTE 4
SEE NOTE 7
.000
.015
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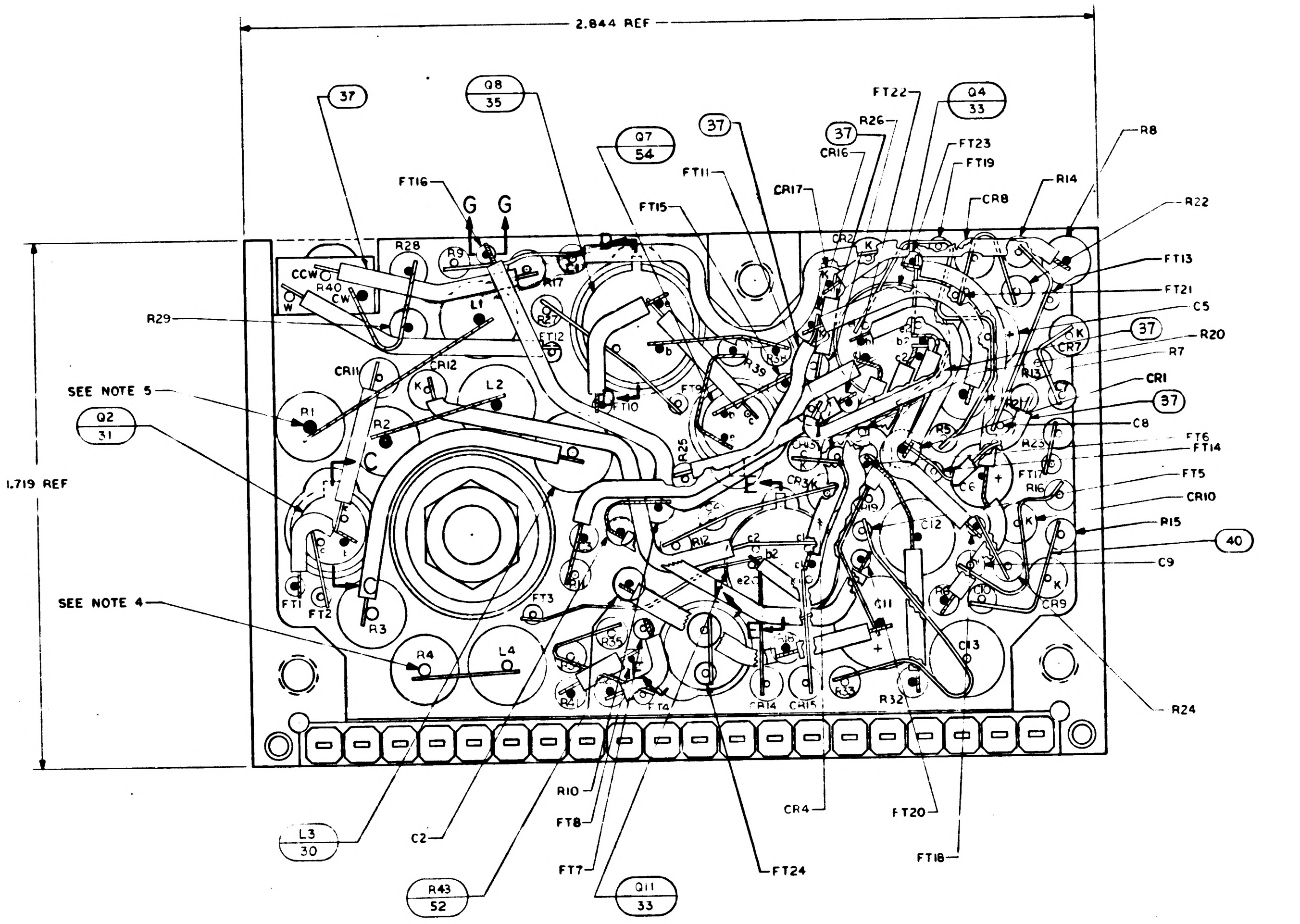
SEE NOTE 20
46
SEE NOTE 17
50



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FT22
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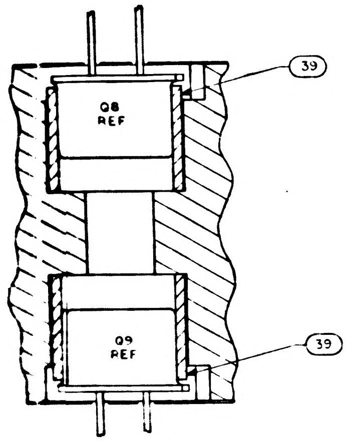
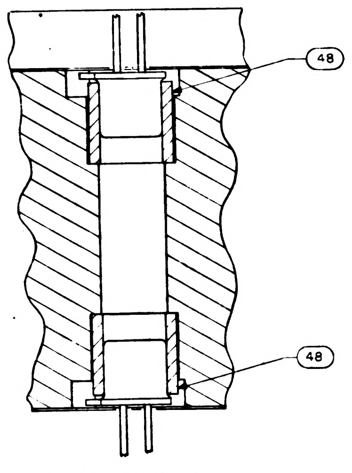
CR16
FT23
FT19
R8
FT16
G
G
FT11
FT15
CR17
CR8
R14
R22
R28
R9
CCW
R40
CW
FT17
FT12
FT13
FT21
R29
L1
C5
37
R20
R7
CR11
CR12
CR7
CR1
SEE NOTE 5
R1
L2
37
Q2
31
R2
C8
FT6
FT14
FT5
CR10
R15
40
C9
1.719 REF
SEE NOTE 4
R3
FT1
FT2
FT3
R4
L4
C12
C11
C13
CR9
R24
R32
L3
30
C2
R10
FT8
FT7
R43
52
Q11
33
FT24
CR4
FT20
FT18

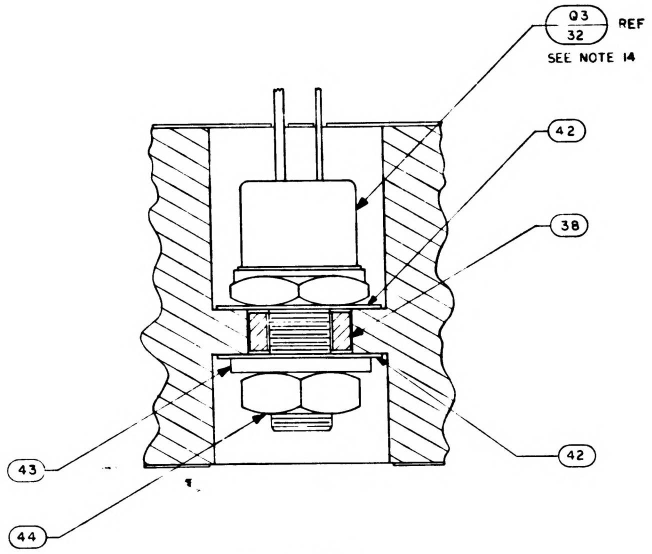


39
Q8
REF
Q9
REF
39

SECTION D-D

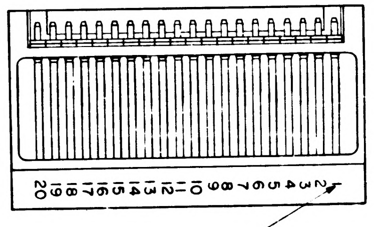


SECTION C-C
2 PLACES
TYPICAL INSTALLATION FOR
FIND NO. 31 AND 34



Q3
32
REF
SEE NOTE 14
42
38
43
42
44

SECTION A-A



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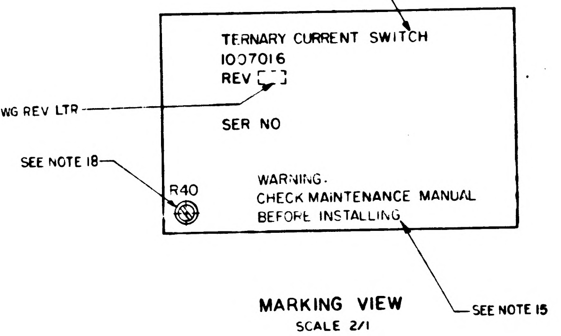
SEE NOTE 8



DWG REV LTR
SEE NOTE 18
R40
SEE NOTE 15

TERNARY CURRENT SWITCH
1007016
REV [ ]

SER NO

WARNING.
CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

MARKING VIEW
SCALE 2/1

☒	1010016
2	1010966-1
1	1010372-6
1	1006750-4
AR	1006776-2
AR	1006776-20
2	1006750-5
4	1008025-1
20	1006782-4
20	1006775
2	1000093-3
1	MS35650-1
1	1008020-1
2	1008024-1
AR	1006787-2
AR	1006757-1
2	1008025-2
1	1008021-1
AR	1006776-21
2	1010600
~~2~~	~~1006752~~
4	1010376-4
1	1010269-1
2	1010357-1
4	1010388-39
2	1010384
3	1010394
6	1010385
4	1010833-1
1	1010393-39
2	1006777-33
4	1006777-20
2	1006755-73
4	1006777-13
1	1010373-10
2	1010369-8
2	1010369-148
~~2~~	~~1006750-~~
2	100675-53
1	1010364-
1	101036-
1	1006750-62
6	1006750-67
2	1006750-
3	1006750-15
1	1010364-55
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2	1006750-8
4	101038
1	[illegible]
1	10080-1
1	1007008
QTY REQD	PART OR IDENTIFYING NO

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± —
DO NOT SCALE THIS DRAWING

MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

NEXT ASSY	USED ON
1007154	

APPLICATION

	REV LTR	SHEET
1007016	Z	1

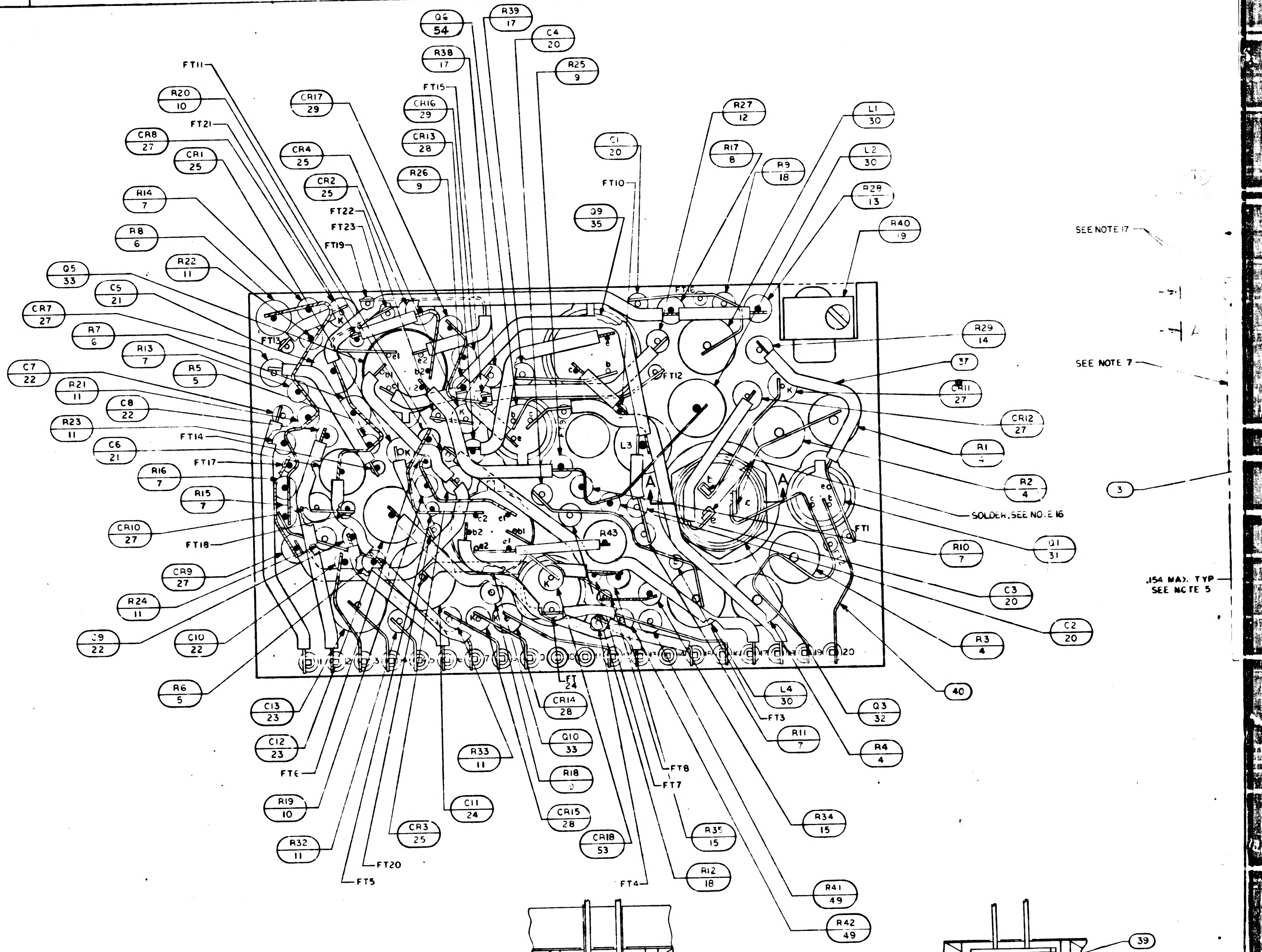
2-1007016

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE.	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 80% OF PERIMETER TO WITHIN .03 ±.03 OF EXTERNAL EDGE

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002008~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND. MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHEWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. STAKE FIND NO.4 THRU FIND NO. 36 FIND NO. 39 FIND NO. 48 AND FIND NO.49 PER ND 1002001 METHOD H.
10.
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585, PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.45
14. MOUNTING TORQUE FOR FIND NO 32 10/15 INCH POUNDS
15. ~~MARK .080/.100 RED PER ND1002019~~
16. SOLDER PER MIL-S-6872
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND
19. + DENOTES POLARITY OF CAPACITOR
20. INSTALL FIND NO.46 AND FIND NO.47 PER ND1002136
21. PROCURE PER PS 1007016.
22. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~
23. ~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~
24. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION
25. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND 1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.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FT11
FT15
CR17 29
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FT21
CR13 28
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L1 30
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CR4 25
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L2 30
CR1 25
CR2 25
FT10
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FT22
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R8 6
FT19
R22 11
Q5 33
C5 21
CR7 27
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C7 22
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C11 24
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R18
CR15 28
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FT7
L4 30
FT3
R11 7
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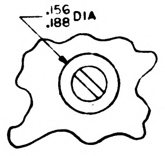
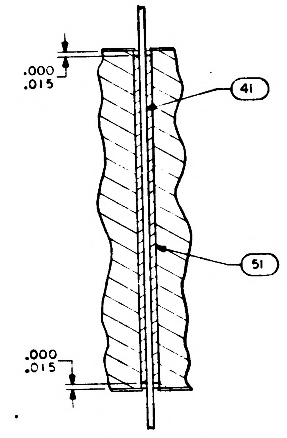
R12 18
R34 15
R41 49
R42 49
Q3 32
R4 4
R3 4
40
C2 20
C3 20
R10 7
Q1 31
3
SOLDER, SEE NOTE 16
R2 4
R1 4
CR12 27
CR11 27
37
R29 14
FT12
FT13
FT16
FT1
L3
R43
A
A
SEE NOTE 17
SEE NOTE 7
.154 MAX. TYP
SEE NOTE 5



VIEW A-A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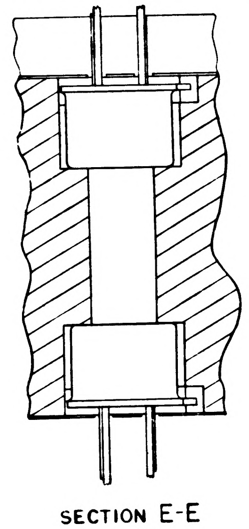
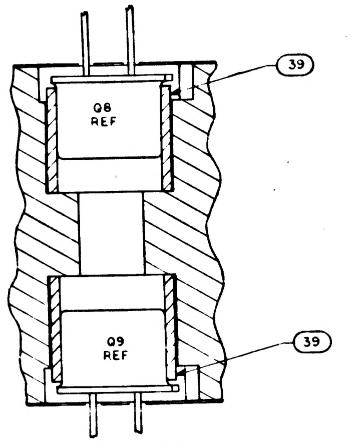
51
.000
.015

SECTION G-G



SECTION E-E
2 PLACES
TYPICAL INSTALLATION FOR FIND NO. 33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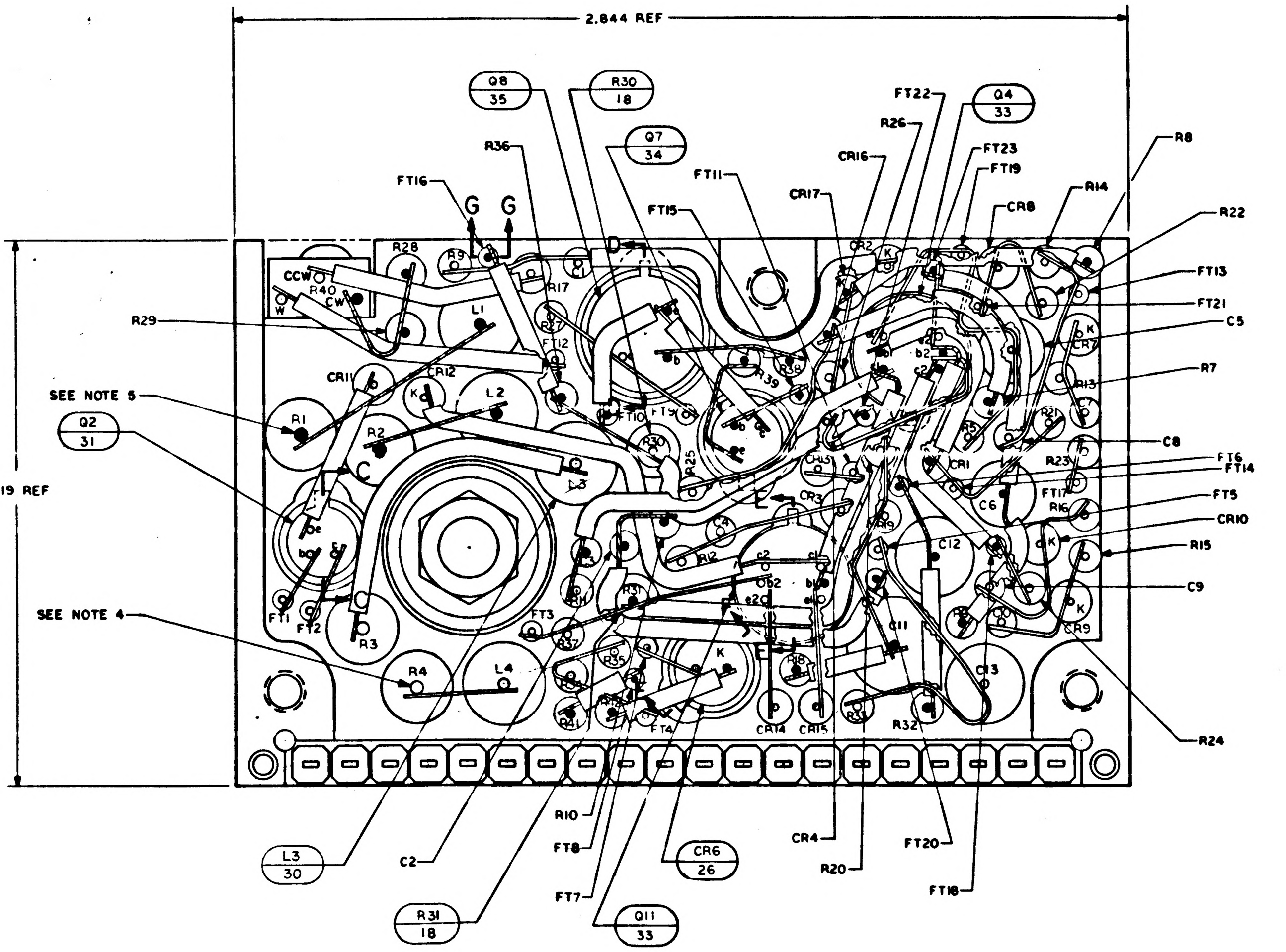
Q8 REF
Q9 REF
39

SECTION D-D

1007016

REVISIONS TDRR00411

SYM	DESCRIPTION	DATE	APPROVAL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L719 REF
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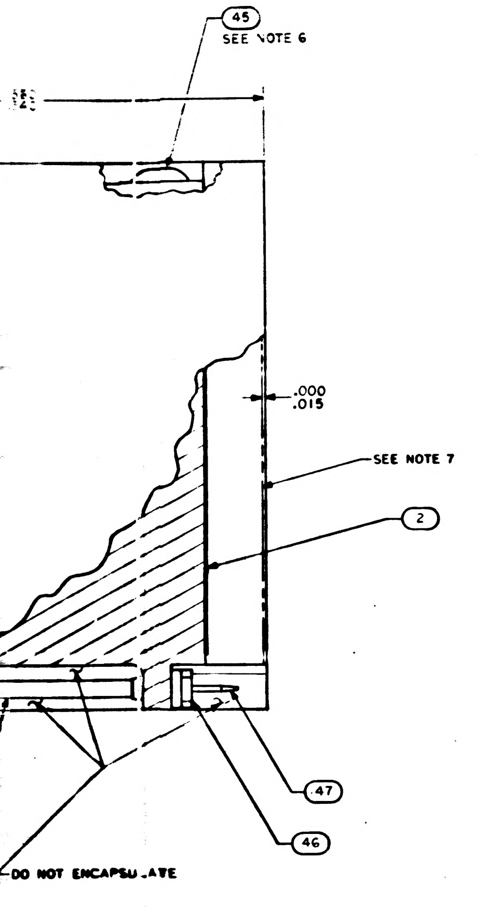
R30 18
Q7 34
Q4 33
FT22
R26
FT23
FT19
CR16
CR17
CR8
R14
R8
R22
FT13
FT21
C5
R7
R36
FT16
G
G
FT11
FT15
R28
R9
R17
R29
CCW
CW
W
R40
L1
FT12
CR11
CR12
L2
SEE NOTE 5
Q2 31
R1
R2
R25
R39
R13
C8
FT6
FT14
R23
FT17
R16
CR1
C6
FT5
CR10
R15
C9
C12
C11
CR9
C13
FT1
FT2
R3
FT3
SEE NOTE 4
R4
L4
R24
R12
CR14
CR15
R32
FT4
L3 30
C2
R10
FT8
FT7
R31 18
CR6 26
Q11 33
CR4
R20
FT20
FT18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SEE NOTE 6
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.015
SEE NOTE 7
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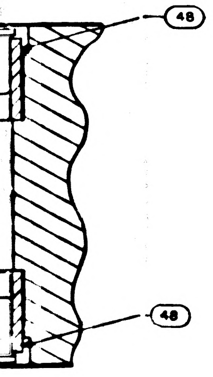
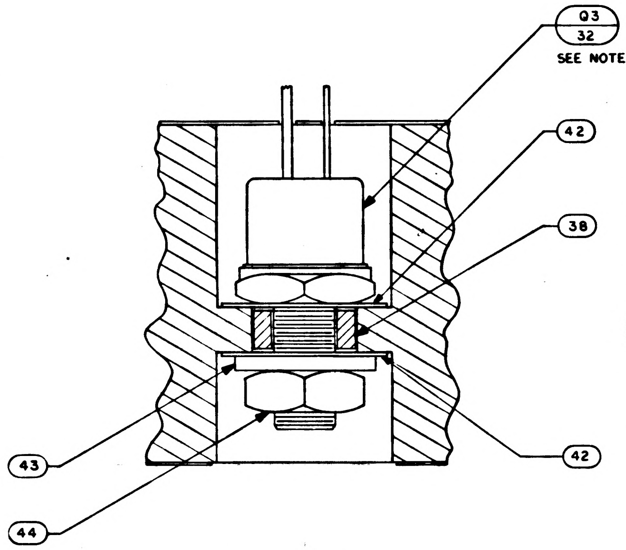
DO NOT ENCAPSULATE



C-C

LATION FOR
3. AND 34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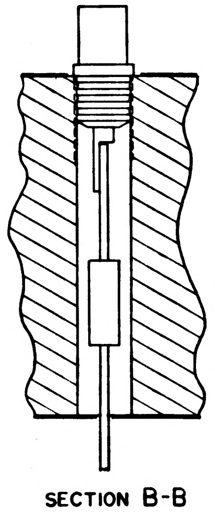
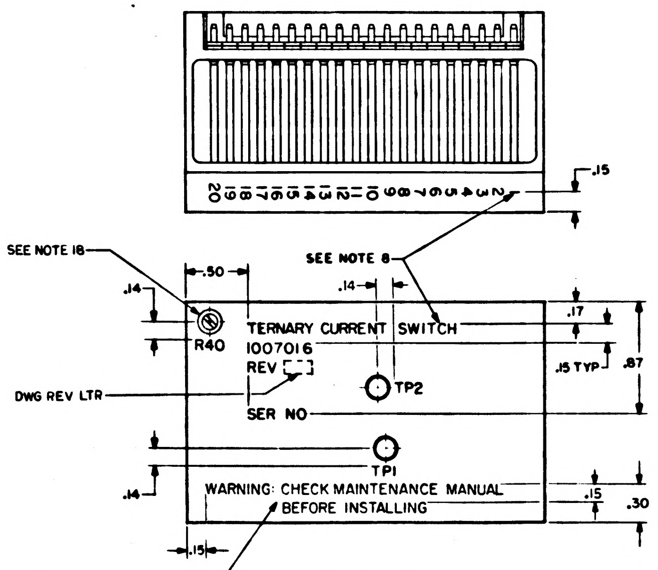
REF
SEE NOTE 14
42
38
42
43
44

SECTION A-A



SECTION B-B
2 PLACES

TYPICAL INSTALLATION
FOR FIND NO. 36 AND 18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SEE NOTE 18
SEE NOTE 8
.50
.14
.14
R40
TERNARY CURRENT SWITCH
1007016
REV
DWG REV LTR
SER NO
TP2
TP1
.17
.15 TYP
.87
.14
WARNING: CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.30
.15
SEE NOTE 15

MARKING VIEW
SCALE 2/1

	1010016	SCHEMATIC	REF
2	1006750-1	RESISTOR,FIXED MF 51, 1/4W ± 5%	49
6	1008025-1	INSULATOR, BUSHING	48
20	1006782-4	CONTACT, WRAPOST MALE MIN	47
20	1006775	INSULATOR, WRAPOST MALE MIN	46
2	1000093-3	SCREW, BUTTON HEAD	45
1	MS35650-104	NUT, PLAIN, HEX	44
1	1008020-1	WASHER, FLAT	43
2	1008024-1	WASHER, INSULATOR	42
AR	1006787-2	WIRE, ELEC .020 DIA	41
AR	1006757-1	WIRE, ELEC .010 X .020	40
2	1008025-2	INSULATOR, BUSHING	39
1	1008021-1	INSULATOR, BUSHING	38
AR	1006776-21	INSULATION SLEEVING	37
2	1010292-2	TEST POINT	36
2	1010386	TRANSISTOR	35
2	1006752	TRANSISTOR	34
4	1010376-1	TRANSISTOR	33
1	1010269	TRANSISTOR SP322	32
2	1010357	TRANSISTOR	31
4	1010388	COIL .01HY 75MA ±5%	30
2	1010384	DIODE	29
3	1010394	DIODE	28
6	1010385	DIODE	27
2	1010390	DIODE	26
4	1010255	DIODE	25
1	1010393	CAP., FIXED TANT, 6.8UF 50V ±20%	24
2	1006777-33	CAP., FIXED CER, .022UF 100V ±10%	23
4	1006777-14	CAP., FIXED CER, 130UUF 100V ±10%	22
2	1006755-73	CAP., FIXED TANT, 2.2UF 35V ±20%	21
4	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	20
1	1010373-10	RESISTOR, VAR, 10K 1W ±5%	19
2	1006750-80	RESISTOR, FIXED MF, 100K 1/4W ±5%	18
2	1010369-148	RESISTOR, FIXED COMP, 20 1/4W ±5%	17
2	1010369-92	RESISTOR, FIXED COMP, 300K 1/4W ±5%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K 1/4W ±5%	15
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	14
1	1010364-635	RESISTOR, FIXED MF, 100K 1/8W ±1%	13
1	1006750-62	RESISTOR, FIXED MF, 18K 1/4W ±5%	12
6	1006750-67	RESISTOR, FIXED MF, 30K 1/4W ±5%	11
2	1006750-44	RESISTOR, FIXED MF, 3.3K 1/4W ±5%	10
3	1006750-15	RESISTOR, FIXED MF, 200 1/4W ±5%	9
1	1010364-557	RESISTOR, FIXED MF, 392K 1/8W ±1%	8
8	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±5%	7
2	1006750-56	RESISTOR, FIXED MF, 10K 1/4W ±5%	6
2	1006750-18	RESISTOR, FIXED MF, 270 1/4W ±5%	5
4	1010389	RESISTOR, FIXED WW, 10K 3W ±1%	4
1	1008019-2	INSULATOR, TOP	3
1	1008019-1	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

J 1007016

MASTER

NEXT ASSY	USED ON
1007102	
1007101	
APPLICATION	

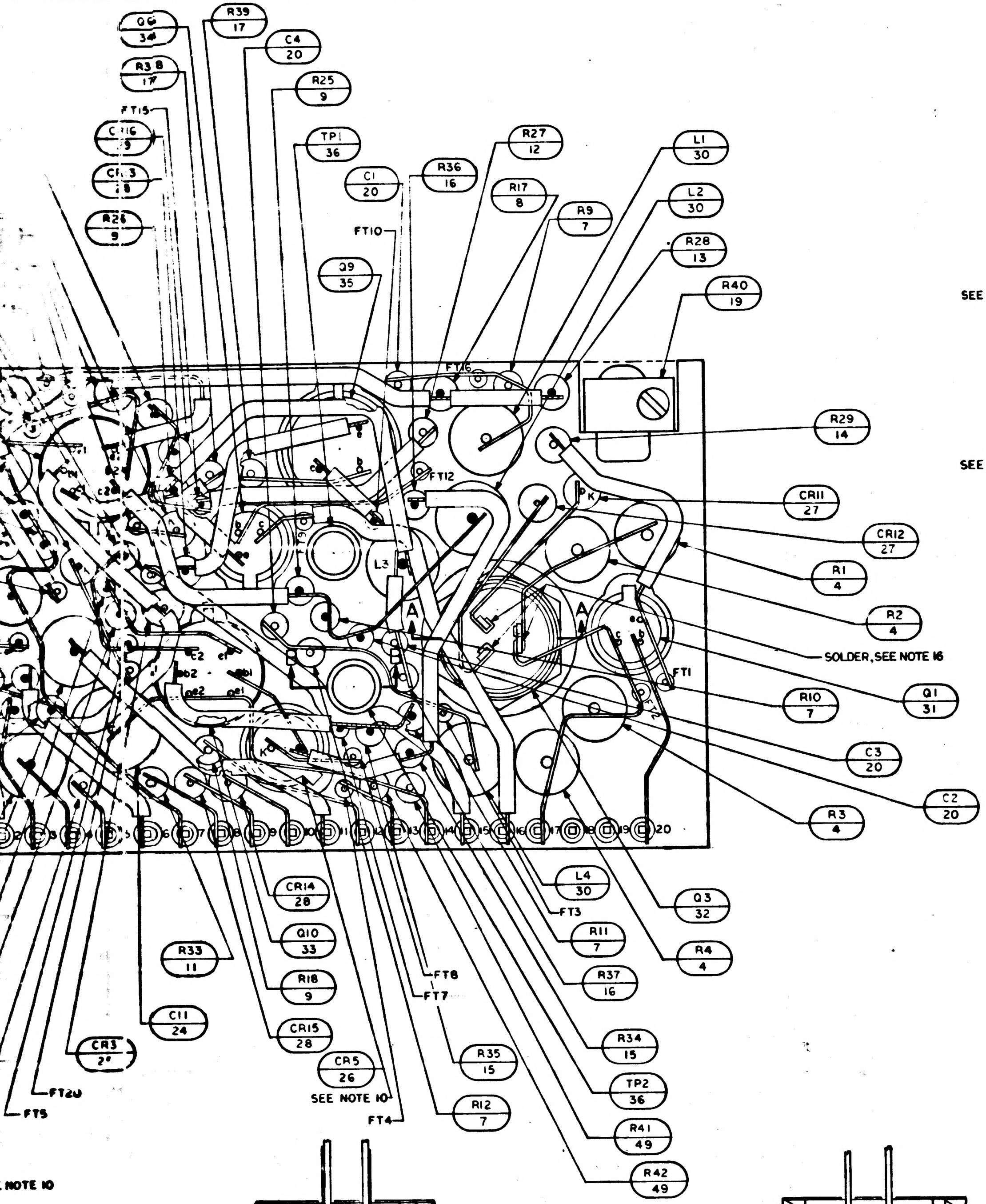
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO. CONTRACT
DRAWN: J. T. Agar DATE 29 JAN 63
CHECKED: R. P. Kingsley 15 FEB 63
APPROVAL: D. A. Fort 18 FEB 63
APPROVAL:
NASA APPROVAL:
MIT APPROVAL: E. J. Nielson

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

TERNARY CURRENT SWITCH,
COMPUTER OUTPUT,
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007016
SCALE 5/1
WT
SHEET 1 OF 1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C4 20
R38 17
R25 9
FT15
C16 9
C13 8
R26 9
TP1 36
C1 20
R36 16
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R17 8
R9 7
L1 30
L2 30
R28 13
R40 19
FT10
Q9 35
FT16
FT12
R29 14
CR11 27
CR12 27
R1 4
R2 4
SOLDER, SEE NOTE 16
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R10 7
C3 20
C2 20
R3 4
L3
FT1
20
Q3 32
L4 30
FT3
R11 7
R4 4
CR14 28
Q10 33
R33 11
R18 9
R37 16
C11 24
CR15 28
FT8
FT7
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FT5
R12 7
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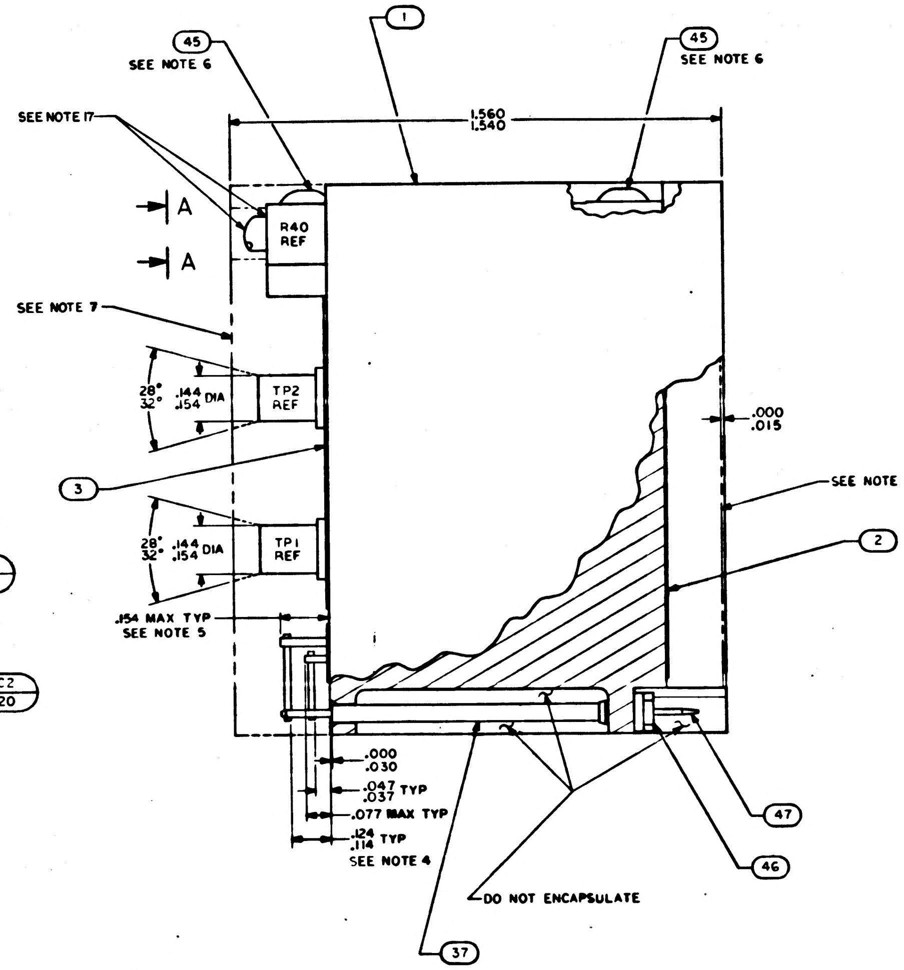
SEE NOTE 10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SEE NOTE 6
1
45
SEE NOTE 6
SEE NOTE 17
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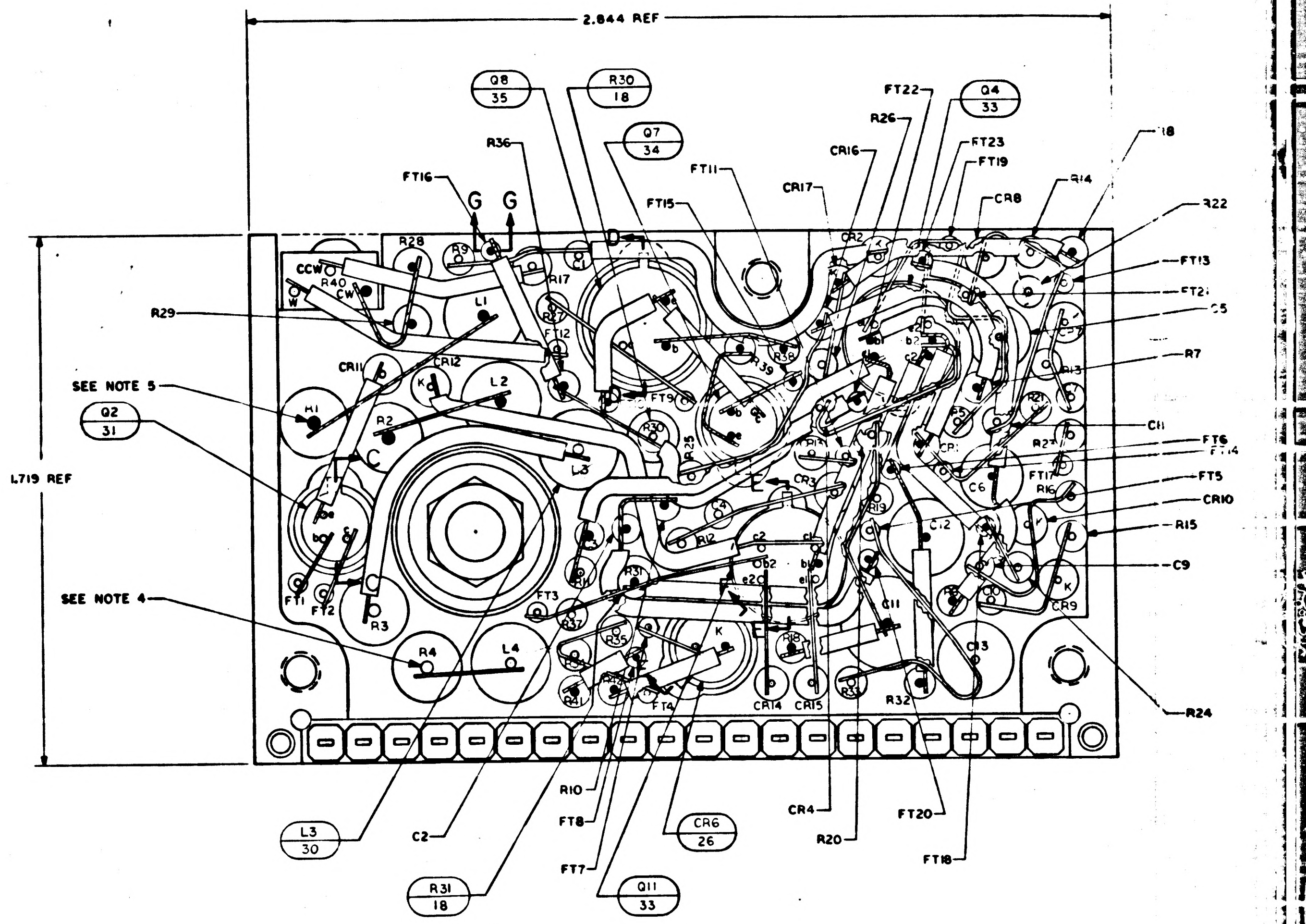
1.540
A
A
R40 REF
SEE NOTE 7
28°
32°
.144
.154 DIA
TP2 REF
.000
.015
3
SEE NOTE 7
2
28°
32°
.144
.154 DIA
TP1 REF
.154 MAX TYP
SEE NOTE 5
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
SEE NOTE 4
47
46
DO NOT ENCAPSULATE
37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R30 18
Q7 34
FT22
Q4 33
R36
CR16
R26
FT23
FT19
18
FT16
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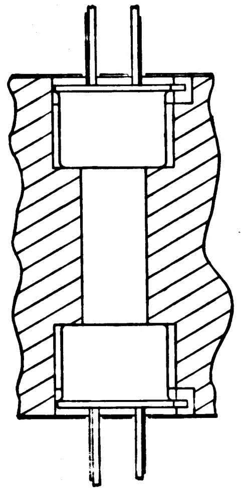
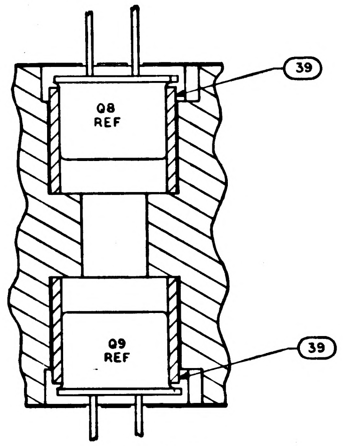
FT11
FT15
CR17
CR2
CR8
R14
R22
R28
R9
D
R17
CCW
R40
CW
W
FT13
FT21
C5
R29
L1
FT12
R7
R13
CR11
CR12
K
L2
R39
FT9
SEE NOTE 5
Q2 31
R2
C11
FT6
FT14
L.719 REF
C
L3
CR3
C6
FT17
R16
FT5
CR10
R12
R15
C9
FT1
FT2
C
R3
FT3
R31
C12
C11
K
CR9
SEE NOTE 4
R4
L4
C13
CR14
CR15
R32
R24
L3 30
C2
R10
FT8
CR6 26
CR4
R20
FT20
FT7
FT18
R31 18
Q11 33



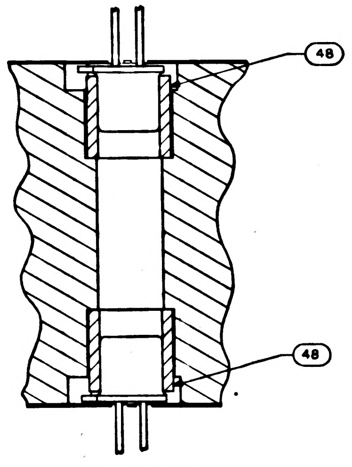
SECTION E-E

2 PLACES

TYPICAL INSTALLATION FOR FIND NO. 33


39
Q8 REF
Q9 REF
39

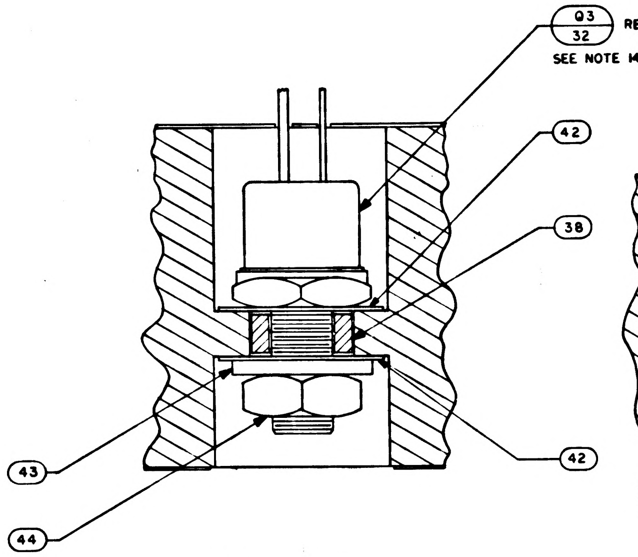
SECTION D-D



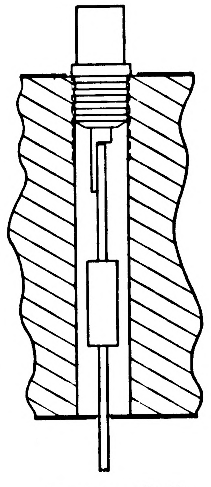
SECTION C-C

2 PLACES

TYPICAL INSTALLATION FOR FIND NO. 31 AND 34


Q3 32 REF
SEE NOTE 14
42
38
43
44
42

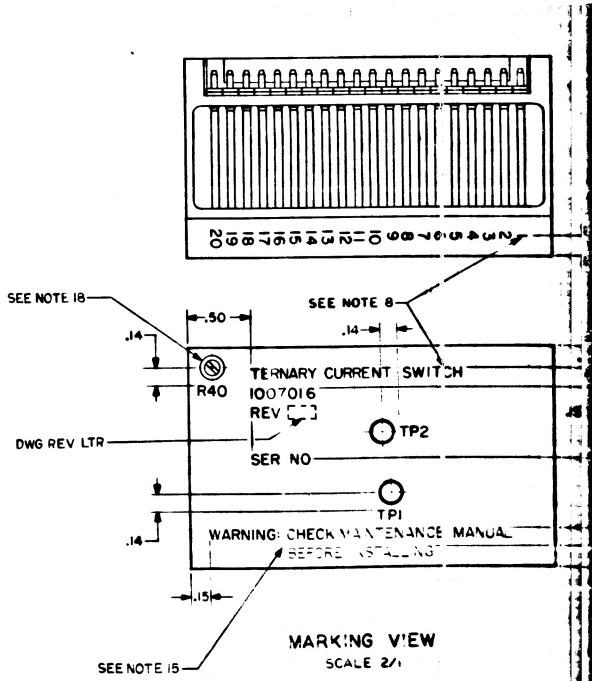
SECTION A-A



SECTION B-B

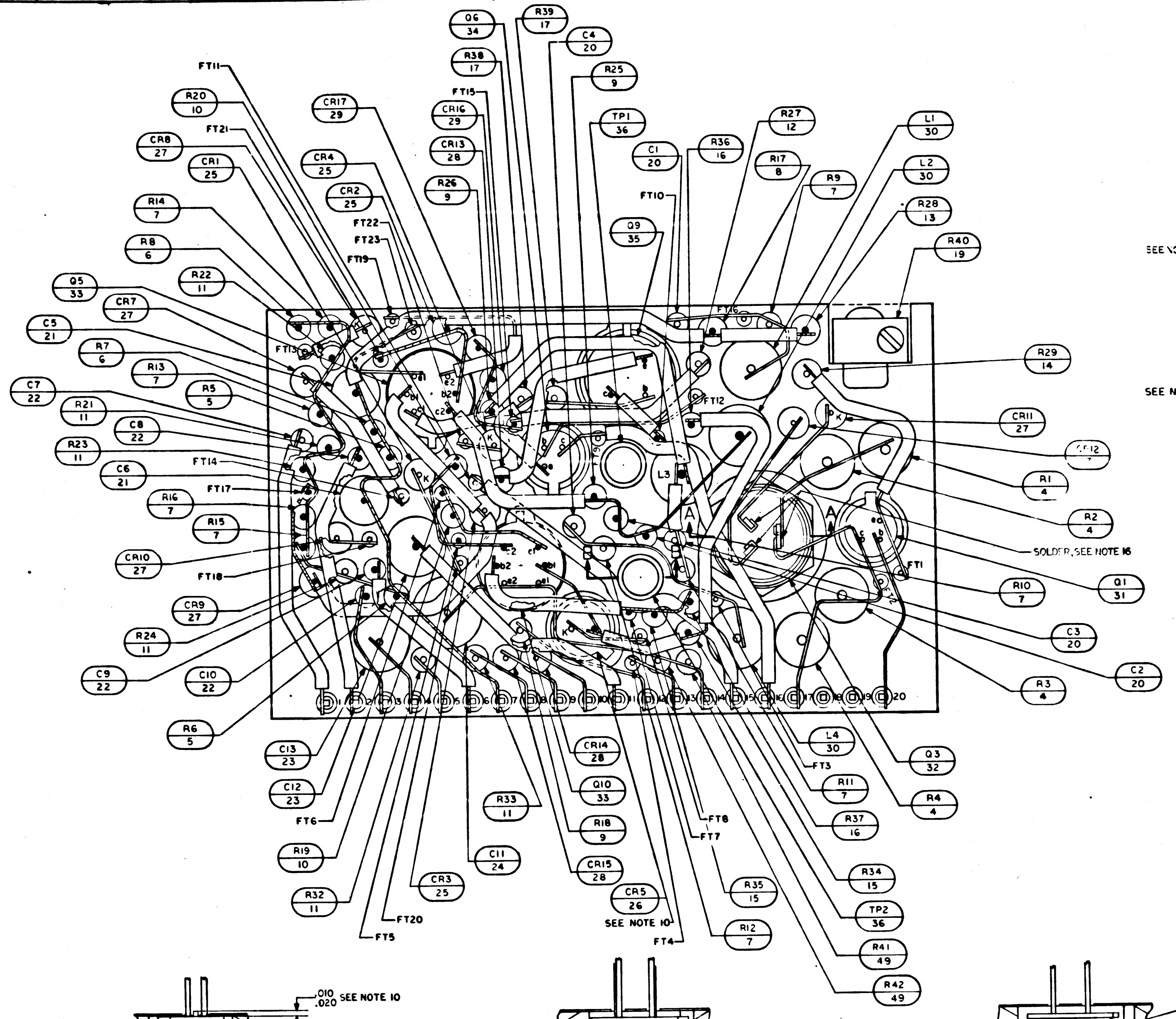
2 PLACES

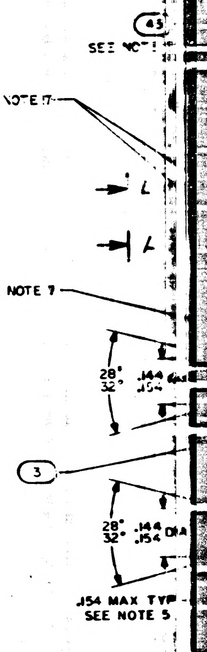
TYPICAL INSTALLATION FOR FIND NO. 36 AND 18

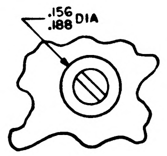

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
SEE NOTE 18
SEE NOTE 8
.50
.14
.14
R40
TERNARY CURRENT SWITCH
1007016
REV
TP2
DWG REV LTR
SER NO
TP1
.14
WARNING: CHECK MAINTENANCE MANUAL BEFORE INSTALLING
.15
SEE NOTE 15

MARKING VIEW
SCALE 2/1

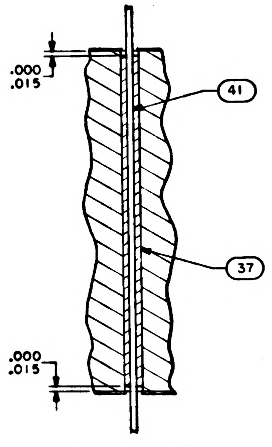
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.


Q6 34
R39 17
C4 20
R38 17
R25 9
FT11
FT15
R20 10
CR17 29
CR16 29
TP1 36
R27 12
L1 30
FT21
CR13 28
C1 20
R36 16
CR8 27
CR1 25
CR4 25
R26 9
R17 8
R9 7
L2 30
CR2 25
FT10
R28 13
R14 7
FT22
FT23
Q9 35
R40 19
R8 6
FT19
R22 11
Q5 33
CR7 27
FT16
C5 21
FT13
R7 6
R29 14
R13 7
C7 22
R5 5
FT12
R21 11
C8 22
CR11 27
R23 11
CR12 7
FT14
L3
R1 4
C6 21
FT17
R16 7
A
A
R2 4
R15 7
SOLDER, SEE NOTE 16
CR10 27
FT1
FT18
R10 7
Q1 31
CR9 27
C3 20
R24 11
C9 22
C10 22
R3 4
C2 20
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
R6 5
L4 30
C13 23
CR14 28
FT3
Q3 32
C12 23
Q10 33
R11 7
R33 11
R4 4
FT6
FT8
R18 9
FT7
R37 16
R19 10
C11 24
CR15 28
R34 15
CR3 25
R35 15
R32 11
CR5 26
TP2 36
FT20
SEE NOTE 10
R12 7
FT5
FT4
R41 49
R42 49
K


43
SEE NOTE
SEE NOTE 17
SEE NOTE 7
28° 32°
.144 .154
3
28° 32°
.144 .154 DIA
.154 MAX TYP
SEE NOTE 5



VIEW A-A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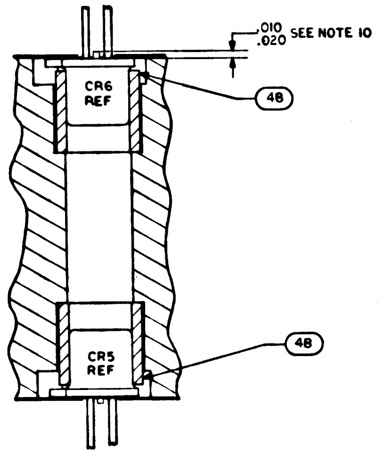
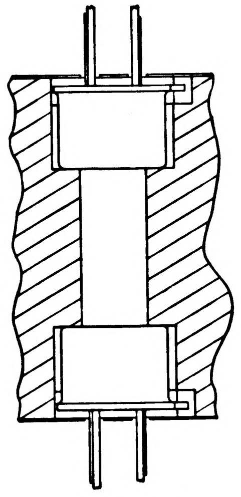
41
37
.000 .015

SECTION G-G


.010 .020 SEE NOTE 10
CR6 REF
48
CR5 REF
48

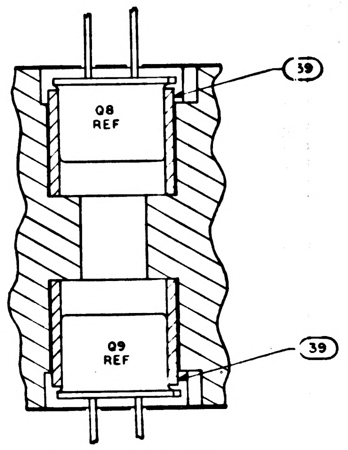
SECTION F-F



SECTION E-E

2 PLACES

TYPICAL INSTALLATION FOR FIND NO. 33


39
Q8 REF
Q9 REF
39

SECTION D-D

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. APPLY SEALING COMPOUND, MIL-S-40083 CLASS 31 TO FIND NO. 44
7. ENCAPSULATE MODULE PER ND1002003 (BLACK POLYURETHANE FOAM)
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. STAKE FIND NO. 4 THRU FIND NO. 36, FIND NO. 39, FIND NO. 48 AND FIND NO. 49 PER ND 1002009
10. ON CR5 AND CR6 CUT PIN NO. 2, .010/.020 ABOVE CASE
11. AR DENOTES AS REQUIRED
12. K INDICATES CATHODE SIDE OF DIODE
13. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG), TO THREADS OF FIND NO. 45
14. MOUNTING TORQUE FOR FIND NO. 32 10/15 INCH POUNDS
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER MSFC PROC 158 A
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. AFTER FINAL ADJUSTMENT SEAL ADJUSTMENT SCREW PER ND

Class A Release
TDRR 06083

PROCUREMENT SPECIFICATION
FOR
TERNARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

Record of Revisions

Revision Letter	TDRR No.	Pages Revised	Approvals		Date
			MIT	NASA	

This specification consists of page i
to iii and 1 to 4 inclusive.

PROCUREMENT SPECIFICATION
FOR
TERNARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Ternary Current Switch, Computer Output Assembly, for use in APOLLO Guidance and Navigation Equipment.

WKupfer 4 Feb 64
MIT/IL DATE

2/4/64
NASA/MSC APPROVAL DATE

PROCUREMENT SPECIFICATION
FOR
TERNARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Ternary Current Switch, Computer Output Assembly, Drawing 1007016, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007016	Final Test Method for Ternary Current Switch, Computer Output Assembly

DRAWINGS

APOLLO G&N

1007016	Ternary Current Switch, Computer Output Assembly

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007016
4 February 1964

Class A Release
TDRR 06083

PROCUREMENT SPECIFICATION
FOR
TERNARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

Record of Revisions

Ⓜ

Revision Letter	TDRR No.	Pages Revised	Approvals		Date
			MIT	NASA	

This specification consists of page i to iii and 1 to 6 inclusive.

APOLLO G&N Specification
PS-1007016
4 February 1964

PROCUREMENT SPECIFICATION
FOR
TERNARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Ternary Current Switch, Computer Output Assembly, Drawing 1007016, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007016	Final Test Method for Ternary Current Switch, Computer Output Assembly

DRAWINGS

APOLLO G&N

1007016	Ternary Current Switch, Computer Output Assembly

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly provides pulse-torque current switching control in the stabilization control loops.

3.3 FUNCTIONAL REQUIREMENTS

3.3.1 Electrical Inputs. The assembly shall perform as specified herein with the following electrical inputs:

a. DC Supply Voltage:

	Nominal	Enhanced	Degraded
(1)	+123 vdc ±2%	+ 138 vdc ±2%	+108 vdc ±2%
(2)	+28 vdc ±2%	+ 30.8vdc ±2%	+25.2 vdc ±2%
(3)	+12 vdc ±2%	+ 12 vdc ± 2%	+ 12 vdc ±2%

b. Input Signals:

(1) TM ± Set, TM ± Reset Pulses

	Nominal	Enhanced	Degraded
(a)	Amplitude: -5.50±0.25V	-7.00±0.25V	-4.00 ± 0.25V
(b)	PRF: 3.2 kc	3.2 kc	3.2 kc
(c)	Risetime: 0.20±0.05 µsec	0.1±0.05 µs	0.4 ± 0.1 µs
(d)	Falltime: 0.6±0.2 µsec	0.6±0.2 µs	1 ± 0.2
(e)	Pulse Width: 3.0±0.3 µsec	3.0 ± 0.3 µs	3.0 ± 0.3 µs

(f) Timing: TM ± Set pulses occur 5.0±0.5 µsec after TM ± Reset pulses except as specified herein.

(2) Set ± Cage Pulses

(a) Amplitude: -5.0±0.5 V peak into 10K load, 200 pf.
(b) PRF: 3.2 kc
(c) Risetime: 2.00±0.75 µsec
(d) Falltime: 5.5±2.0 µsec
(e) Pulse Width: 4±1 µsec
(f) Timing: Set ± Cage pulses occur 4.0±0.5 µsec after TM ± Reset pulses except as specified herein.

(3.) Data Pulse

	Nominal	Enhanced	Degraded
(a) Amplitude	3.2 ± 0.1V	3.5 ± 0.1 V	2.9 ± 0.1V
(b) PRF	3.2 kc	3.2 kc	3.2 kc
(c) Risetime	0.5 ± 0.1 μsec	0.5 ± 0.1 μsec	0.5 ± 0.1 μsec
(d) Falltime	5.5 ± 0.5 μsec	5.5 ± 0.5 μsec	5.5 ± 0.5 μsec
(e) Pulse Width	3.1 ± 0.5 μsec	3.1 ± 0.5 μsec	3.1 ± 0.5 μsec

(f) Timing: Data Pulses occur 6.2±0.5 μsec after TM ± Reset pulses except as specified herein.

3.3.2 Insulation Resistance. The resistance between the assembly pins and the assembly mounting screws shall be equal to or greater than 100 megohms.

3.3.3 Dummy Adjustability. With the voltage at pin 20 adjusted to produce 6.000±0.010V at the simulated scale-factor resistor with TM + current only, adjustment of R40 shall produce a scale-factor voltage of 5.5 to 6.5V with DUMMY current only. R40 shall be preset to produce a scale-factor voltage of 6.000±010V.

3.3.4 Output Leakage Current. The TM+ and TM- output leakage currents shall be equal to or less than 10 mμa at 125°F ± 5°F **heatsink temperature.** The dummy leakage current shall be equal or less than 150 mμa at 125°F ±5°F **heatsink temperature.**

3.3.5 Torque Pulse Characteristics

a. The T+ and T- pulse characteristics shall be as follows at pin 9:

(1) Pulse risetime: ≤1.35 μsec
(2) Pulse falltime: ≤200 nsec
(3) Delay of pulse risetime: ≤650 nsec
(4) Delay of pulse falltime: ≤750 nsec

b. The dummy pulse characteristics shall be as follows at pin 17:

(1) Pulse risetime: ≤200 nsec
(2) Pulse falltime: ≤250 nsec
(3) Delay of risetime: ≤120 nsec
(4) Delay of falltime: ≤600 nsec

1007017

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00460		
A	REVISED PER TDPR 00725	4-8-63	D.F. WK

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010032	SCHEMATIC	REF
			48
			47
1	1010290-	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006787-2	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	10106782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335 -	TRANSFORMER	37
1	1010357 -	TRANSISTOR	36
4	1010376-1	TRANSISTOR	35
2	1010290 -	DIODE	34
2	1010385 -	DIODE	33
1	1006777-27	CAPACITOR, .0033UF ,100V,± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V,±20%	31
1	1006755-57	CAPACITOR, 0.1UF 35V,±20%	30
1	1010264-13	CAPACITOR, 0.01UF ,200V,±10%	29
1	1006777-16	CAPACITOR, 220UUF ,100V,±10%	28
2	1006755-83	CAPACITOR, 15UF 35V,±20%	27
6	1006755-65	CAPACITOR, 0.47 UF, 35V,±20%	26
1	1006760-27	RESISTOR, FIXED, M F,620Ω, 1/2W,± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W,±5%	24
2	1010369-96	RESISTOR, FIXED, COMP, INS., 430K, 1/4W,±5%	23
1	1010389-	RESISTOR, 43Ω, 3W,±1%	22
1	1010312 -	RESISTOR, FIXED, M F, 36Ω, 2W,±5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W,± 5%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W,±5%	19
2	1010377-51	RESISTOR, FIXED, W W, 5K, 1/10W,± 1%	18
1	1010377 -	RESISTOR, FIXED, W W, 150Ω, 1/10W,±1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W,±5%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W,±5%	15
2	1010369-92	RESISTOR, FIXED, COMP. INS., 300K, 1/4W,±5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ±5%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ±5%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS., 240K, 1/4W,±5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W,±5%	10
2	1010377 -	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ±5%	8
1	1010377-	RESISTOR, FIXED, W W, 100Ω, 1/10W,± 1%	7
2	1010369-97	RESISTOR FIXED, COMP., INS. 470K, 1/4W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W,± 5%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 5%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

MASTER

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS ±.03 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN DATE 12-2-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL W. J. Rhine 5-27-63
MIT APPROVAL 27 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007017
SCALE 5/1 | WT | SHEET 1 OF 1

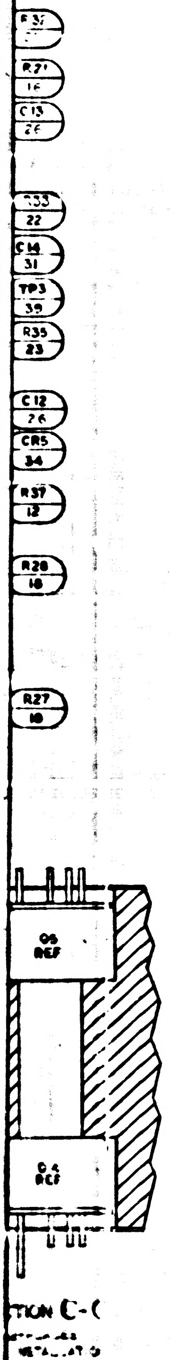
1007017 A

AT107001

1007017 A

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00725	7-2-63	

REVISIONS TDRR 00400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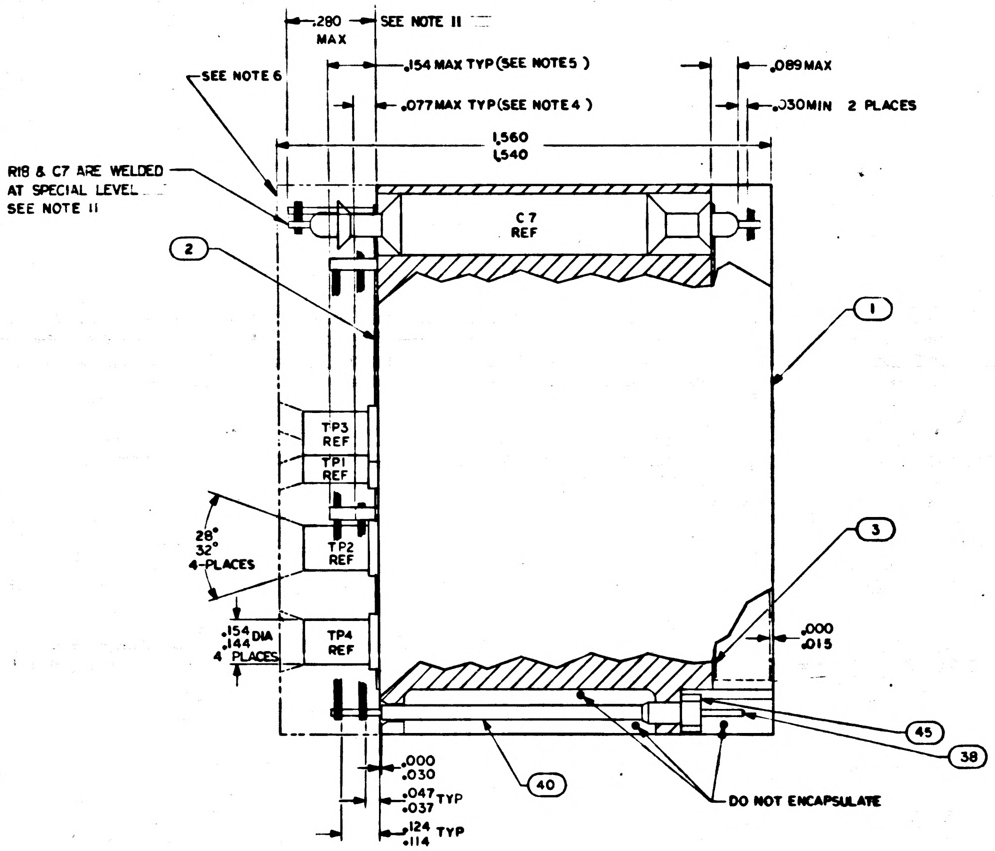
R71 16
C13 26
R33 22
C14 31
TP3 39
R35 23
C12 26
CR5 34
R37 12
R28 18
R27 18
Q6 REF
Q4 REF

SECTION C-C


.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.000
.015
.154
.144
DIA
4 PLACES
TP4 REF
45
38
40
DO NOT ENCAPSULATE
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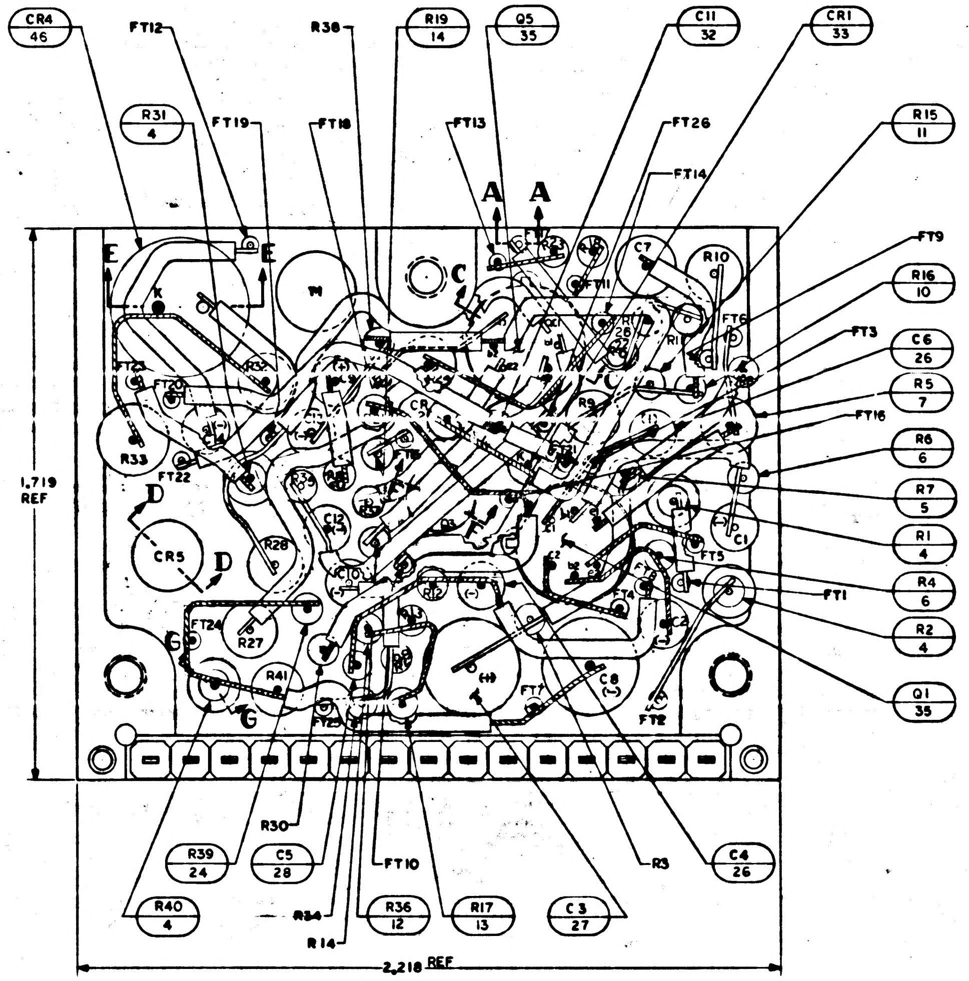
.030
.047
.037
TYP
.124
.114
TYP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FT12
R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT26
FT14
R15 11
A
A
FT9
R16 10
FT3
C6 26
R5 7
FT16
R6 6
R7 5
R1 4
R4 6
FT1
R2 4
Q1 35
E
E
C
1.719 REF
D
D
CR5
R33
FT22
R28
R27
FT24
G
G
R41
C8
FT7
FT2
FT5
C1
C7
R10
R39 24
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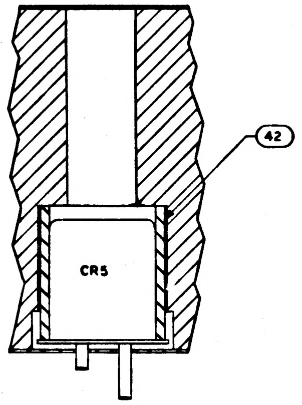
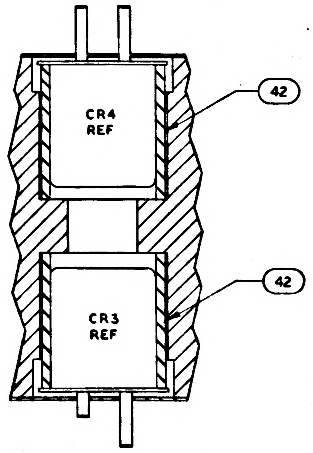
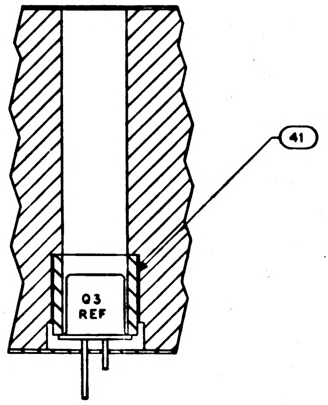
R3
C4 26
2.218 REF



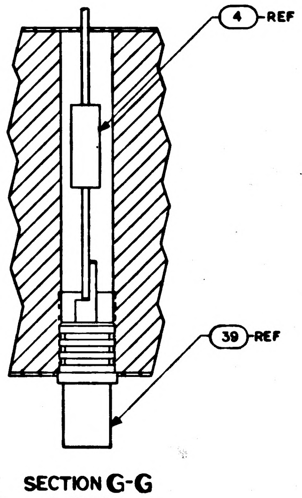
SECTION D-D


CR4 REF
42
CR3 REF
42

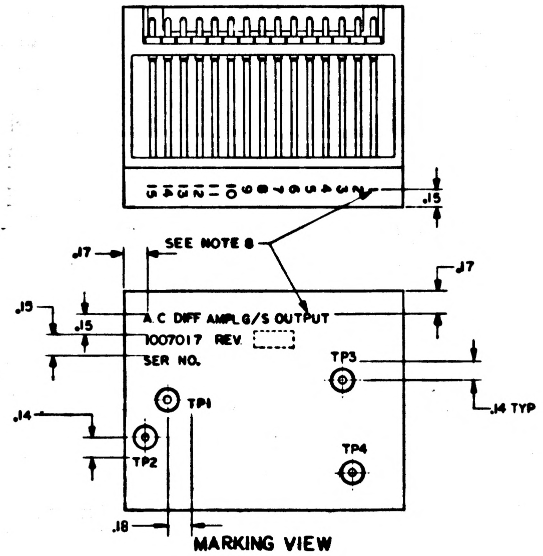
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO.39 & FIND NO.4


.15
SEE NOTE 8
.17
.17
.15
.15
A C DIFF AMPL G/S OUTPUT
1007017 REV
SER NO.
TP3
TP1
.14
TP2
TP4
.14 TYP
.18

MARKING VIEW
SCALE 2/1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
╳	1010032	SCHEMATIC	REF
			48
			47
1	1010290–	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006787-2	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	10106782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335 –	TRANSFORMER	37
1	1010357 –	TRANSISTOR	36
4	1010376 – 1	TRANSISTOR	35
2	1010290 –	DIODE	34
2	1010385 –	DIODE	33
1	1006777 – 27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755 – 69	CAPACITOR. 1.0UF 35V, ±20%	31
1	1006755 – 57	CAPACITOR. 0.1UF 35V, ±20%	30
1	1010264 – 13	CAPACITOR. 0.01UF .200V, ±10%	29
1	1006777 – 16	CAPACITOR. 220UUF .100V, ±10%	28
2	1006755 – 83	CAPACITOR. 15UF 35V, ±20%	27
6	1006755 – 65	CAPACITOR. 0.47UF, 35V, ±20%	26
1	1006760 – 27	RESISTOR, FIXED, M F. 620Ω, 1/2W, ±5%	25
1	1006750 – 40	RESISTOR, FIXED, M F. 2.2K, 1/4W, ±5%	24
2	1010369 – 96	RESISTOR, FIXED, COMP. INS., 430K, 1/4W, ±5%	23
1	1010389 –	RESISTOR, 43Ω, 3W, ±1%	22
1	1010312 –	RESISTOR, FIXED, M F. 36Ω, 2W, ±5%	21
1	1006750 – 32	RESISTOR, FIXED, M F. 1K, 1/4W, ±5%	20
1	1006750 – 73	RESISTOR, FIXED, M F. 51K, 1/4W, ±5%	19
2	1010377 – 51	RESISTOR, FIXED, W W. 5K, 1/10W, ±1%	18
1	1010377 –	RESISTOR, FIXED, W W. 150Ω, 1/10W, ±1%	17
1	1006750 – 49	RESISTOR, FIXED, M F. 5.1K, 1/4W, ±5%	16
1	1006750 – 60	RESISTOR, FIXED, M F. 15K, 1/4W, ±5%	15
2	1010369 – 92	RESISTOR, FIXED, COMP. INS., 300K, 1/4W, [illegible]	14
2	1006750 – 50	RESISTOR, FIXED, M F. 5.6K, 1/4W, ±5%	13
4	1006750 – 8	RESISTOR, FIXED, M F. 100Ω, 1/4W, ±5%	12
2	1010369 – 90	RESISTOR, FIXED, COMP. INS. 240K, 1/4W, [illegible]	11
4	1006750 – 66	RESISTOR, FIXED, M F. 27K, 1/4W, ±5%	10
2	1010377 –	RESISTOR, FIXED, W W. [illegible]	9
1	1006750 – 70	RESISTOR, FIXED, M F. 39K, 1/4W, ±5%	8
1	1010377 –	RESISTOR, FIXED, W W. [illegible]	7
2	1010369 – 97	RESISTOR, FIXED, COMP. INS. 470K, 1/4W, [illegible]	6
2	1006750 – 67	RESISTOR, FIXED, M F. 30K, 1/4W, ±5%	5
5	1006750 – 56	RESISTOR, FIXED, M F. 10K, 1/4W, ±5%	4
1	1008029 – 2	INSULATOR, BOTTOM	3
1	1008029 – 1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± // DECIMALS ±.03 ANGLES ± ½°
DO NOT SCALE THIS DRAWING
MATERIAL //
HEAT TREATMENT //
FINAL FINISH //

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN H.Bell Crane DATE 12-2-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL W. J. Rhine 5-27-63
MIT APPROVAL 27 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

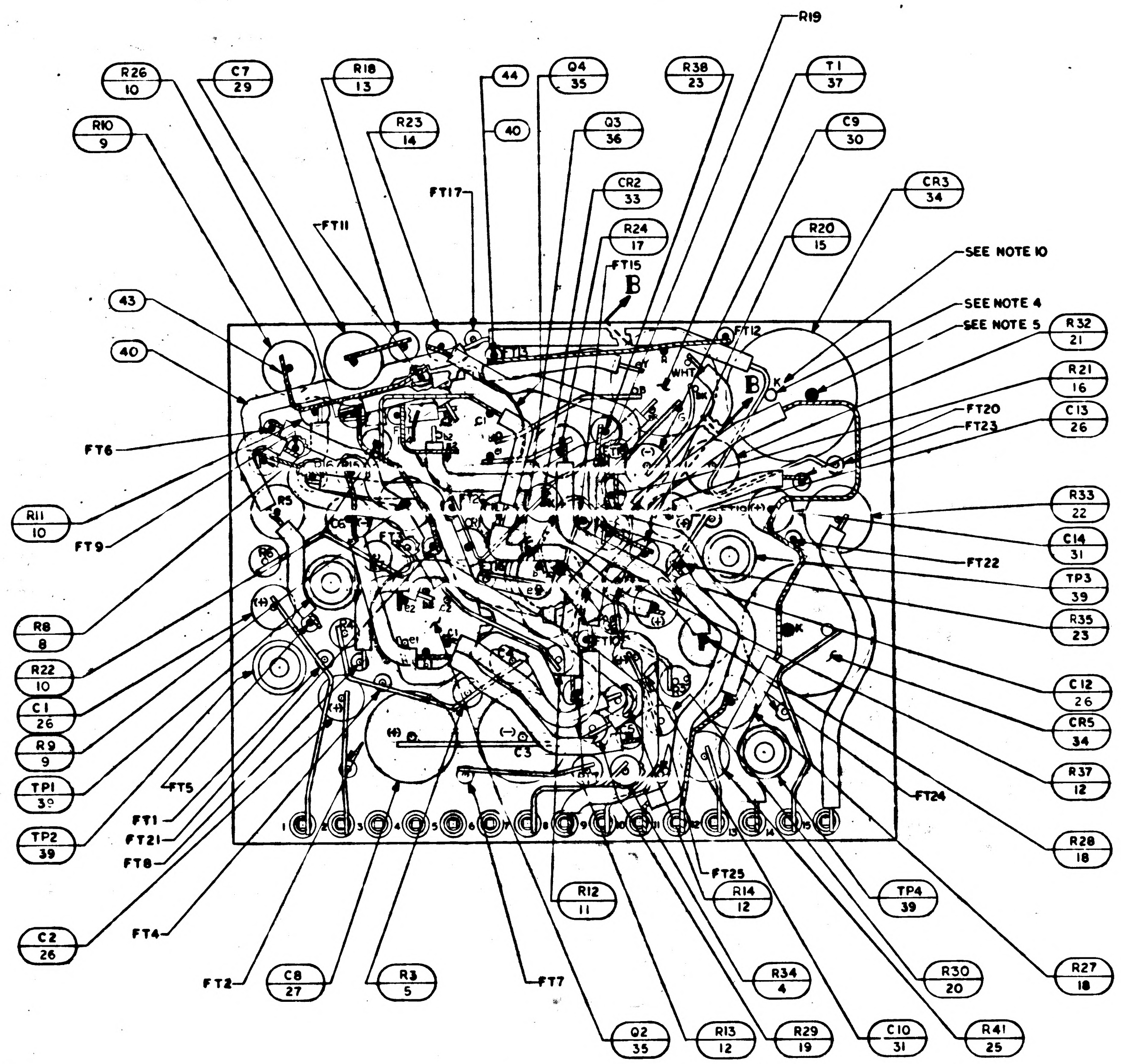
AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007017
SCALE 5/1
WT
SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

1107001

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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C7 29
R18 13
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Q4 35
R38 23
R19
T1 37
R10 9
R23 14
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Q3 36
C9 30
CR2 33
CR3 34
FT17
FT11
R24 17
FT15
B
R20 15
SEE NOTE 10
SEE NOTE 4
SEE NOTE 5
43
40
FT12
R32 21
R21 16
FT20
FT23
C13 26
WHT
FT6
R11 10
FT9
R5
R33 22
C14 31
FT22
TP3 39
R35 23
R8 8
R22 10
C1 26
R9 9
TP1 39
TP2 39
C12 26
CR5 34
R37 12
C3
(+)
(−)
FT5
FT1
FT21
FT8
FT24
R28 18
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
FT25
R12 11
R14 12
TP4 39
FT4
C2 26
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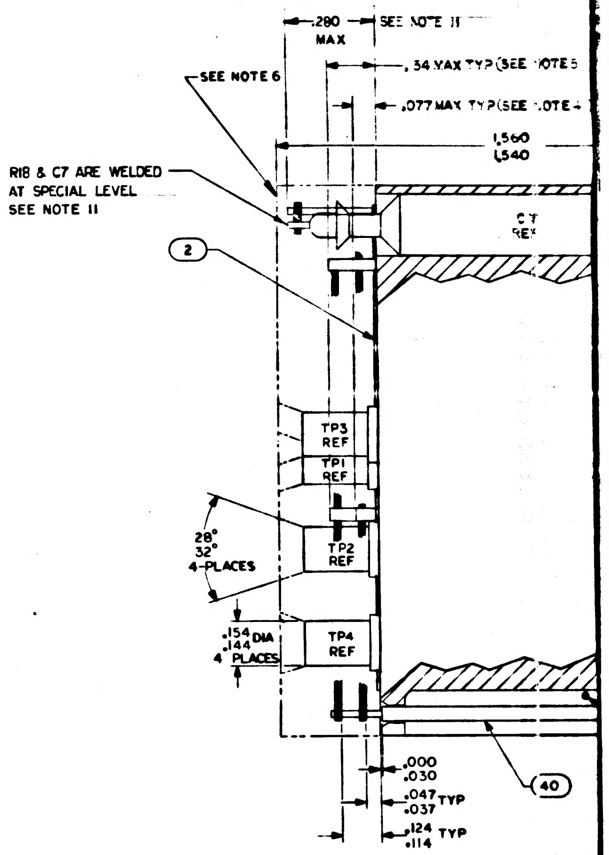
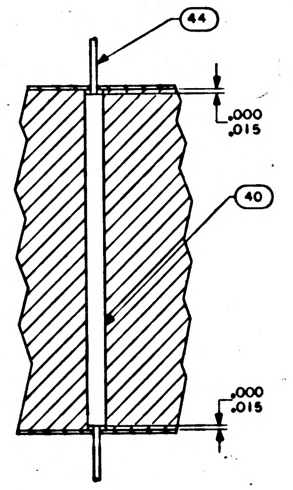
R13 12
R29 19
C10 31
R41 25


.280 MAX
SEE NOTE 11
.54 MAX TYP (SEE NOTE 5
.077 MAX TYP (SEE NOTE 4
SEE NOTE 6
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
.154
.144 DIA
4 PLACES
TP4 REF
.000
.030
.047
.037 TYP
.124
.114 TYP
40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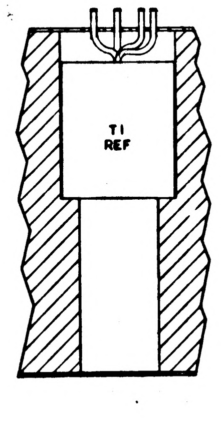
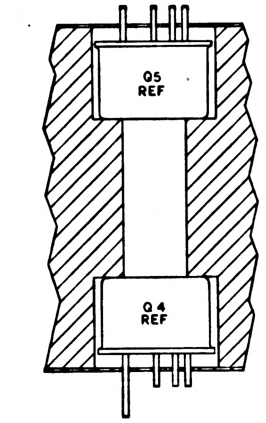
.015

SECTION A-A



SECTION B-B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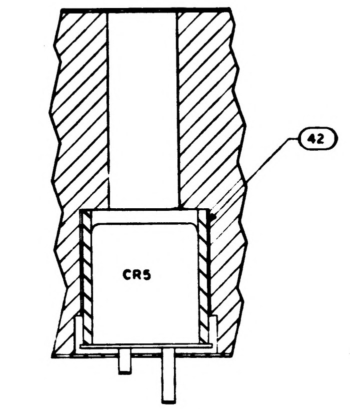
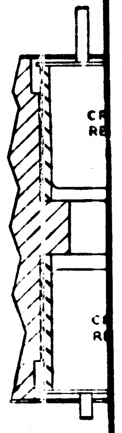
Q4 REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D



SECTION

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO 39, FIND NO 41, FIND NO 42 AND FIND NO 46 PER ND 1002009
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE
11. ⊕ DENOTES SPECIAL LEVEL

INCHES
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007017 A
31 January 1964
Class A Release
TDRR 06055

PROCUREMENT SPECIFICATION

FOR

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals MIT	Approvals NASA
6/23/64	A	10422	2	WK.	

This specification consists of page i to iii and 1 to 6 inclusive.

PROCUREMENT SPECIFICATION

FOR

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT

The purpose of this document is to establish the requirements for the procurement of the AC Differential Amplifier G/S Output for use in the APOLLO Guidance and Navigation Equipment.

W.A. Kupfer 31 Jan 64
MIT/IL DATE

W.S. Swingle 1/31/64
NASA/MSC APPROVAL DATE

PROCUREMENT SPECIFICATION

FOR

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the AC Differential Amplifier G/S Output, Drawing 1007017, hereafter called the amplifier.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007017	Final Test Method for AC Differential Amplifier G/S Output

DRAWINGS

APOLLO G&N

1007017	AC Differential Amplifier G/S Output
1010032	AC Differential Amplifier G/S Output, Schematic Diagram (For Reference Only)

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007017 A
31 January 1964

Class A Release
TDRR 06055

PROCUREMENT SPECIFICATION

FOR

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
6/23/64	A	10422	2	WR.	

This specification consists of page i to iii and 1 to 4 inclusive.

APOLLO G&N Specification
PS-1007017
31 January 1964

PROCUREMENT SPECIFICATION

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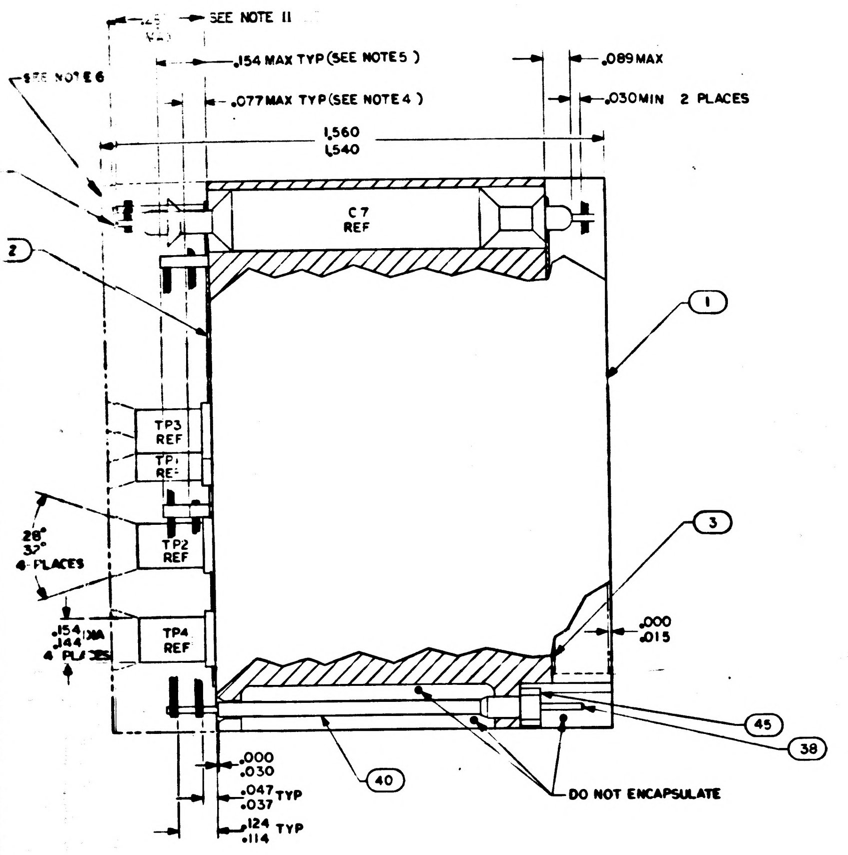
DRAWINGS

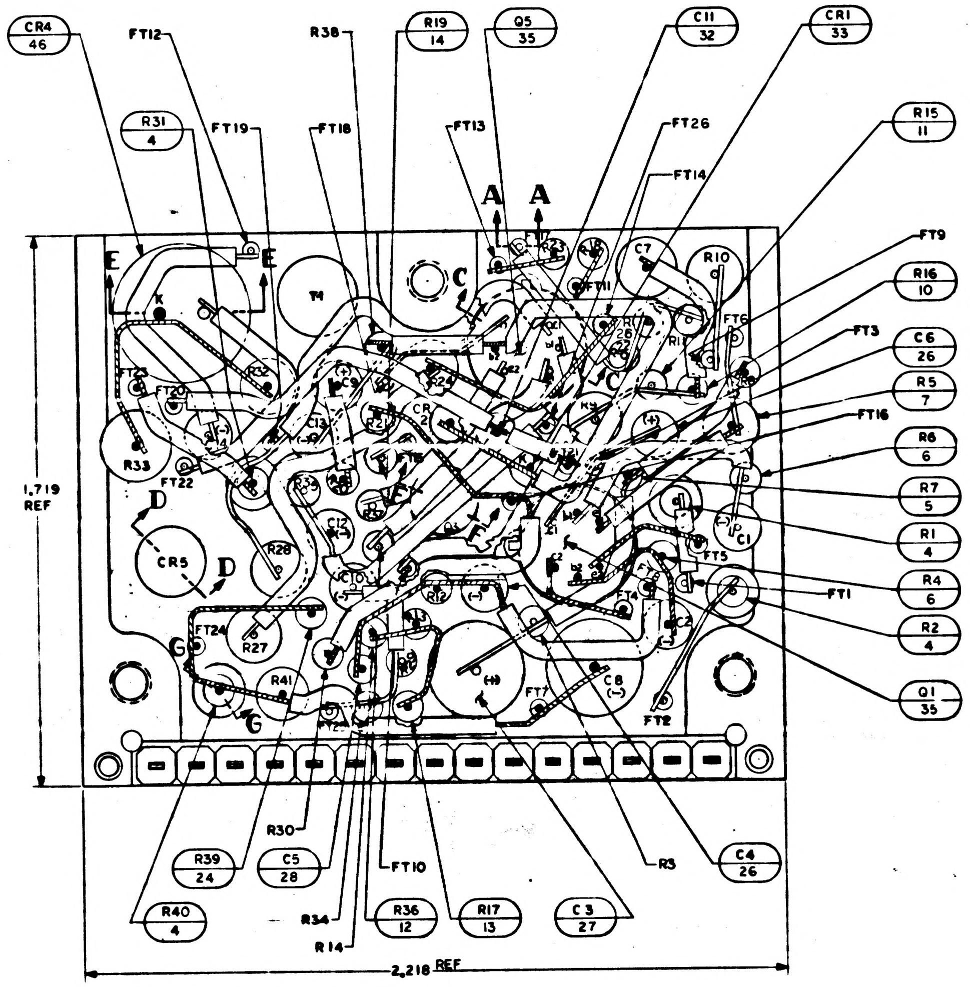
APOLLO G&N

1007017	AC Differential Amplifier G/S Output
1010032	AC Differential Amplifier G/S Output, Schematic Diagram (For Reference Only)

1007017 B

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00460		
A	REVISED PER TDRR 00725	1-2-63	DT WK
B	REVISED PER TDRR 01005	4-25-63	DT WK


SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
SEE NOTE 6
.089 MAX
.030 MIN 2 PLACES
1.560
1.540
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4 PLACES
TP2 REF
.154
.144 DIA
4 PLACES
TP4 REF
3
.000
.015
45
38
40
.000
.030
.047
.037 TYP
.124
.114 TYP
DO NOT ENCAPSULATE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R38
R19 14
Q5 35
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FT19
FT18
FT13
FT26
FT14
A
A
E
E
C
C
C7
R10
FT9
R16 10
FT3
C6 26
R5 7
FT16
R6 6
R7 5
R1 4
R4 6
R2 4
Q1 35
FT1
FT5
FT2
FT6
FT11
R33
FT22
FT20
R32
CR5
D
D
R28
C12
FT24
R27
G
G
R41
FT7
C8
1.719 REF
R39 24
C5 28
R30
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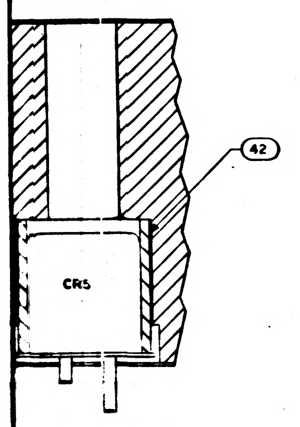
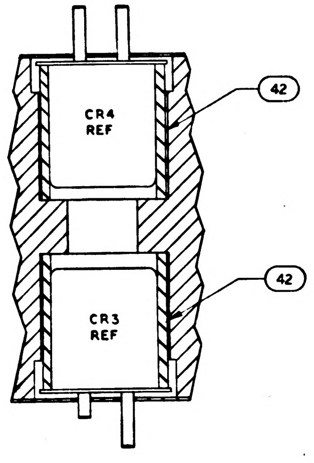
R3
C4 26
R40 4
R34
R36 12
R17 13
C3 27
R14
2.218 REF



SECTION D-D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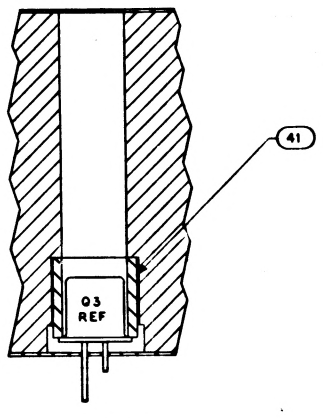
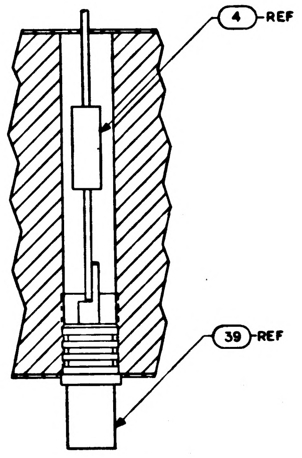
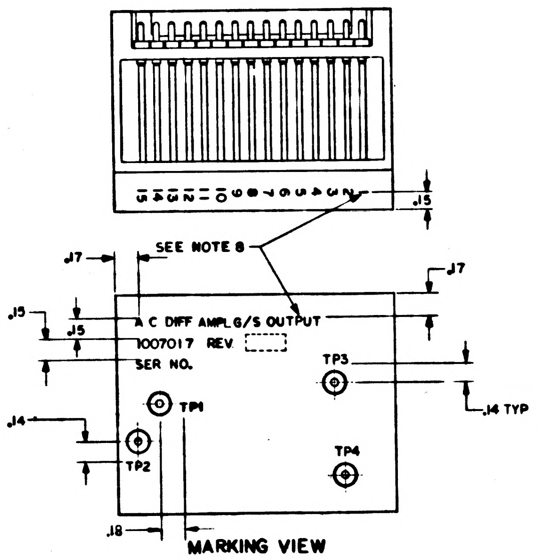
42
CR3 REF
42
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO.39 & FIND NO.4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SEE NOTE 8
.17
.17
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.15
A C DIFF AMPL G/S OUTPUT
1007017 REV
SER NO.
TP3
.14 TYP
TP1
.14
TP2
TP4
.18
MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010032	SCHEMATIC	REF
			48
			47
1	1010290-2	DIODE	46
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15	10106782-4	CONTACT, WRAPOST MALE MIN	38
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1	1010264-13	CAPACITOR, 0.01UF ,200V ± 10%	29
1	1006777-16	CAPACITOR, 220UUF ,100V ± 10%	28
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6	1006755-65	CAPACITOR, 0.47 UF, 35V ± 10%	26
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1	1010312-033	RESISTOR, FIXED, M F, 36Ω, 2W, ± 5%	21
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1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED COMP. INS., 300K, 1/8W, ± 5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS., 240K, 1/8W, ± 5	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP., INS., 470K, 1/8W, 5%	6
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1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

1007017 B

MASTER

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN DATE 1-2-63
CHECKED
APPROVAL 25 Feb 63
APPROVAL 26 FEB 63
NASA APPROVAL W J Rhine 3-27-63
MIT APPROVAL 27 Feb 63

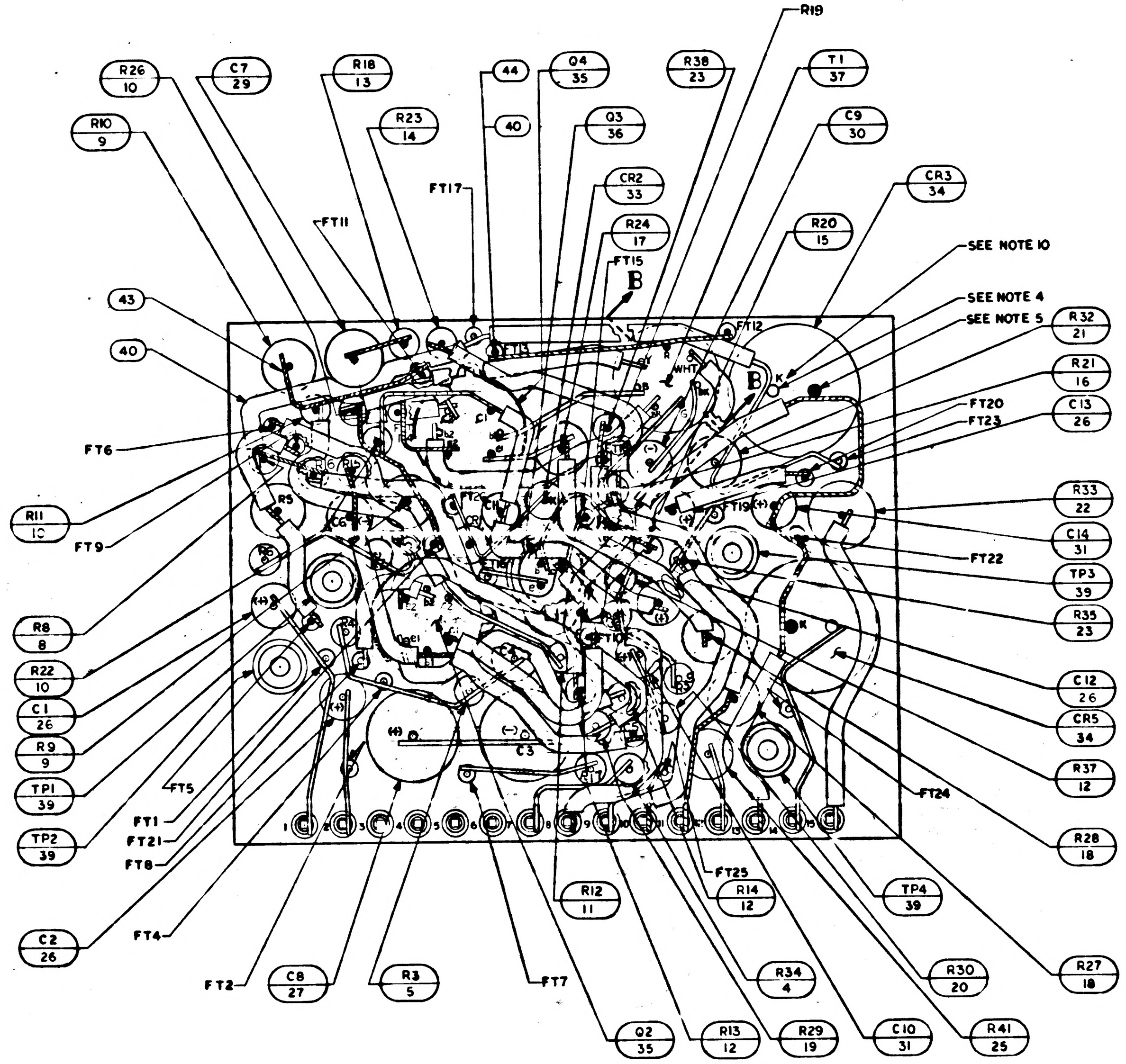
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER
G/S OUTPUT
ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007017
SCALE 5/1 WT SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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C7 29
R18 13
44
Q4 35
R38 23
R19
T1 37
R10 9
R23 14
40
Q3 36
C9 30
CR2 33
CR3 34
FT17
FT11
R24 17
R20 15
FT15
B
SEE NOTE 10
43
SEE NOTE 4
SEE NOTE 5
R32 21
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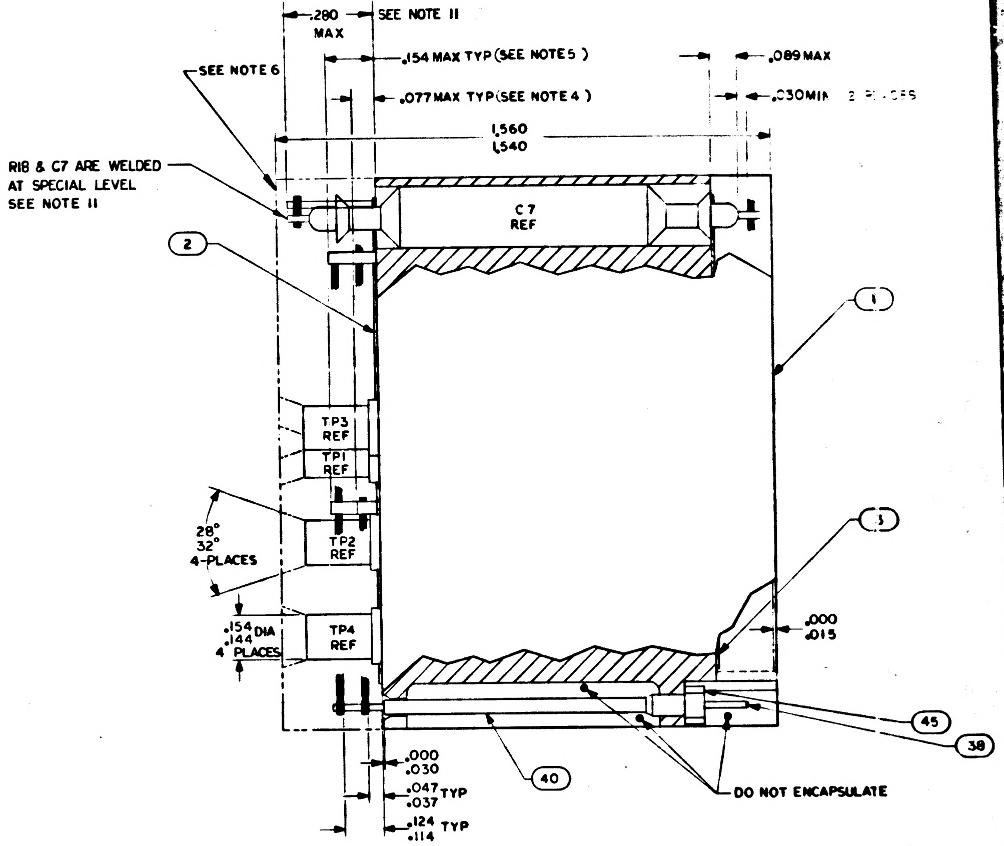
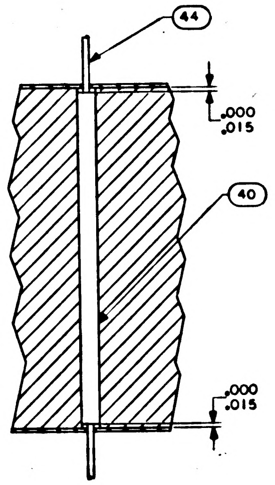
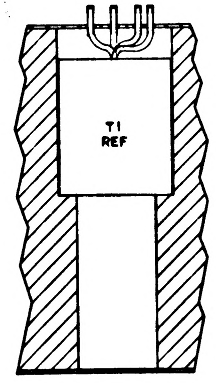
FT23
C13 26
FT6
R5
R33 22
R11 10
FT9
FT19
C14 31
FT22
TP3 39
R35 23
R8 8
R22 10
C1 26
R9 9
TP1 39
TP2 39
C3
C12 26
CR5 34
R37 12
FT5
FT1
FT21
FT8
FT24
R28 18
FT4
C2 26
FT25
R12 11
R14 12
TP4 39
FT2
C8 27
R3 5
FT7
R34 4
R30 20
R27 18
Q2 35
R13 12
R29 19
C10 31
R41 25
WHT
K
(+)
(−)

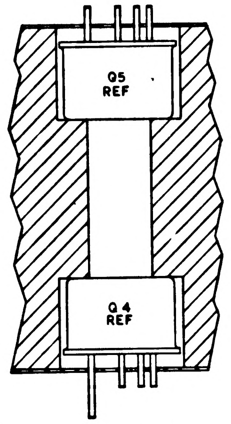

.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP (SEE NOTE 4)
.030 MIN
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.154
.144 DIA
4 PLACES
TP4 REF
.000
.015
45
38
40
.000
.030
.047
.037 TYP
.124
.114 TYP
DO NOT ENCAPSULATE


44
.000
.015
40
.000
.015

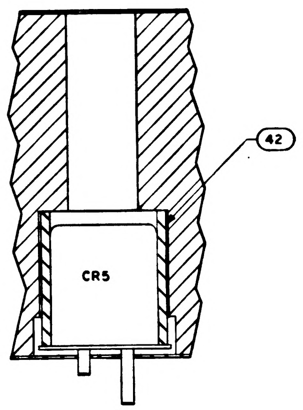
SECTION A-A



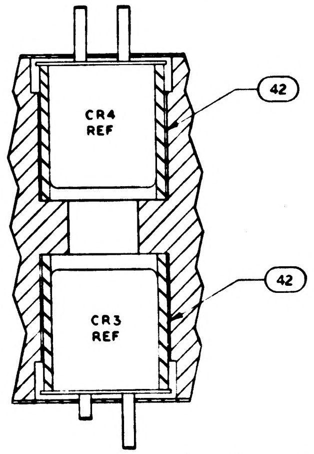
SECTION B-B


Q5
REF
Q4
REF

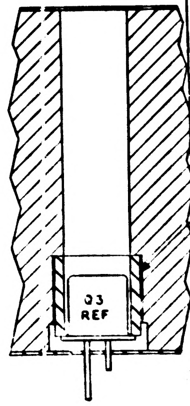
SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D


CR4
REF
42
CR3
REF
42

SECTION E-E

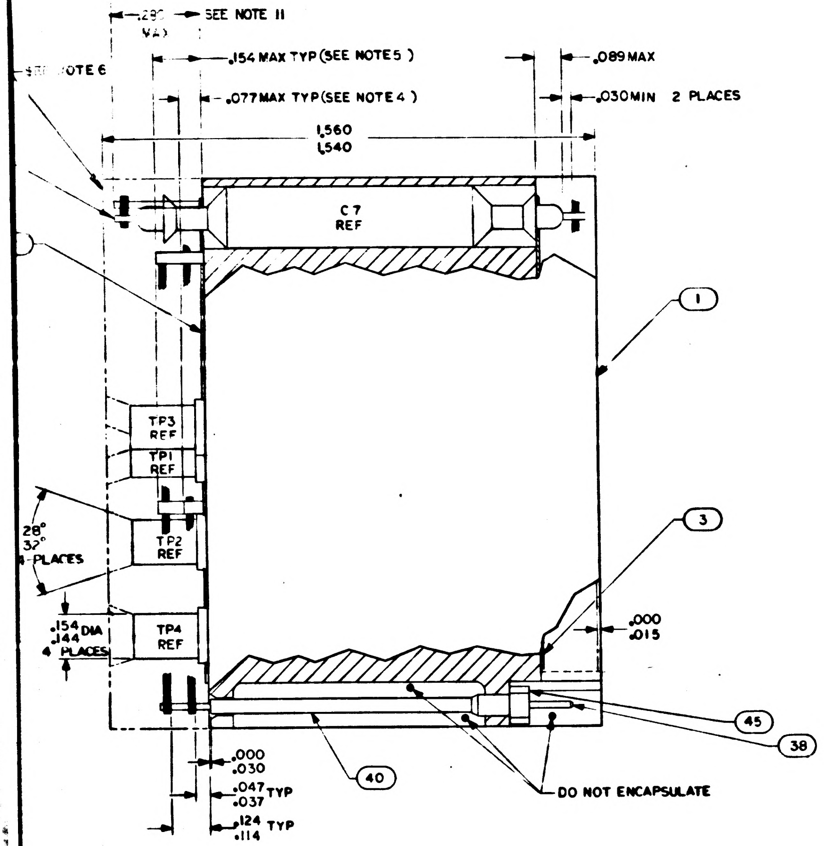


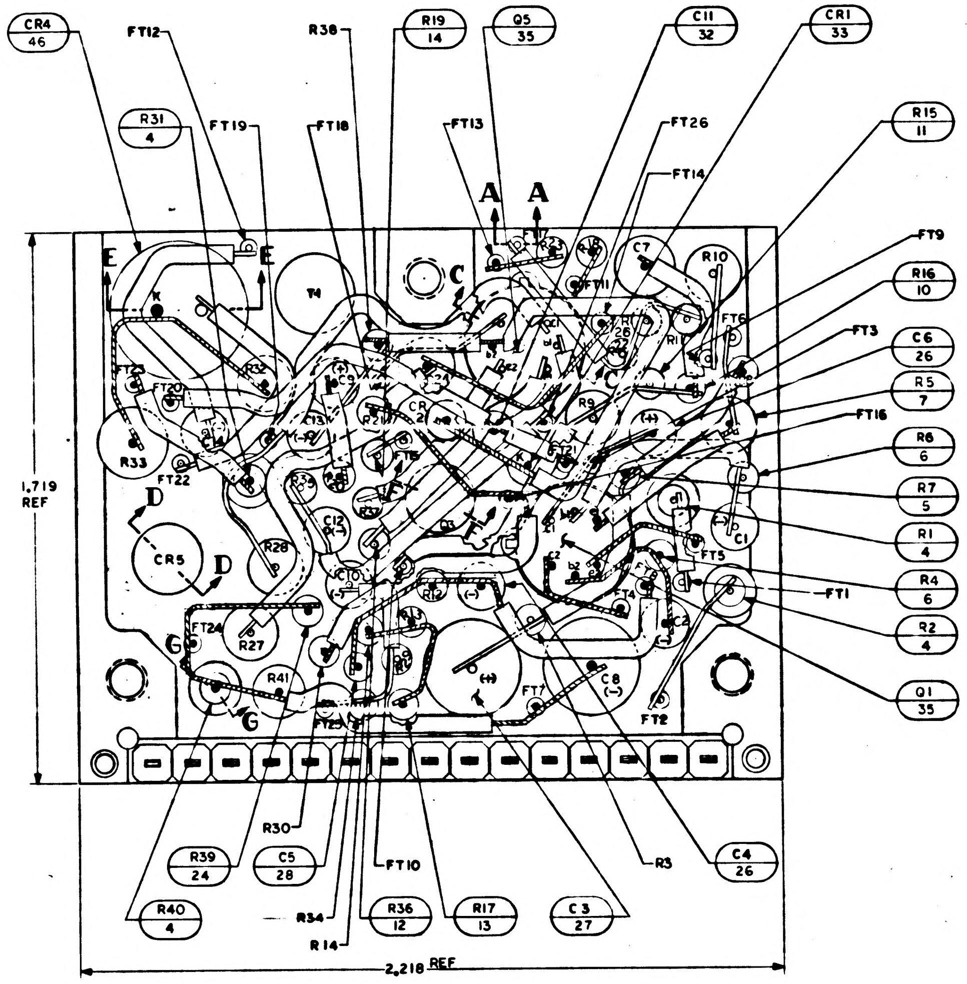
SECTION F-F

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO 39, FIND NO 41, FIND NO 42 AND FIND NO 46 PER ND 1002009
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE
11. ⊕ DENOTES SPECIAL LEVEL

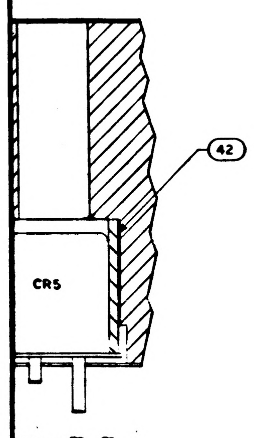
1007017 C

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00466		
A	REVISED PER TDRR 00725	1-2-63	D.T. WK
B	REVISED PER TDRR 01005	4-25-63	D.T. WK
C	REVISED PER TDRR 01181	5-2-63	D.T. WK

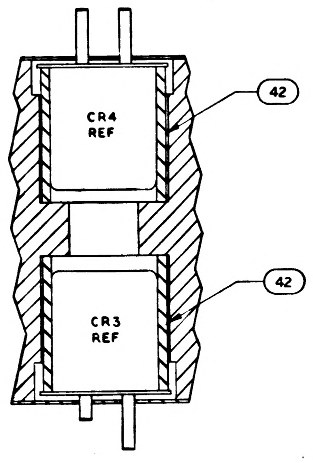

.280 MAX
SEE NOTE 11
SEE NOTE 6
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
1.560
1.540
C7 REF
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28°
32°
4 PLACES
.154
.144
DIA
4 PLACES
3
.000
.015
45
38
40
DO NOT ENCAPSULATE
.000
.030
.047
.037
TYP
.124
.114
TYP


CR4 46
FT12
R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT26
R15 11
FT14
A
A
E
E
C
C7
R10
FT9
R16 10
FT6
FT3
C6 26
R5 7
FT16
R6 6
R7 5
R1 4
R4 6
R2 4
Q1 35
FT1
FT5
C1
T4
C8
FT2
FT7
R33
FT22
D
D
CR5
R28
C12
FT24
R27
G
G
R41
1.719 REF
R30
R39 24
C5 28
R40 4
R34
R14
FT10
R36 12
R17 13
C3 27
R3
C4 26
2.218 REF

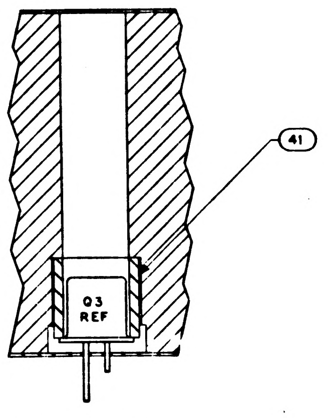
TP	COMPONENT
1	R1
2	R2
3	R31
4	R40



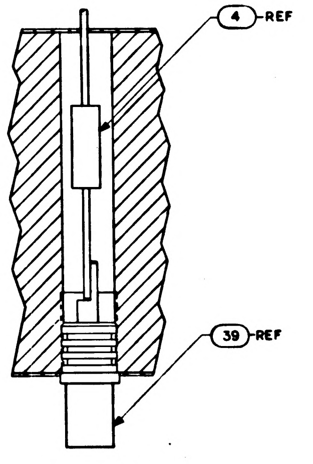
SECTION D-D


CR4 REF
42
CR3 REF
42

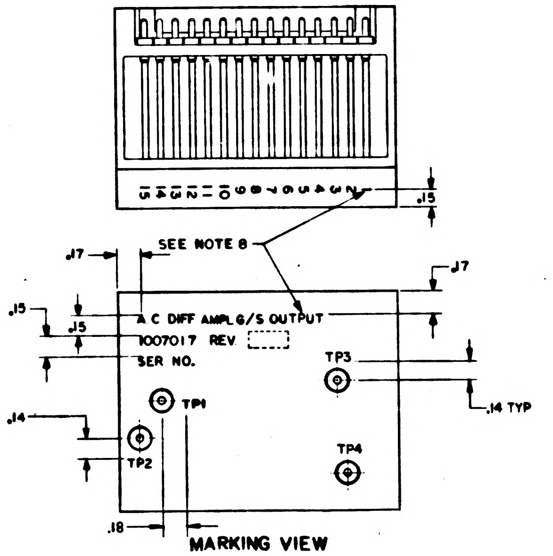
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO.39 & FIND NO.4


.15
SEE NOTE 8
.17
.17
.15
.15
A C DIFF AMPL G/S OUTPUT
1007017 REV
SER NO.
TP3
TP1
.14 TYP
.14
TP2
TP4
.18

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1010032	SCHEMATIC	REF
			48
			47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006787-2	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	10106782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357	TRANSISTOR	36
4	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF ,200V ± 10%	29
1	1006777-16	CAPACITOR, 220UUF ,100V ± 10%	28
2	1006755-83	CAPACITOR, 15UF 35V, ± 10%	27
6	1006755-65	CAPACITOR, 0.47 UF, 35V ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 620Ω, 1/2W ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W ± 2%	24
2	1010369-96	RESISTOR, FIXED, COMP, INS., 430K, 1/8W, ± 5%	23
1	1010389-92	RESISTOR, 43Ω . 3W, ± 1%	22
1	1010312-033	RESISTOR, FIXED, M F, 36Ω, 2W, ± 5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED, W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED COMP. INS., 300K, 1/8W, ± 5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS., 240K, 1/8W, ± 5	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP., INS., 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN D.O.H. DATE 12-2-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL W. J. Rhine 5-22-63
MIT APPROVAL 27 Feb 63

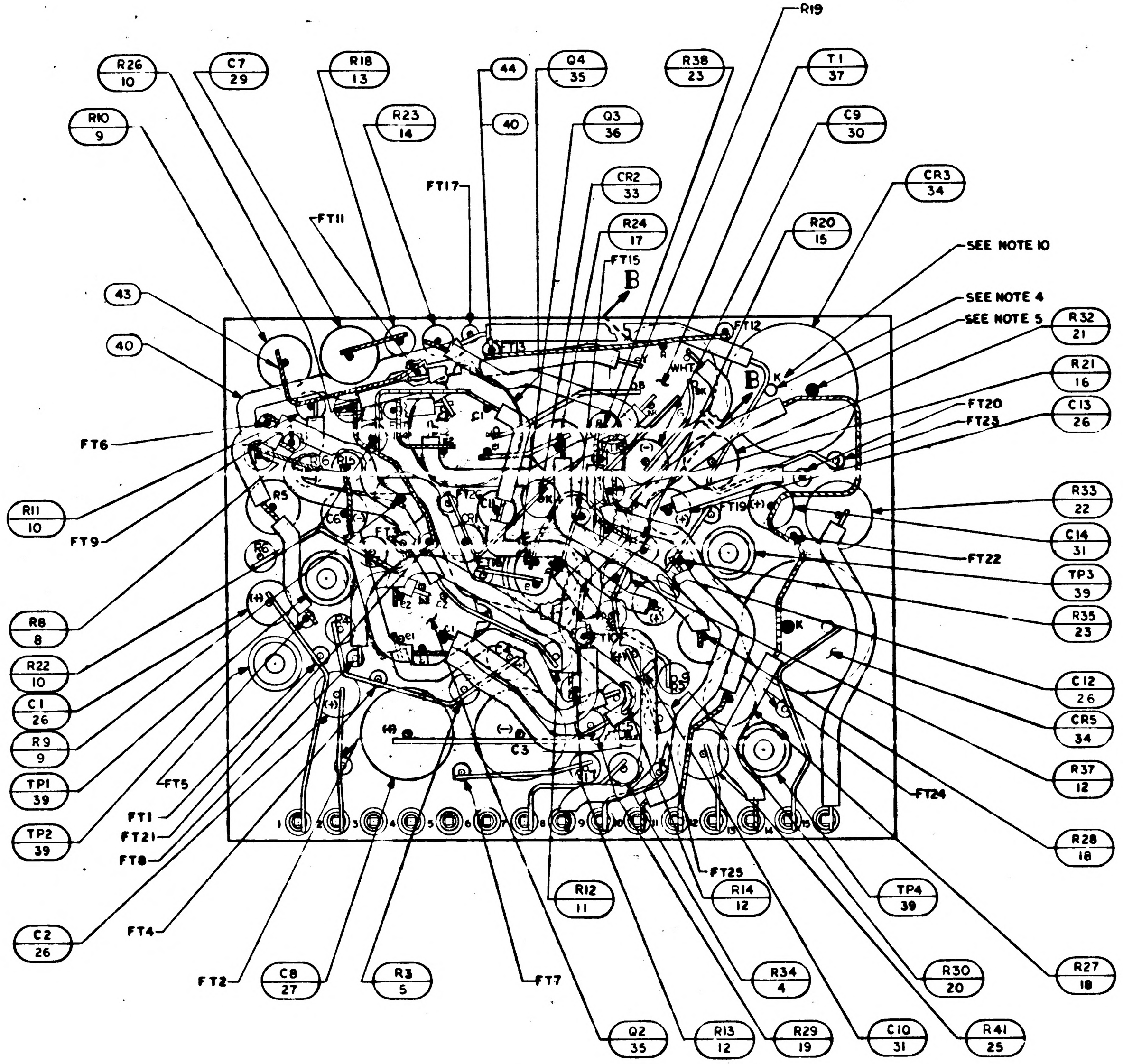
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007017
SCALE 5/1 | WT | SHEET 1 OF 1

1007017

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



R26 10
C7 29
R18 13
44
Q4 35
R38 23
R19
T1 37
R10 9
R23 14
40
Q3 36
C9 30
CR2 33
CR3 34
FT17
FT11
R24 17
R20 15
FT15
B
SEE NOTE 10
43
SEE NOTE 4
SEE NOTE 5
R32 21
40
FT12
R21 16
B
FT20
C13 26
FT23
FT6
R11 10
FT9
R33 22
C14 31
FT22
TP3 39
R8 8
R35 23
R22 10
C12 26
C1 26
CR5 34
R9 9
C3
R37 12
TP1 39
FT5
FT24
TP2 39
FT1
FT21
FT8
R28 18
FT25
R12 11
R14 12
TP4 39
C2 26
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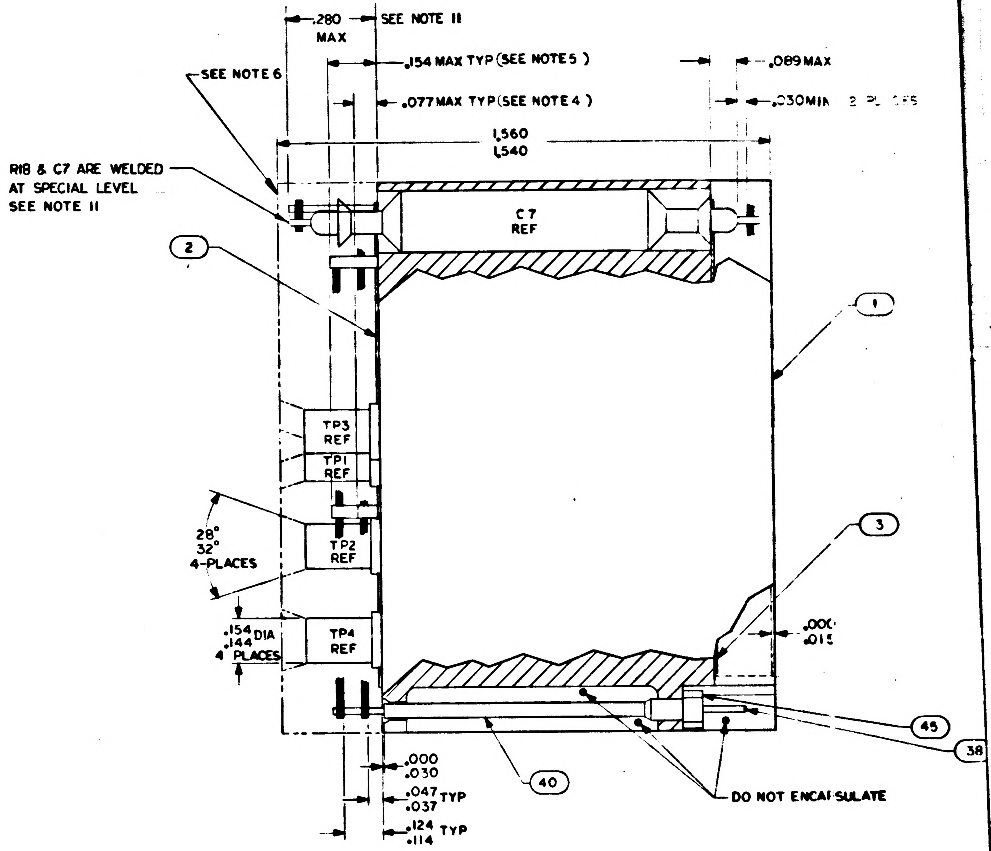
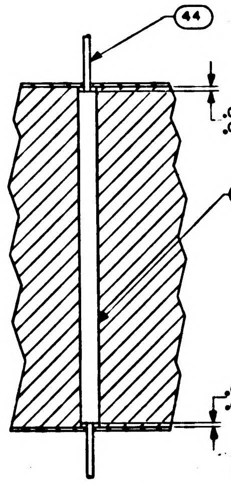
R13 12
R29 19
C10 31
R41 25

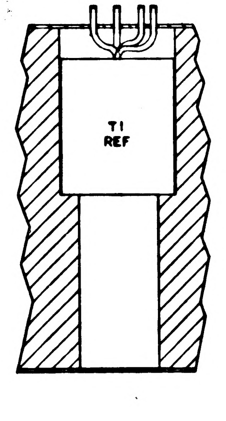


.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.154
.144 DIA
4 PLACES
TP4 REF
.000
.015
45
38
.000
.030
.047
.037 TYP
.124
.114 TYP
40
DO NOT ENCAPSULATE

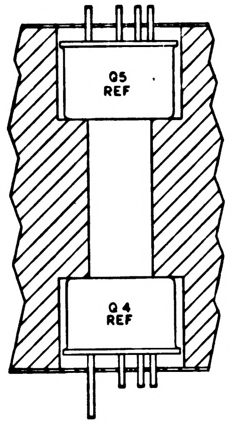


44
.000
.015
40
.000
.015

SECTION A-A

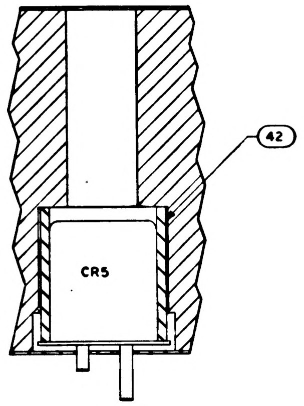


SECTION B-B

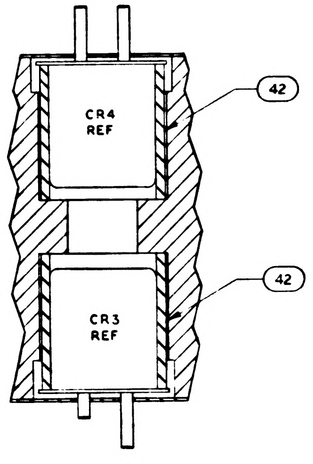


Q5 REF
Q4 REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35

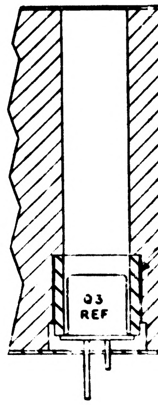


SECTION D-D



42
CR4 REF
42
CR3 REF

SECTION E-E



SECTION F-F

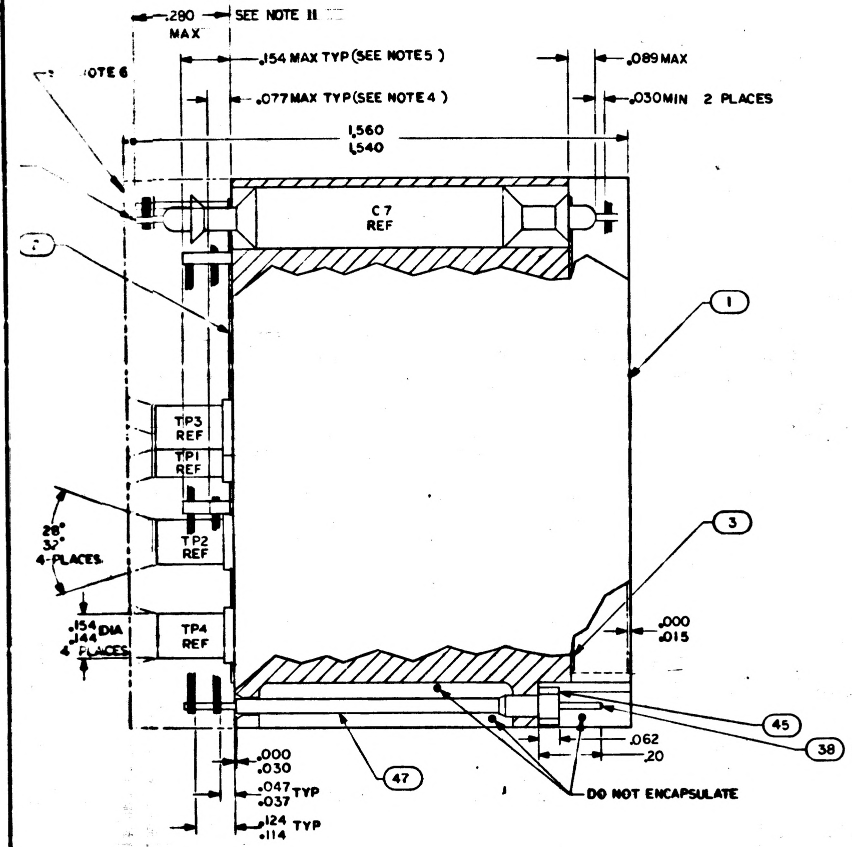
NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO 39, FIND NO 41, FIND NO 42 AND FIND NO 46 PER ND 1002009
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE
11. ⊕ DENOTES SPECIAL LEVEL
12. + DEFINES POLARITY OF CAPACITOR.

INCHES
PHOTOGRAPHING SCALE ONLY

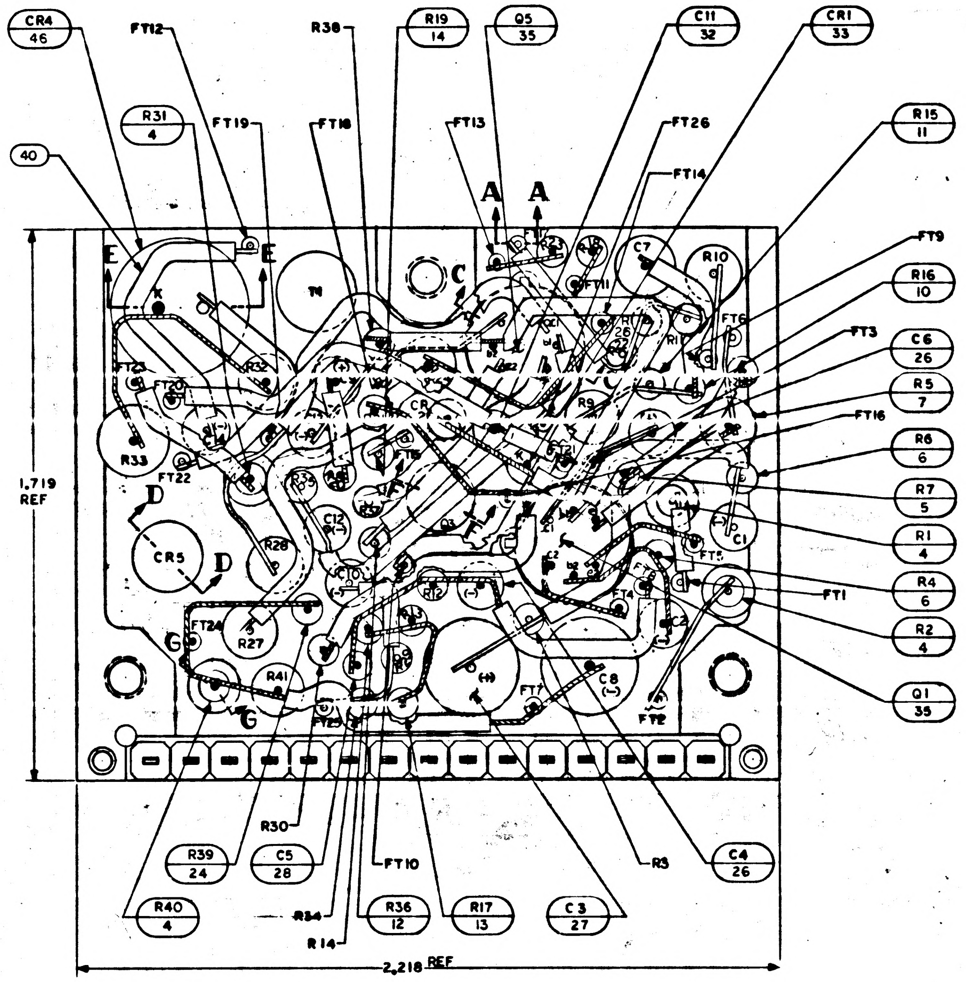
1007017 D

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00725	4-2-63	D.T. WK
B	REVISED PER TDRR 01005	4-25-63	D.T. WK
C	REVISED PER TDRR 01181	5-2-63	D.T. WK
D	REVISED PER TDRR 01711	6-24-63	J.J.M. WK

REVISIONS TDRR 00460

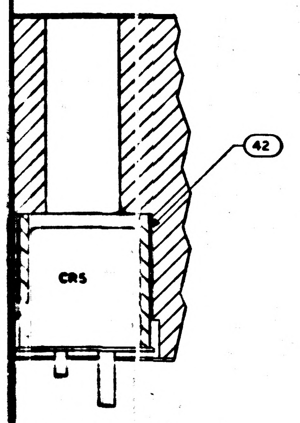


.280 MAX
SEE NOTE 11
NOTE 6
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
1.560
1.540
C7 REF
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28°
32°
4-PLACES
.154 DIA
.144
4 PLACES
.000
.015
.000
.030
.047
.037 TYP
.124
.114 TYP
.062
.20
1
3
45
38 SEE NOTE 13
47
DO NOT ENCAPSULATE

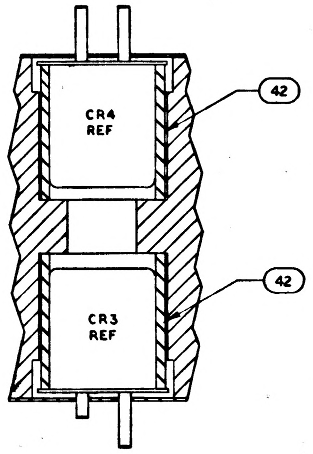


CR4 46
FT12
R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT26
FT14
R15 11
40
A A
FT9
R16 10
FT3
C6 26
R5 7
FT16
R6 6
R7 5
R1 4
R4 6
FT1
R2 4
Q1 35
1.719 REF
R33
FT22
CR5
D
E
G
R27
R28
R41
FT24
C12
C7
R10
C8
C1
FT5
FT7
FT2
R39 24
C5 28
R30
FT10
R40 4
R34
R14
R36 12
R17 13
C3 27
R3
C4 26
2.218 REF

TP	COMPONENT
1	R1
2	R2
3	R31
4	R40

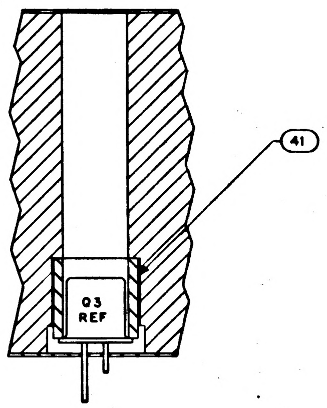


ECTION D-D

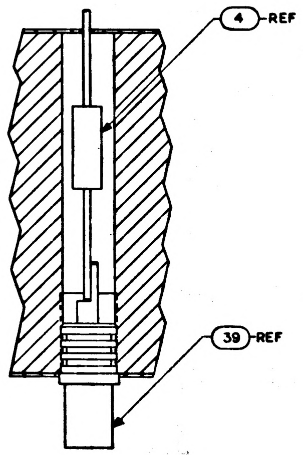


CR4 REF
CR3 REF
42
42

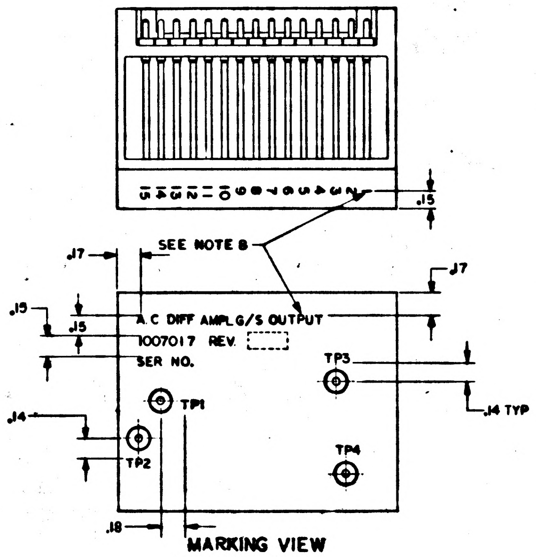
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO. 39 & FIND NO. 4



.15
.17
.17
SEE NOTE 8
.15
.15
A C DIFF AMPL G/S OUTPUT
1007017 REV.
SER NO.
TP3
TP1
TP2
TP4
.14
.14 TYP
.18

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
⨯	1010032	SCHEMATIC	REF
AR	1006776 22	INSULATION SLEEVING	48
AR	1006776-20	INSULATION SLEEVING	47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	10106782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357	TRANSISTOR	36
4	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF, 200V ± 10%	29
1	1006777-16	CAPACITOR, 220UUF, 100V ± 10%	28
2	1006755-83	CAPACITOR, 15UF, 35V, ± 10%	27
6	1006755-65	CAPACITOR, 0.47 UF, 35V, ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 620Ω, 1/2W, ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W, ± 2%	24
2	1010369-96	RESISTOR, FIXED, COMP, INS., 430K, 1/8W, ± 5%	23
1	1010389-92	RESISTOR, 43Ω, 3W, ± 1%	22
1	1010312-033	RESISTOR, FIXED, M F, 36Ω, 2W, ± 5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED, W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED, COMP, INS., 300K, 1/8W, ± 5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS., 240K, 1/8W, ± 5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP., INS. 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 12-2-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL W. J. Rhine 5-27-63
MIT APPROVAL 27 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO. — SIZE J — NASA DRAWING NO. 1007017
SCALE 5/1 — WT — SHEET 1 OF 1

1007017 D

INCHES
PHOTOGRAPHIC SCALE ONLY

E-2

1007017

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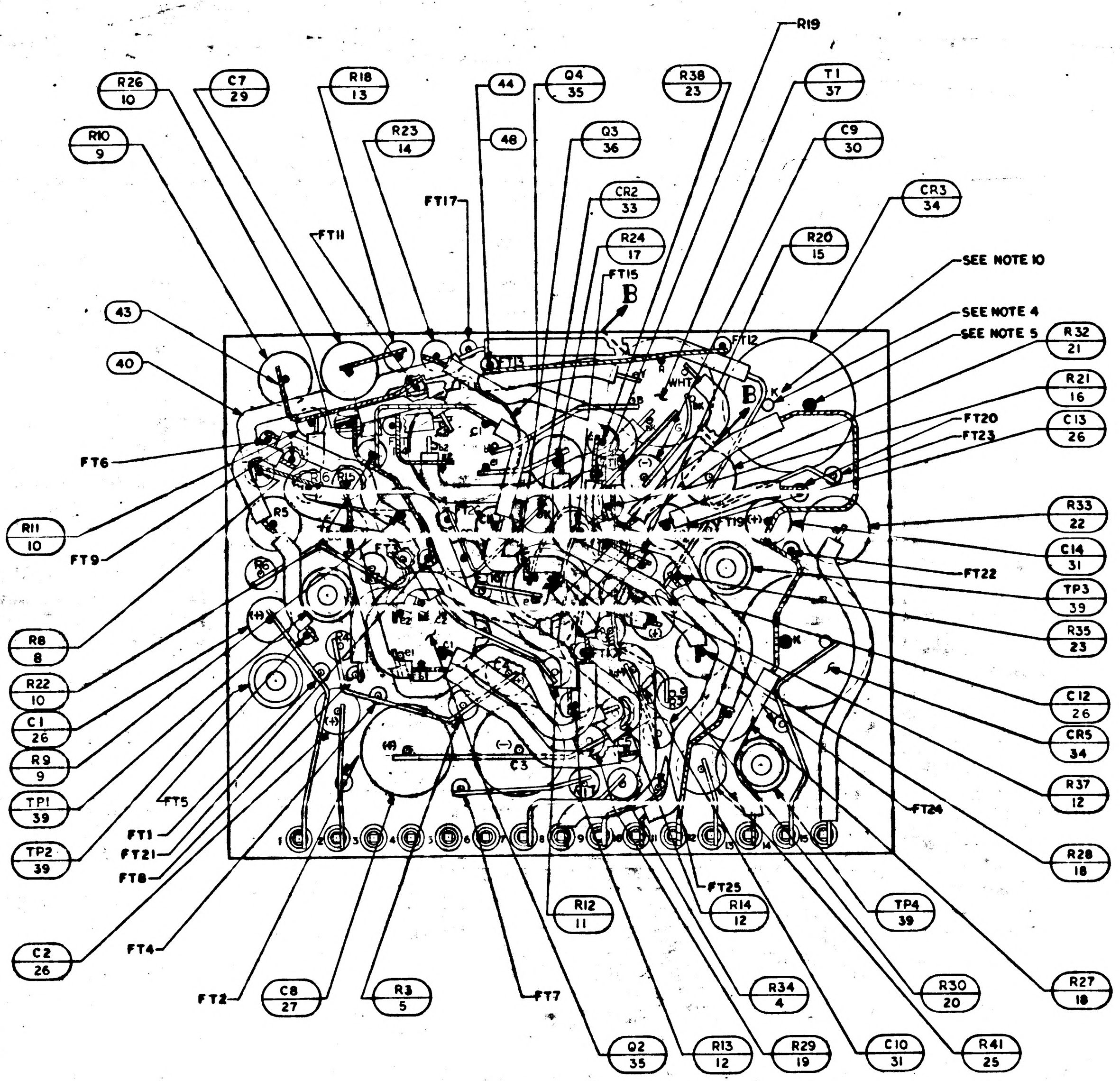
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R26 10
C7 29
R18 13
44
Q4 35
R38 23
T1 37
R10 9
R23 14
48
Q3 36
C9 30
FT17
CR2 33
CR3 34
FT11
R24 17
R20 15
FT15
SEE NOTE 10
B
43
SEE NOTE 4
SEE NOTE 5
FT12
R32 21
40
WHT
B
R21 16
FT20
C13 26
FT23
FT6
R33 22
R11 10
FT19
C14 31
FT9
FT22
TP3 39
R35 23
R8 8
K
R22 10
C1 26
C12 26
CR5 34
R9 9
C3
FT5
R37 12
TP1 39
FT24
FT1
FT21
TP2 39
FT8
FT25
R28 18
R12 11
R14 12
TP4 39
FT4
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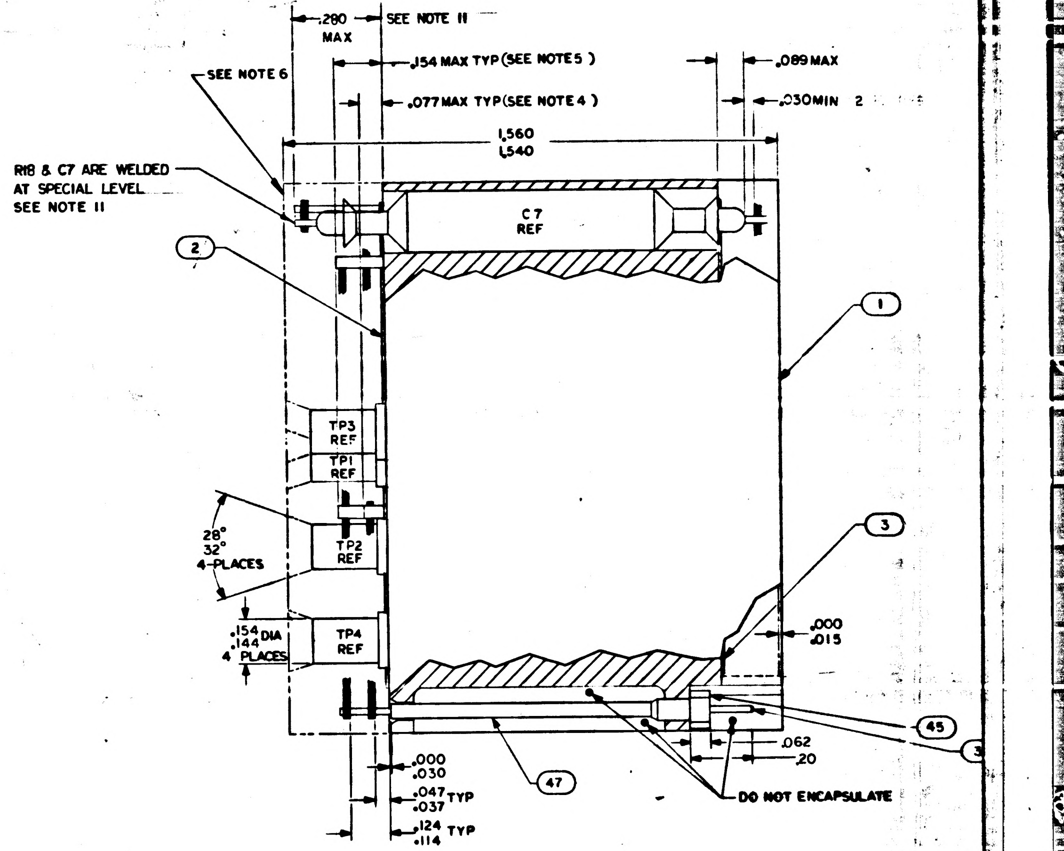
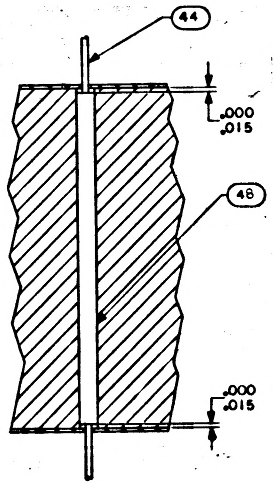
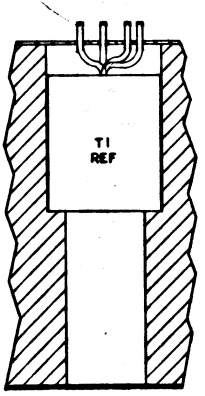
R29 19
C10 31
R41 25

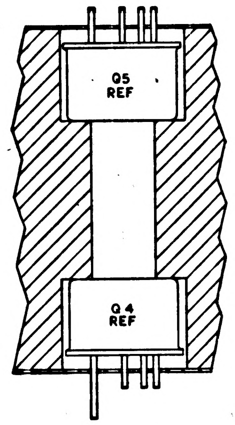

.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN
SEE NOTE 6
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.154
.144
DIA
4 PLACES
TP4 REF
.000
.015
45
3
.062
.20
.000
.030
.047
.037
TYP
47
.124
.114
TYP
DO NOT ENCAPSULATE


44
.000
.015
48
.000
.015

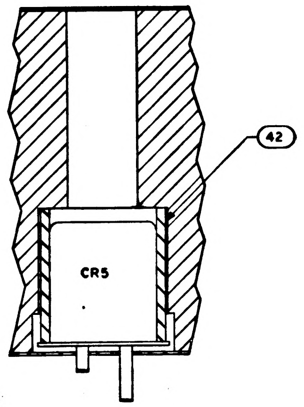
SECTION A-A



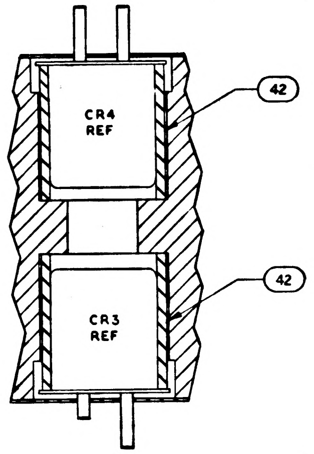
SECTION B-B


Q5 REF
Q4 REF

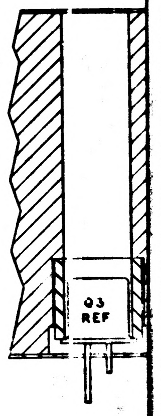
SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D


42
CR4 REF
42
CR3 REF

SECTION E-E



SECTION F-F

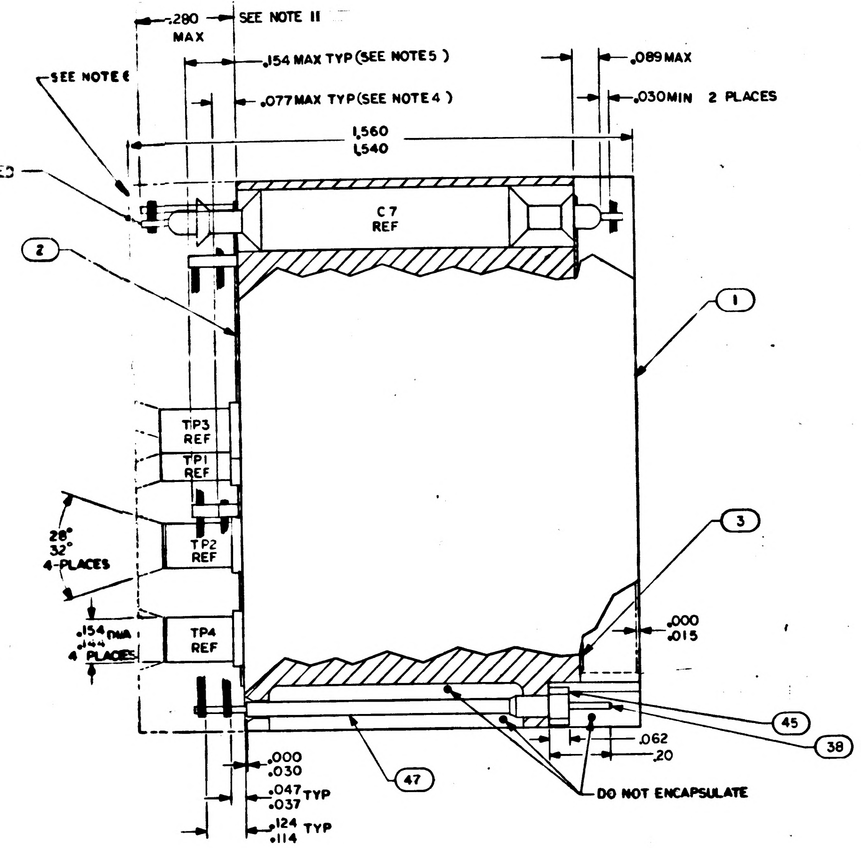
NOTES:

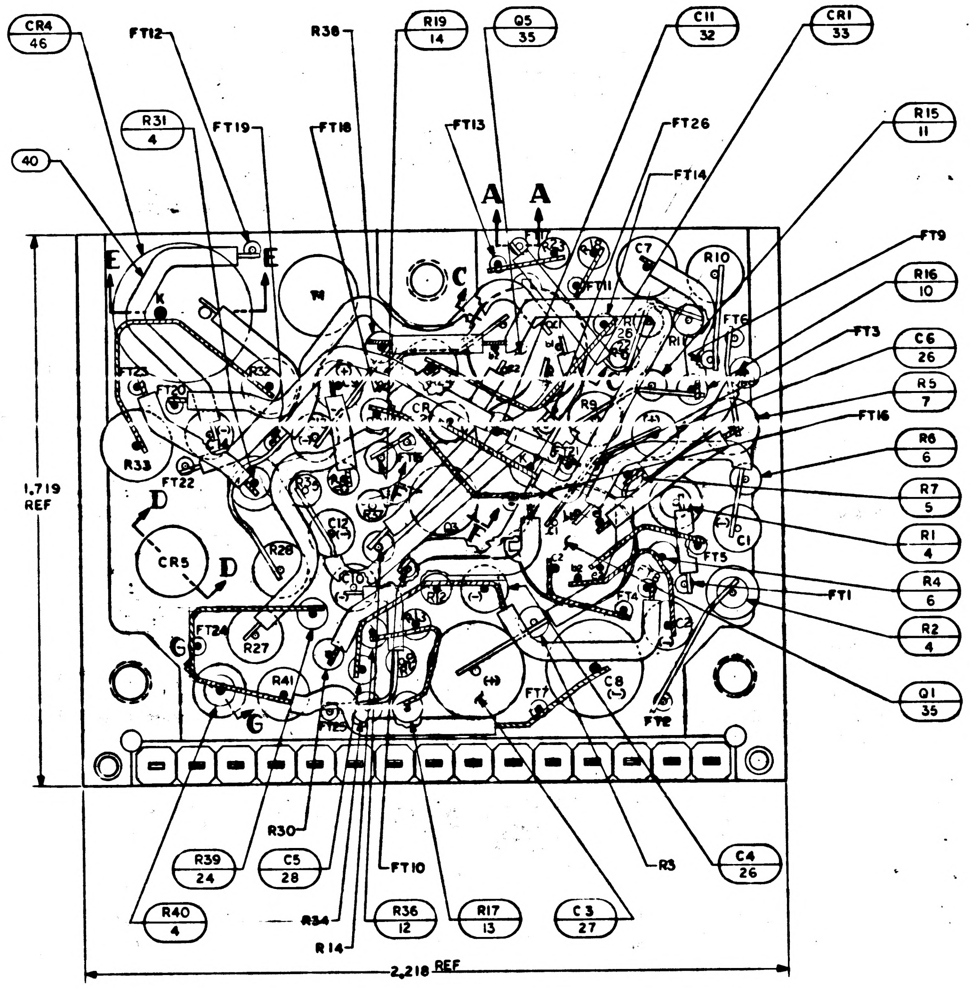
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO 39, FIND NO 41, FIND NO 42 AND FIND NO 46 PER ND 1002009
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE
11. ⊕ DENOTES SPECIAL LEVEL
12. + DEFINES POLARITY OF CAPACITOR.
13. MUST MEET REQUIRMENTS OF ND 1002136

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007017 E

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00460		
A	REVISED PER TDRR 00725	4-8-63	D.F. WK
B	REVISED PER TDRR 01005	4-25-63	D.T. WK
C	REVISED PER TDRR 01181	5-2-63	D.T. WK
D	REVISED PER TDRR 01711	6-21-63	J.J.M. WK
E	REVISED PER TDRR 04127	5 Oct 63	BPR WK


.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
SEE NOTE 6
.089 MAX
.030 MIN 2 PLACES
1.560
1.540
C7 REF
2
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28°
32°
4-PLACES
.154 DIA
.144
4 PLACES
3
.000
.015
45
38 SEE NOTE 13
.062
.20
47
DO NOT ENCAPSULATE
.000
.030
.047 TYP
.037
.124 TYP
.114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R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT26
R15 11
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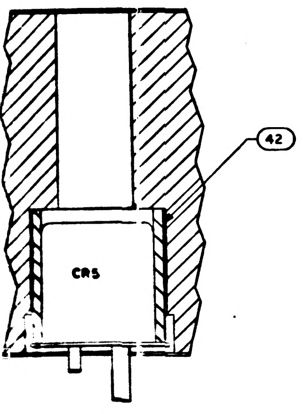
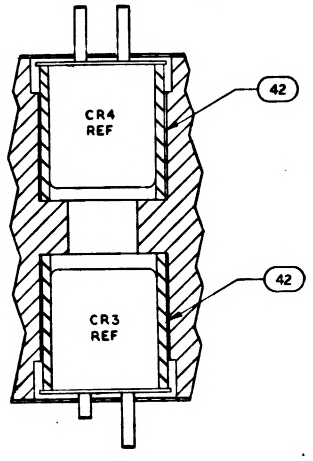
FT14
FT9
R16 10
FT3
C6 26
R5 7
FT16
R6 6
R7 5
R1 4
R4 6
FT1
R2 4
Q1 35
1.719 REF
CR5
D
E
G
R33
R28
R27
R41
C7
R10
FT20
FT22
FT23
FT24
FT25
FT5
FT4
FT7
FT2
C1
C8
R39 24
C5 28
R30
R40 4
R34
R14
R36 12
FT10
R17 13
C3 27
R3
C4 26
2.218 REF

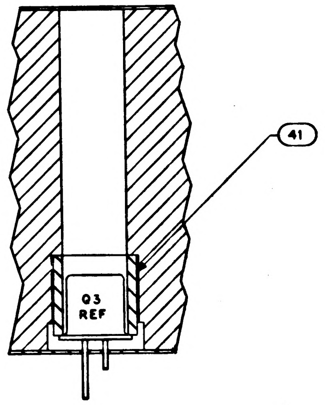
TP	COMPONENT
1	R1
2	R2
3	R31
4	R40



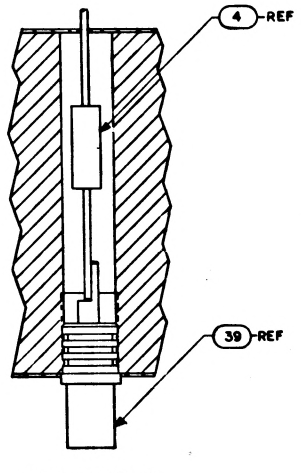
SECTION D-D


CR4 REF
42
CR3 REF
42

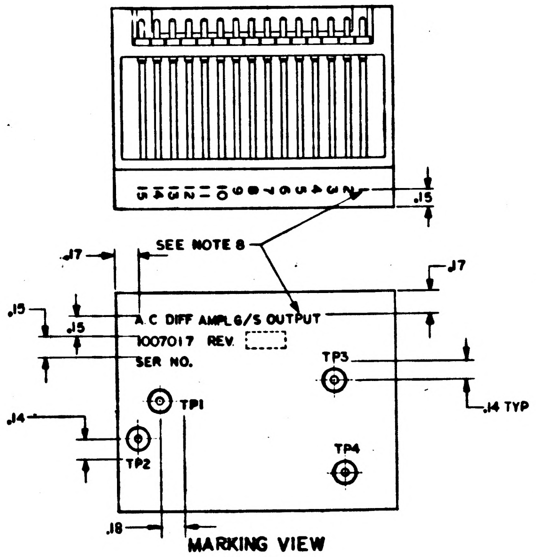
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO.39 & FIND NO.4


.15
SEE NOTE 8
.17
.17
.15
.15
A C DIFF AMPL G/S OUTPUT
1007017 REV.
SER NO.
TP3
TP1
TP2
TP4
.14
.14 TYP
.18

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010032	SCHEMATIC	REF
AR	1006776 22	INSULATION SLEEVING	48
AR	1006776-20	INSULATION SLEEVING	47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357	TRANSISTOR	36
4	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF ,200V, ±10%	29
1	1006777-16	CAPACITOR 220UUF ,100V, ±10%	28
2	1006755-83	CAPACITOR, 15UF 35V, ± 10%	27
6	1006755-65	CAPACITOR, 0.47 UF, 35V, ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 620Ω, 1/2W, ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W, ±2%	24
2	1010369-96	RESISTOR, FIXED, COMP, INS., 430K, 1/8W, ±5%	23
1	1010389-92	RESISTOR, 43Ω, 3W, ± 1%	22
1	1010312-033	RESISTOR, FIXED, M F, 36Ω, 2W, ± 5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED, W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED, COMP, INS., 300K, 1/8W, ±5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS., 240K, 1/8W, ±5	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP., INS. 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

1007017 E

MASTER

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN DATE 12-2-62
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL W. D. Rhine 5-22-63
MIT APPROVAL 27 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007017
SCALE 5/1 | WT | SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

F2

1007017

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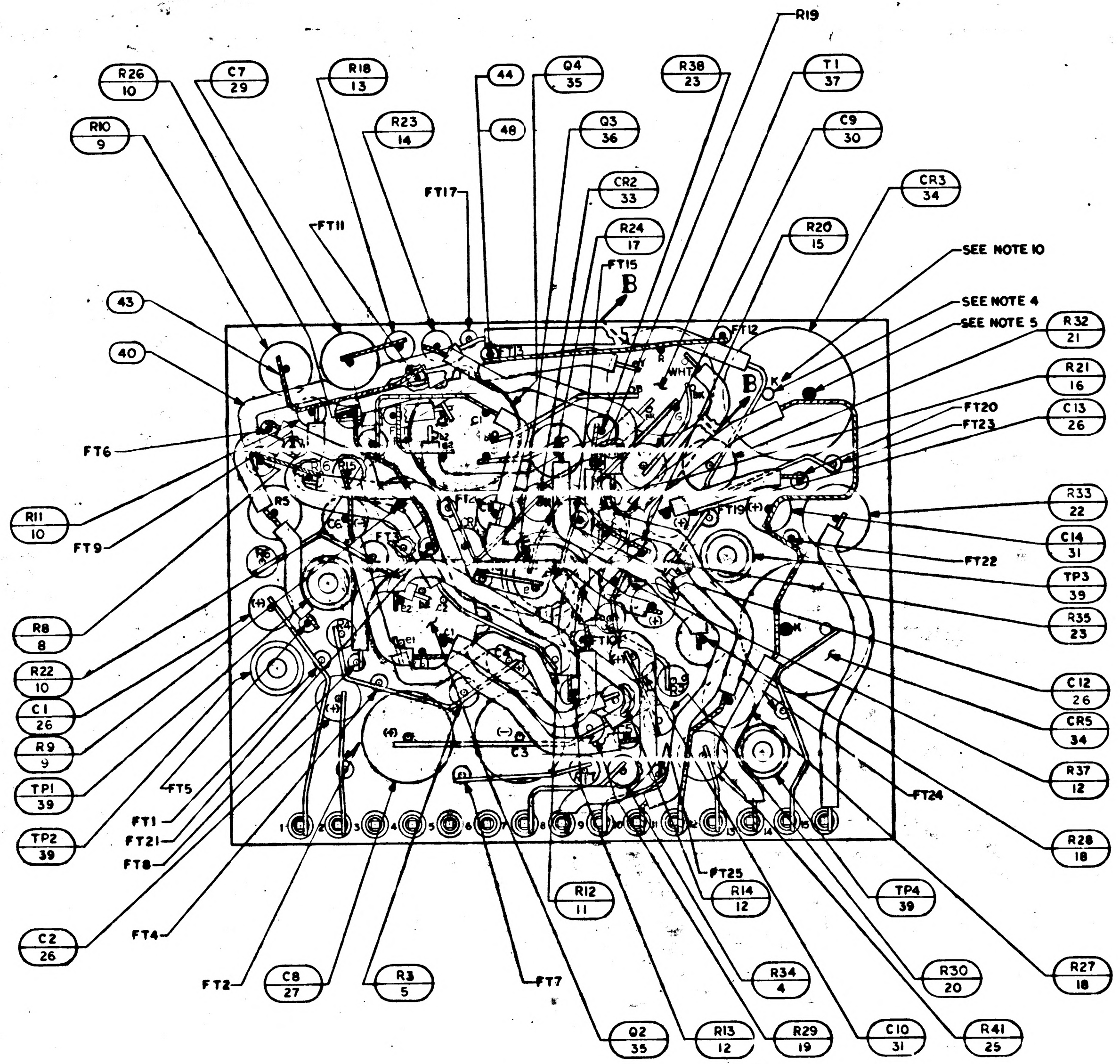
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Q4 35
R38 23
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R10 9
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Q3 36
C9 30
FT17
FT11
CR2 33
CR3 34
R24 17
FT15
R20 15
B
SEE NOTE 10
43
SEE NOTE 4
SEE NOTE 5
R32 21
40
R21 16
FT20
FT23
C13 26
FT6
R33 22
R11 10
FT9
C14 31
FT22
TP3 39
R35 23
R8 8
R22 10
C12 26
C1 26
CR5 34
R9 9
TP1 39
FT5
R37 12
FT1
FT21
TP2 39
FT8
FT24
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C2 26
R34 4
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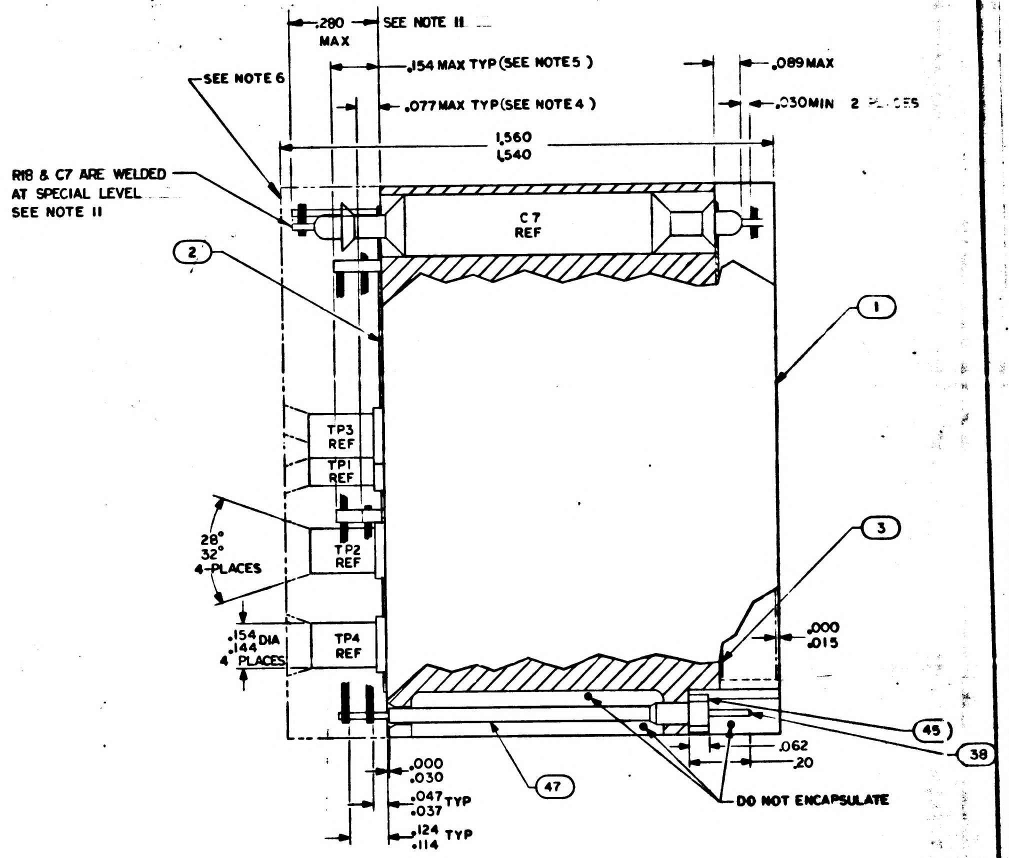
R41 25
R5
C6
C3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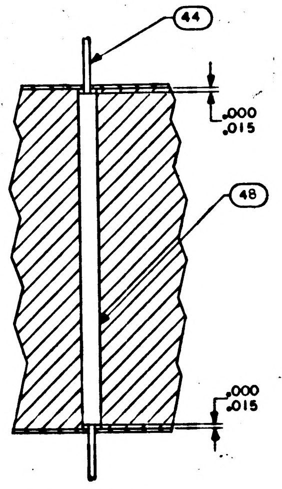
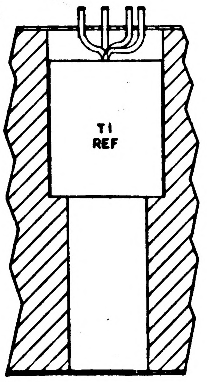
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.154
.144 DIA
4 PLACES
TP4 REF
.000
.015
45
38
.062
.20
47
.000
.030
.047
.037 TYP
.124
.114 TYP
DO NOT ENCAPSULATE

NOTES:

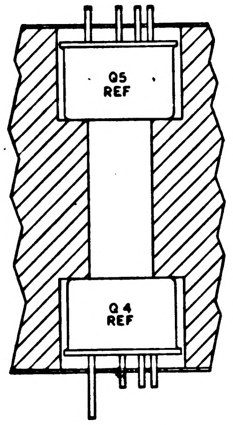
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO 39, FIND NO 41, FIND NO 42 AND FIND NO 46 PER ND 1002009
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE
11. ● DENOTES SPECIAL LEVEL
12. + DEFINES POLARITY OF CAPACITOR.
13. MUST MEET REQUIRMENTS OF ND 1002136


44
.000
.015
48
.000
.015

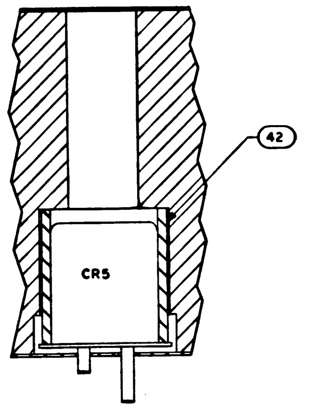
SECTION A-A



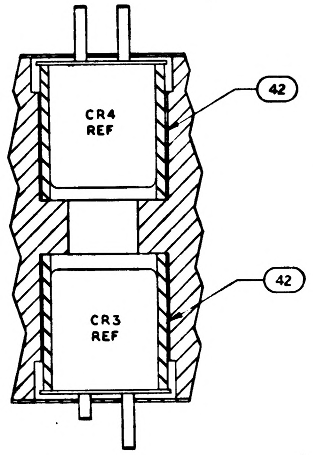
SECTION B-B


Q5 REF
Q4 REF

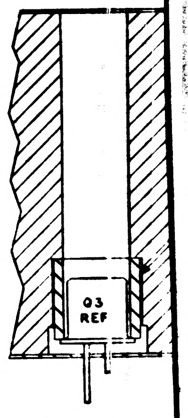
SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D


CR4 REF
42
42
CR3 REF

SECTION E-E



SECTION F-F

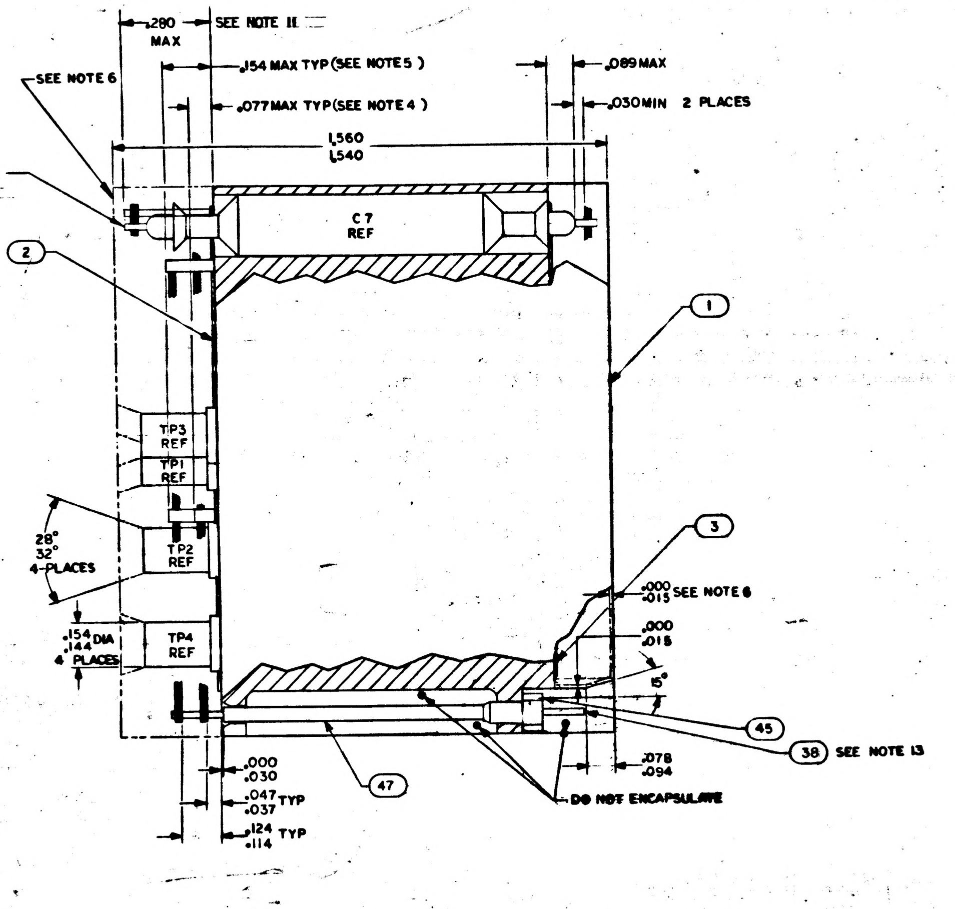
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

E1 1007017

1007017 F

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00925	7-2-63	D.F. WK
B	REVISED PER TDRR 01005	6-26-63	D.F. WK
C	REVISED PER TDRR 01181	5-2-63	D.F. WK
D	REVISED PER TDRR 01711	6-24-63	J.J.A. WK
E	REVISED PER TDRR 04127	[illegible] 63	[illegible] WK
F	REVISED PER TDRR 05482	27 [illegible] 63	[illegible] WK

REVISIONS TDRR 00466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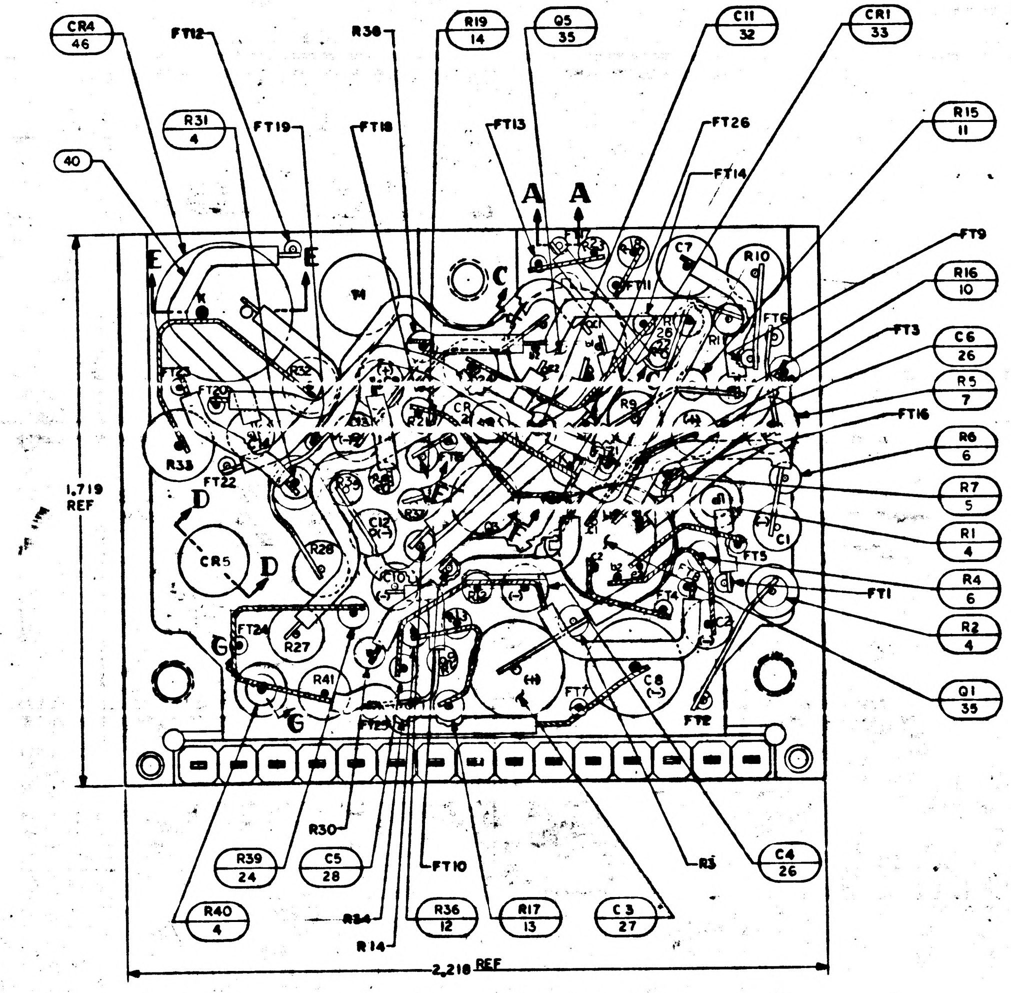
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
SEE NOTE 6
1.560
1.540
R19 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28° 32° 4-PLACES
.154 .144 DIA 4 PLACES
3
.000 .015 SEE NOTE 6
.000 .015
15°
45
38 SEE NOTE 13
47
.000 .030
.047 .037 TYP
.124 .114 TYP
.078 .094
DO NOT ENCAPSULATE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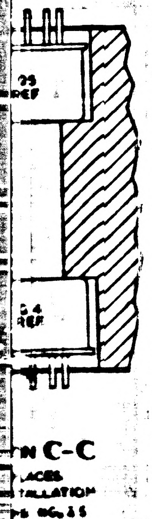
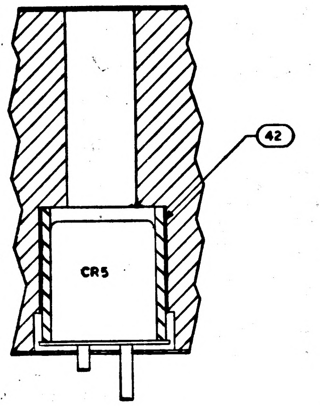
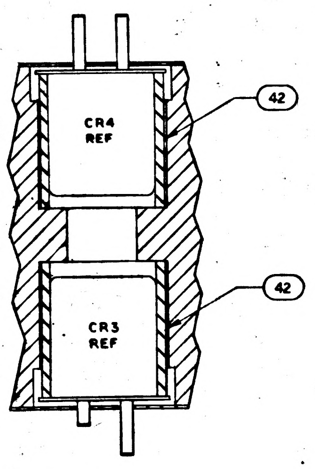
R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT26
FT14
R15 11
40
A A
E E
C
C7
R10
FT9
R16 10
FT6
FT3
C6 26
R5 7
FT16
R6 6
R7 5
R1 4
FT5
FT1
R4 6
R2 4
Q1 35
1.719 REF
R33
FT22
D D
CR5
R28
C12
R27
FT24
R41
G G
C8
FT7
FT2
R30
R39 24
C5 28
R40 4
R34
R14
FT10
R36 12
R17 13
C3 27
R3
C4 26
2.218 REF

TP	COMPONENT
1	R1
2	R2
3	R31
4	R40


N C-C
ACES
TALLATION



SECTION D-D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CR3 REF
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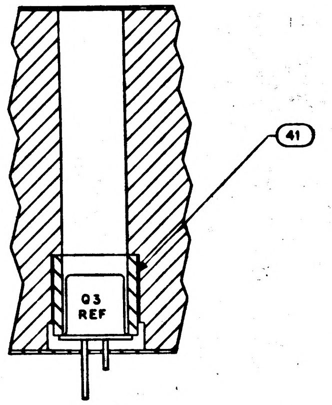
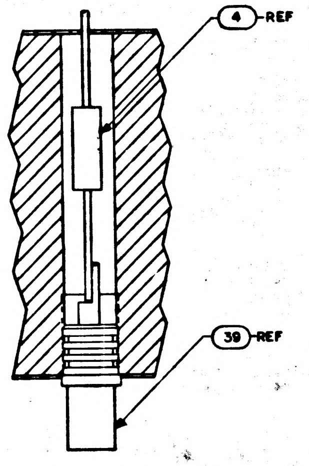
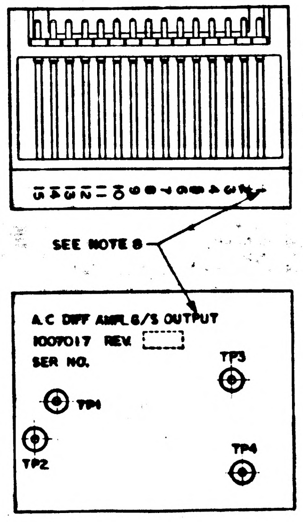
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO. 39 & FIND NO. 4


SEE NOTE 8
A.C DIFF AMPL G/S OUTPUT
1007017 REV.
SER NO.
TP1
TP2
TP3
TP4

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010032	SCHEMATIC	REF
AR	1006776 22	INSULATION SLEEVING	48
AR	1006776 20	INSULATION SLEEVING	47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357	TRANSISTOR	36
4	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF, 200V, ±10%	29
1	1006777-16	CAPACITOR, 220UUF, 100V, ±10%	28
2	1006755-83	CAPACITOR, 15UF, 35V, ± 10%	27
6	1006755-65	CAPACITOR, 0.47UF, 35V, ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 620Ω, 1/2W, ±5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W, ±2%	24
2	1010369-96	RESISTOR, FIXED, COMP, INS., 430K, 1/8W, ±5%	23
1	1010389-92	RESISTOR, 43Ω, 3W, ±1%	22
1	1010312-033	RESISTOR, FIXED, M F, 36Ω, 2W, ±5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ±2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ±2%	19
2	1010377-51	RESISTOR, FIXED, W W, 5K, 1/10W, ±1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ±1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED, COMP. INS., 300K, 1/8W, ±5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS., 240K, 1/8W, ±5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR, FIXED, COMP., INS., [illegible], 1/8W, ±5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

MASTER

1007154	
1007153	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ± .02 XXX ± .005
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 12-2-62
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 27 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

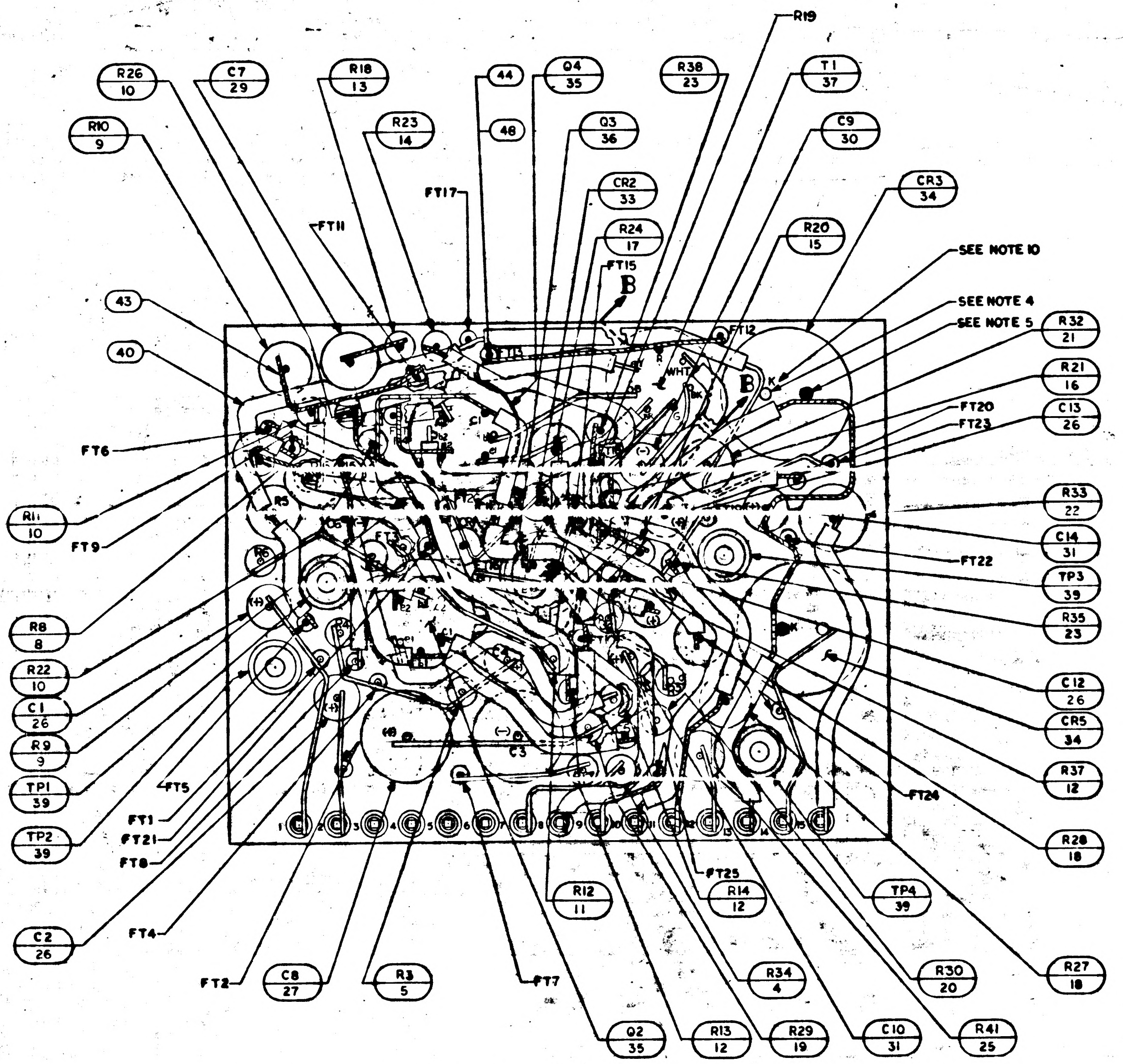
AC DIFFERENTIAL AMPLIFIER
G/S OUTPUT
ASSEMBLY

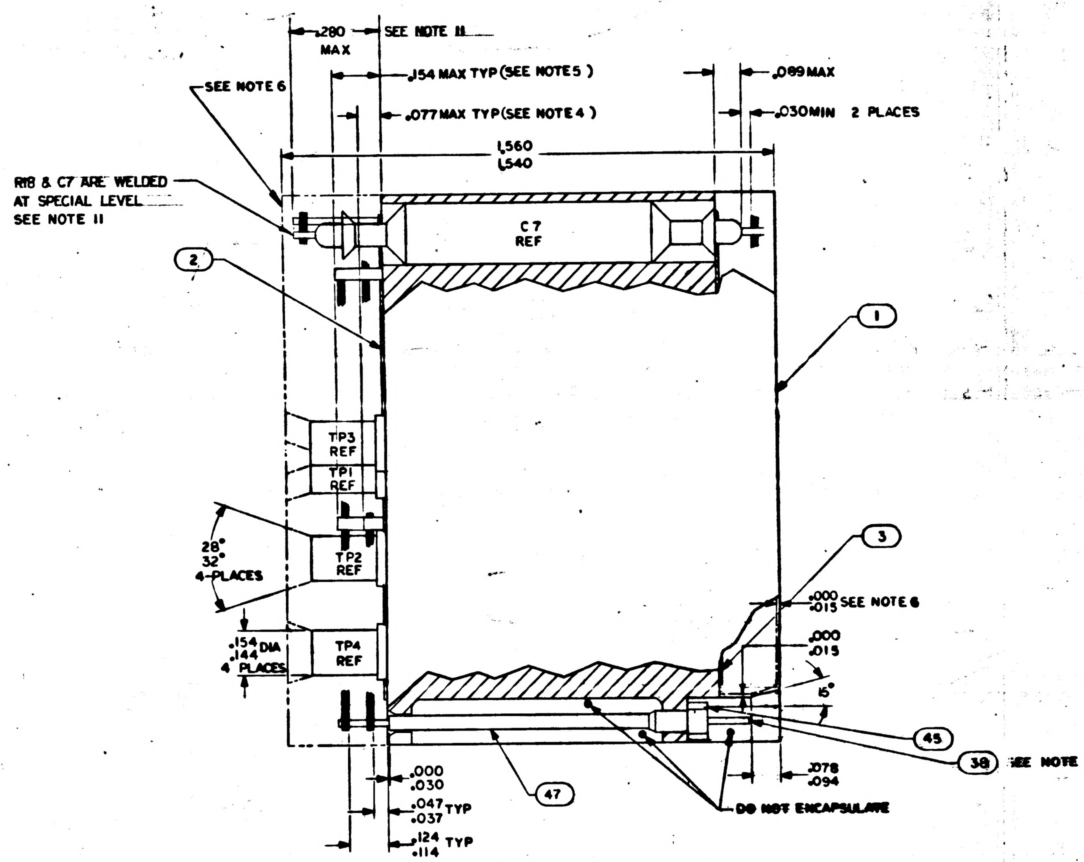
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007017
SCALE 5/1
WT
SHEET 1 OF 1

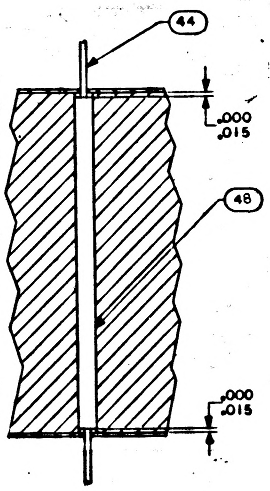
1007017 F

F-2

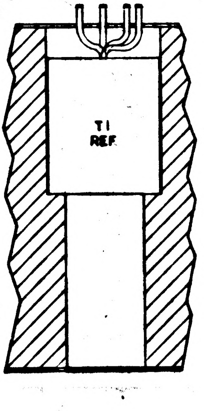
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.


R26 10
C7 29
R18 13
44
Q4 35
R38 23
T1 37
R19
R10 9
R23 14
48
Q3 36
C9 30
FT17
CR2 33
CR3 34
FT11
R24 17
R20 15
FT15
B
SEE NOTE 10
SEE NOTE 4
SEE NOTE 5
R32 21
FT12
43
40
R21 16
FT20
C13 26
FT23
FT6
R33 22
R11 10
FT9
C14 31
FT22
TP3 39
R35 23
R8 8
R22 10
C12 26
C1 26
CR5 34
R9 9
R37 12
TP1 39
FT5
FT24
TP2 39
FT1
FT21
FT8
R28 18
C2 26
FT4
R12 11
R14 12
FT25
TP4 39
R27 18
C8 27
R3 5
FT2
FT7
R34 4
R30 20
Q2 35
R13 12
R29 19
C10 31
R41 25
C3
R5
K
(+)
(−)

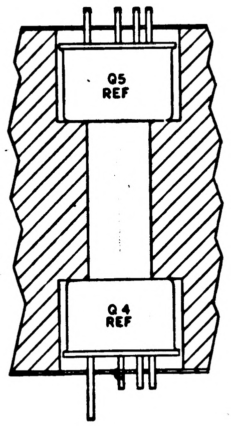

.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
SEE NOTE 6
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28°
32°
4-PLACES
.154
.144 DIA
4 PLACES
3
.000
.015 SEE NOTE 6
.000
.015
15°
45
38 SEE NOTE 13
.078
.094
47
.000
.030
.047
.037 TYP
.124
.114 TYP
DO NOT ENCAPSULATE


44
.000
.015
48
.000
.015

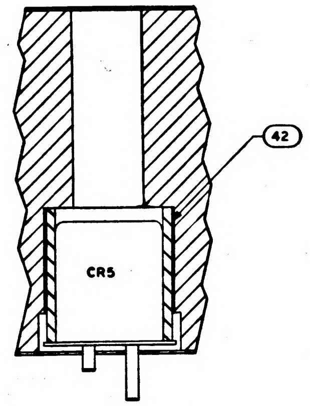
SECTION A-A



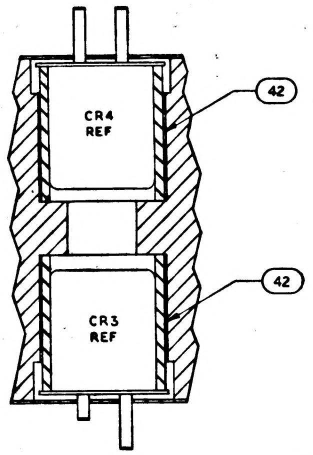
SECTION B-B


Q5 REF
Q4 REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D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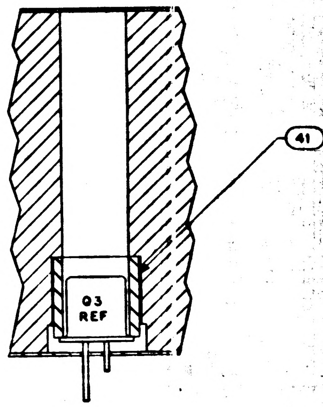
42
CR3 REF
42

SECTION E-E



SECTION F-F

NOTES:

1. INTERPRET DRAWING IN ACC DANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL CONNECTIONS TO BE M BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002005~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO. 39, FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002002. CENTRILIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE.
11. ◐ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136

F-1

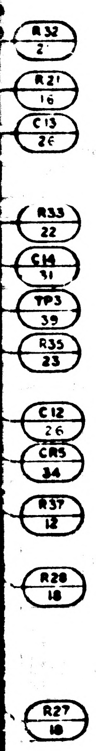
10070017

INCHES
0
PHOTOGRAPHIC SCALE ONLY

1007017 G

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00725	4-2-63	D.F.
B	REVISED PER TDRR 01005	[illegible]	D.F.
C	REVISED PER TDRR 01181	5-2-63	D.F.
D	REVISED PER TDRR 01711	6-21-63	W.M.
E	REVISED PER TDRR 04127	[illegible] -63	[illegible]
F	REVISED PER TDRR 05482	[illegible] 63	[illegible]
G	REVISED PER TDRR 06541	[illegible] 64	[illegible]

REVISIONS TDSR 694


R32
2
R21
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C13
26
R33
22
C14
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TP3
39
R35
23
C12
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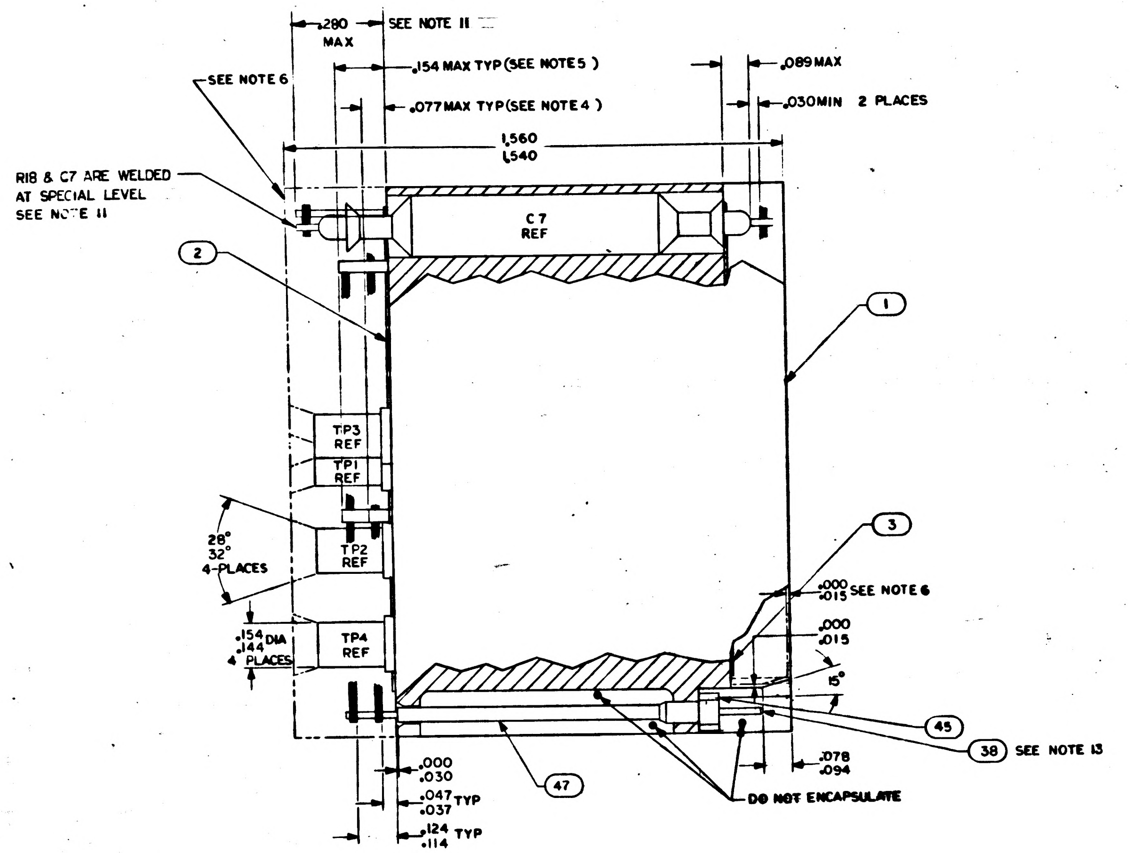
R37
12
R28
18
R27
18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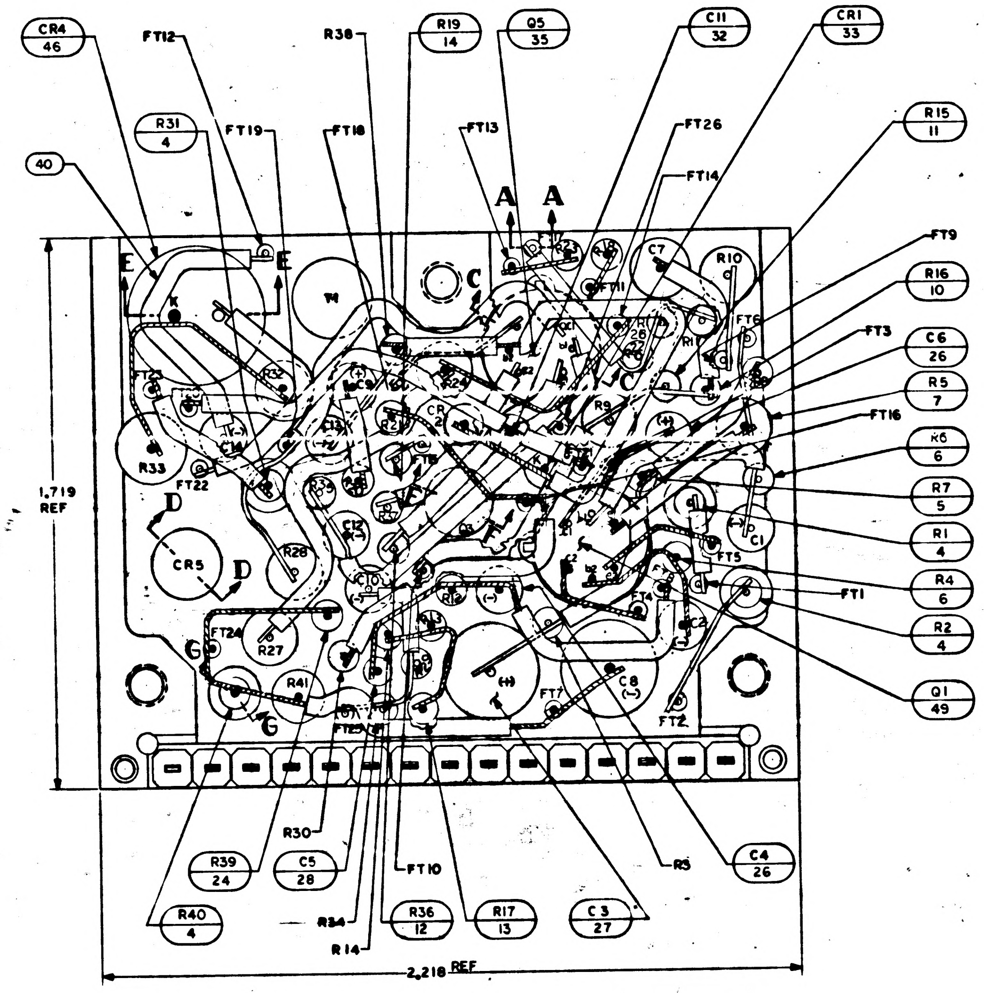
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
SEE NOTE 6
.089 MAX
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28°
32°
4-PLACES
.154
.144 DIA
4 PLACES
3
.000
.015 SEE NOTE 6
.000
.015
15°
45
38 SEE NOTE 13
.078
.094
47
DO NOT ENCAPSULATE
.000
.030
.047
.037 TYP
.124
.114 TYP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FT12
R38
R19
14
Q5
35
C11
32
CR1
33
R31
4
FT19
FT18
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FT26
FT14
40
R15
11
A
A
FT9
R16
10
FT3
C6
26
R5
7
FT16
R6
6
R7
5
R1
4
R4
6
FT1
R2
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Q1
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C4
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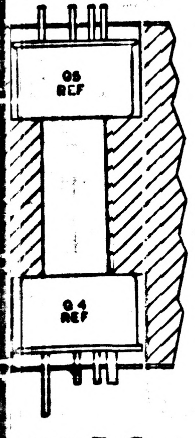
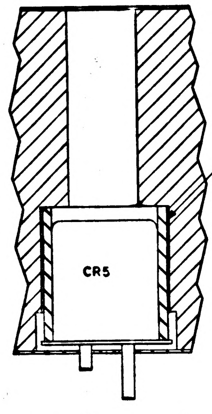
R5
R39
24
C5
28
FT10
R30
R34
R36
12
R17
13
C3
27
R14
R40
4
1,719 REF
2,218 REF
E
E
C
D
D
G
G
CR5
R33
FT22
FT24
R27
R41
C8
FT7
FT2
C7
R10
C1
FT5

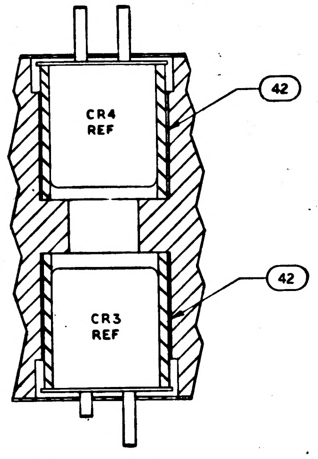
TP	COMPONENT
1	R1
2	R2
3	R31
4	R40


Q5 REF
Q4 REF

ECTION C–C
2-PLACES
P INSTALLATION
IB FIND NO. 35



SECTION D–D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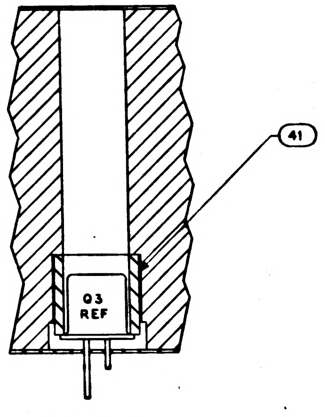
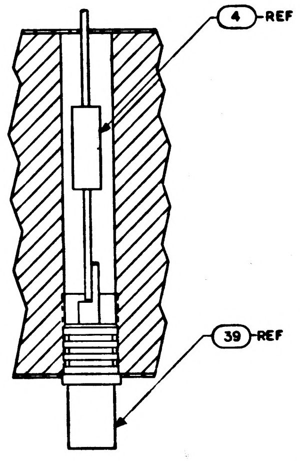
CR3 REF
42

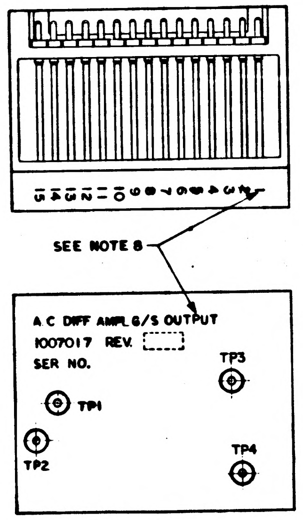
SECTION E–E



SECTION F–F



SECTION G–G
4-PLACES
TYP INSTALLATION
FOR FIND NO.39 & FIND NO.4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SEE NOTE 8
A.C DIFF AMPL G/S OUTPUT
1007017 REV.
SER NO.
TP1
TP2
TP3
TP4

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1010376-2	TRANSISTOR	49
☒	1010032	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	48
AR	1006776-20	INSULATION SLEEVING	47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357 -1	TRANSISTOR	36
2	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF ,200V, ±10%	29
1	1006777-16	CAPACITOR, 220UUF ,100V ±10%	28
2	1006755-83	CAPACITOR, 15UF 35V, ± 10%	27
6	1006755-65	CAPACITOR, 0.47UF, 35V, ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 620Ω, 1/2W, ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W, ±2%	24
2	1010369-96	RESISTOR, FIXED, COMP, INS, 430K, 1/8W, ±5%	23
1	1010389-92	RESISTOR, 43Ω, 3W, ±1%	22
1	1010312-033	RESISTOR, FIXED, M F, 36Ω, 2W, ±5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED, W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED, COMP, INS, 300K, [illegible]	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP, INS, [illegible]	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR, FIXED, COMP, INS, 470K, [illegible]	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED, M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN [illegible] DATE 12-2-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL W. J. R[illegible] 3-22-63
MIT APPROVAL [illegible] 27 Feb 63

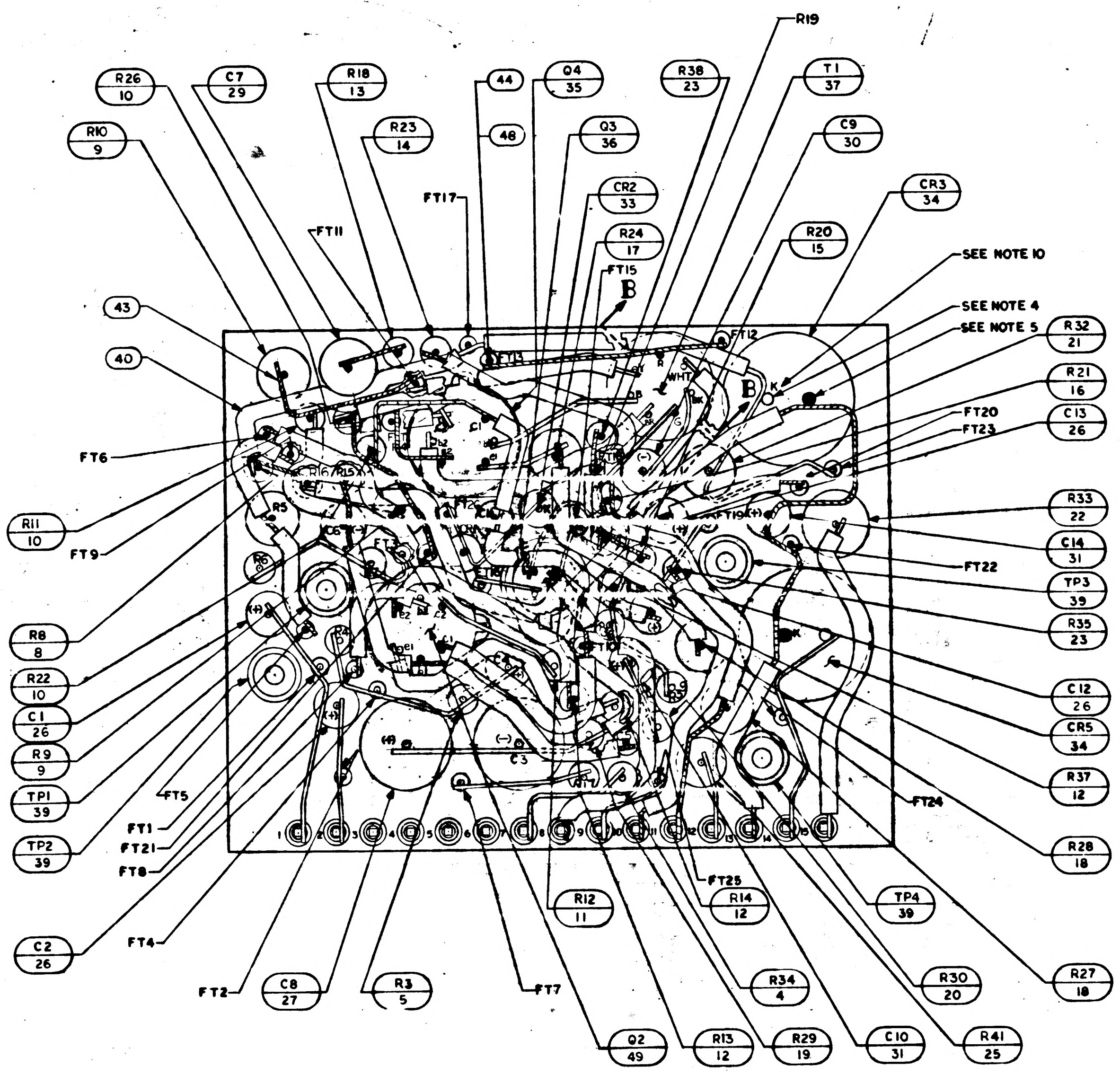
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007017
SCALE 5/1
WT
SHEET 1

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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48
Q4 35
Q3 36
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T1 37
C9 30
R10 9
FT11
FT17
CR2 33
R24 17
FT15
R20 15
CR3 34
SEE NOTE 10
SEE NOTE 4
SEE NOTE 5
R32 21
R21 16
FT20
FT23
C13 26
43
40
FT6
FT12
B
R11 10
FT9
R33 22
C14 31
FT22
TP3 39
R35 23
R8 8
R22 10
C1 26
R9 9
TP1 39
TP2 39
FT5
FT1
FT21
FT8
C12 26
CR5 34
R37 12
FT24
R28 18
C2 26
FT4
FT2
C8 27
R3 5
FT7
R12 11
R14 12
FT25
TP4 39
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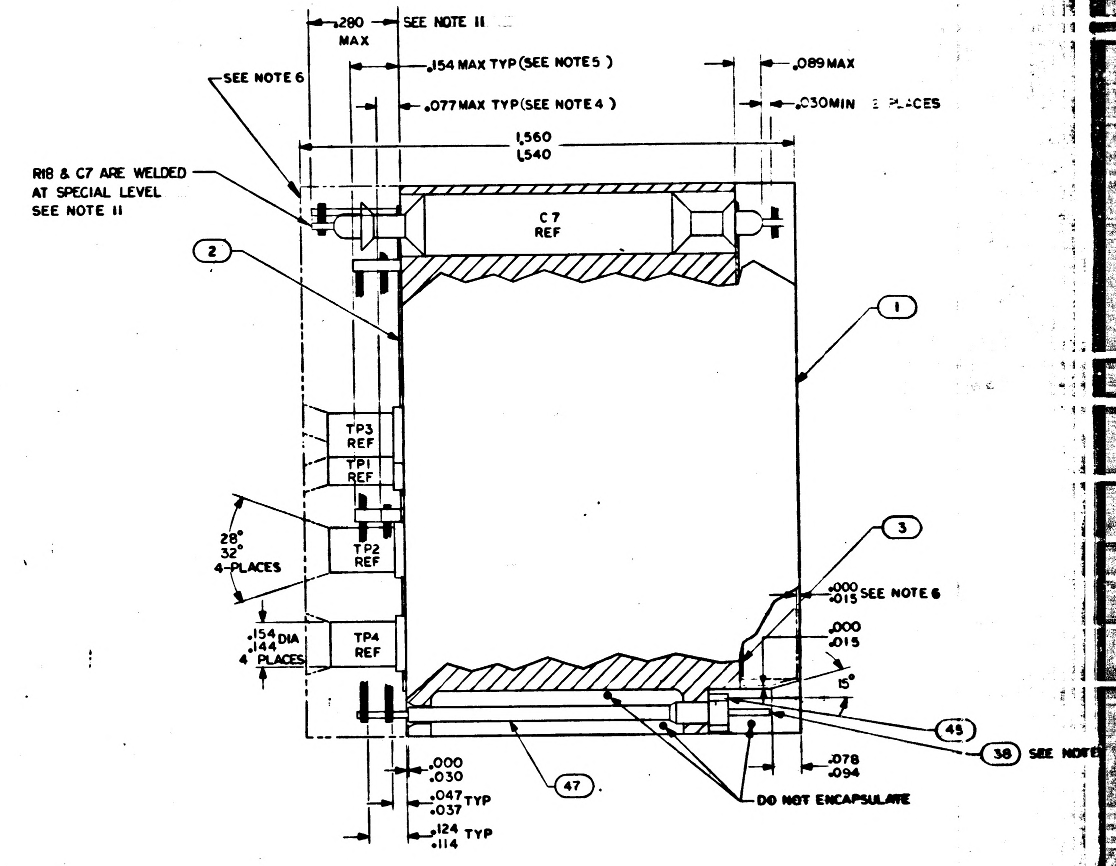
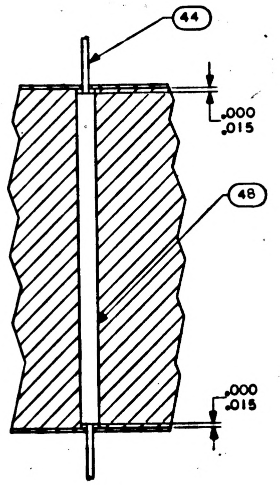
C10 31
R41 25
C3
C1
R5
WHT
K


.280 MAX
SEE NOTE 11
SEE NOTE 6
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28°
32°
4-PLACES
.154
.144 DIA
4 PLACES
3
.000
.015 SEE NOTE 6
.000
.015
15°
45
38 SEE NOTE
.000
.030
.047
.037 TYP
.124
.114 TYP
47
.078
.094
DO NOT ENCAPSULATE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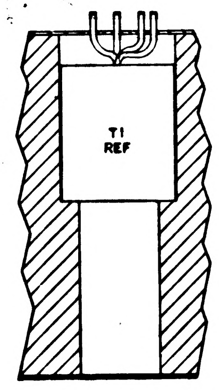
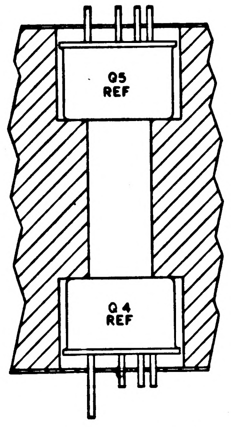
48
.000
.015

SECTION A-A



SECTION B-B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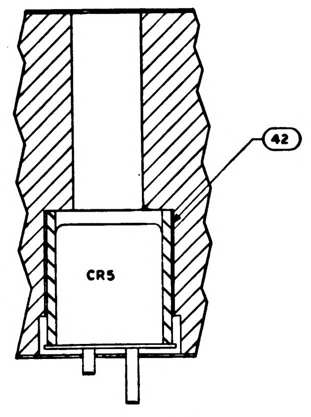
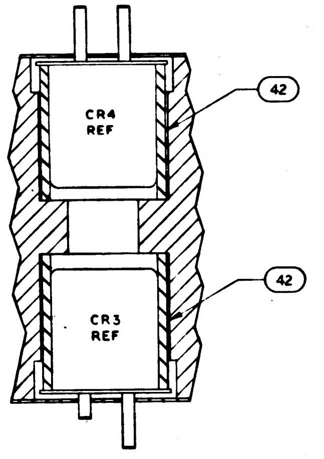
REF
Q4
REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D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REF
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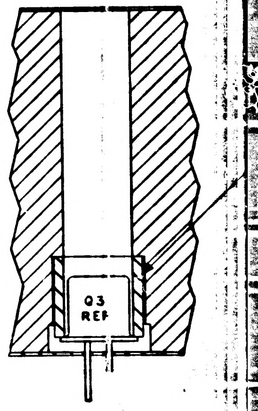
42
CR3
REF

SECTION E-E



SECTION F-F

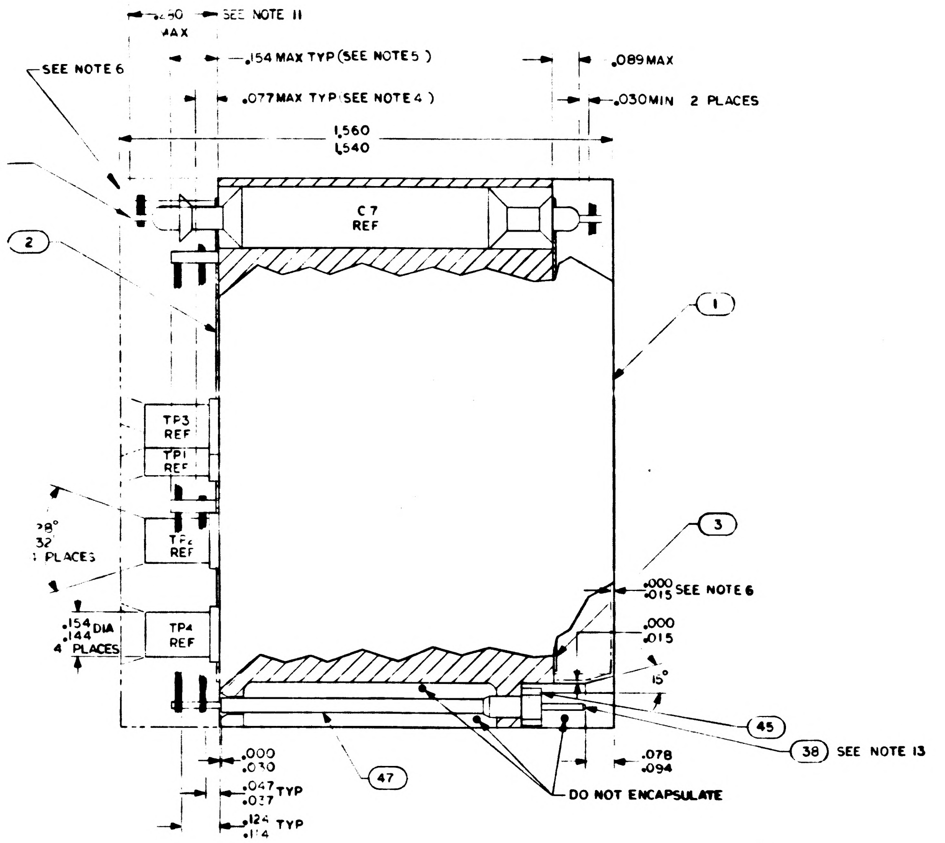
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO. 39, FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002002. CENTRILIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE.
11. ◐ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136

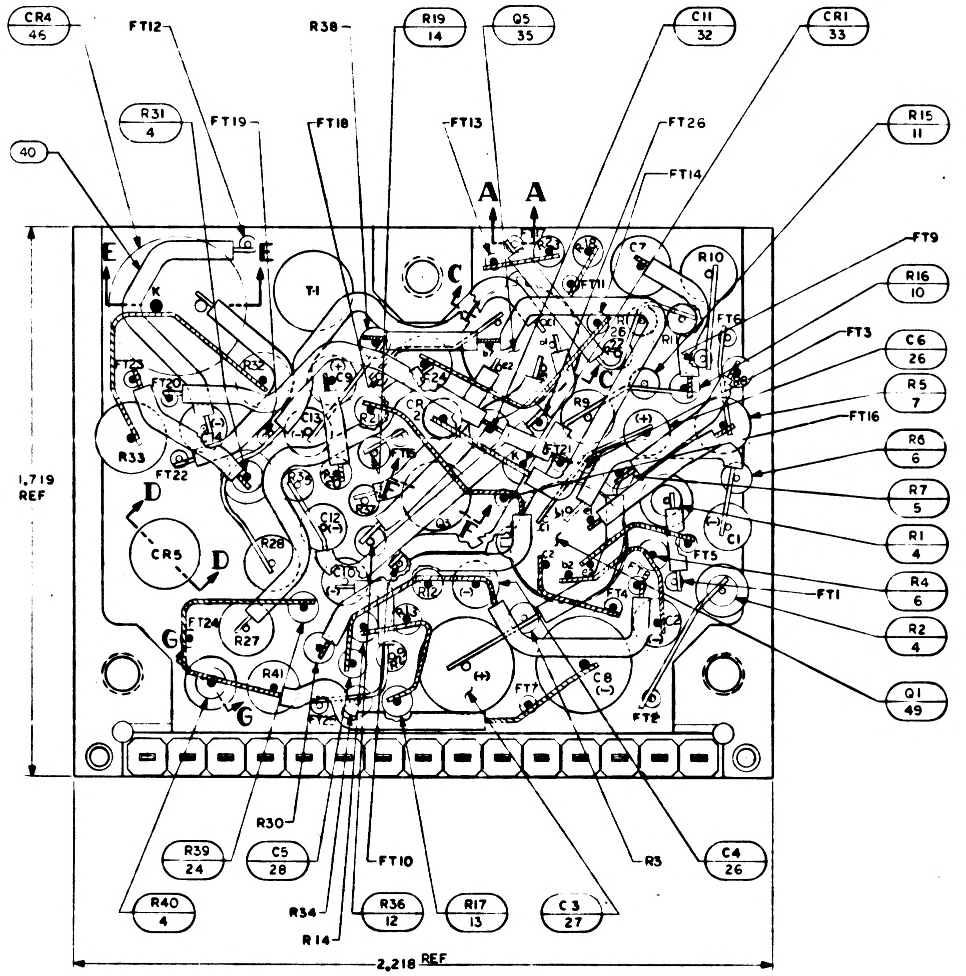
1007017 G

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00456		
A	REVISED PER TDRR 00725	1-2-63	DT WK
B	REVISED PER TDRR 01005	4-25-63	DT WK
C	REVISED PER TDRR 01181	5-2-63	DT WK
D	REVISED PER TDRR 01711	6-24-63	WK
E	REVISED PER TDRR 04127	25 Oct 63	WK
F	REVISED PER TDRR 05482	27 Dec 63	WK
G	REVISED PER TDRR 06641		
H	REVISED PER TDRR [illegible]009	2 MAR 64	AU

TP	COMPONENT
1	R1
2	R2
3	R31
4	R40



.240 MAX
SEE NOTE 11
SEE NOTE 6
.154 MAX TYP (SEE NOTE 5)
.089 MAX
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
SEE NOTE 11
2
C7 REF
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28°
32
4 PLACES
.154
.144 DIA
4 PLACES
3
.000
.015 SEE NOTE 6
.000
.015
15°
45
38 SEE NOTE 13
47
.000
.030
.047
.037 TYP
.124
.114 TYP
.078
.094
DO NOT ENCAPSULATE



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R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT26
R15 11
40
FT14
A
A
E
E
T1
C
C7
R10
FT9
FT11
R16 10
FT6
FT3
C6 26
FT20
R32
R5 7
FT16
R33
FT22
1.719 REF
R6 6
D
R7 5
R1 4
CR5
D
R28
C12
C1
FT5
R4 6
FT24
FT1
R27
G
R2 4
R41
C8
FT7
FT8
Q1 49
G
FT2
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FT10
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R30
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R36 12
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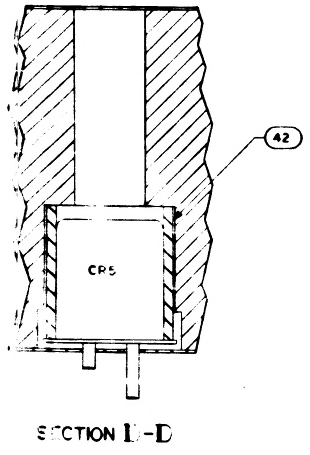
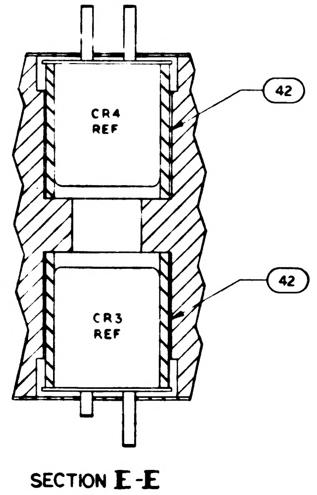
C3 27
R14
2.218 REF

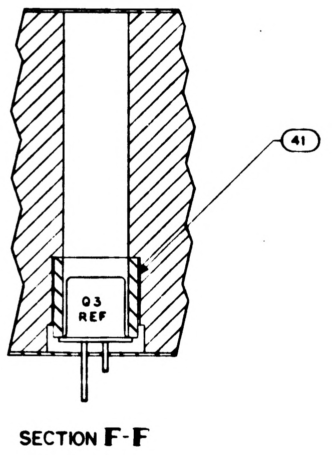


SECTION D-D

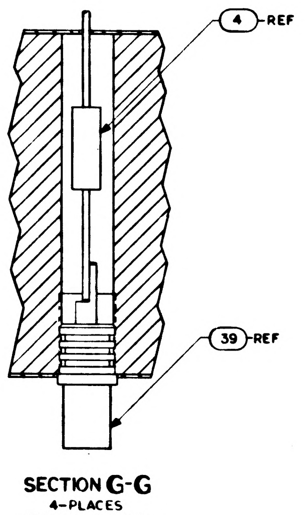


CR4 REF
42
CR3 REF
42

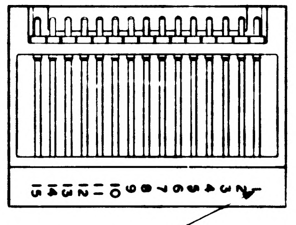
SECTION E-E

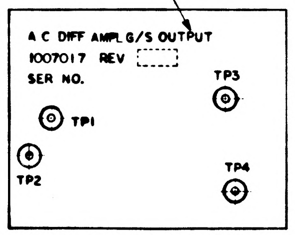


SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO. 39 & FIND NO. 4


SEE NOTE 8


A C DIFF AMPL G/S OUTPUT
1007017 REV
SER NO.

TP1
TP2
TP3
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MARKING VIEW
SCALE 2/1

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4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
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1	1010389-92	RESISTOR, 43Ω, 3W, ±1%	22
1	1010312-033	RESISTOR, FIXED, M [illegible]36Ω, 2W, ±5%	21
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4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS., 240K, 1/8W, ±5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR, FIXED, COMP., INS. 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
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1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN DATE 12-2-63
CHECKED
APPROVAL
APPROVAL 26 FEB 63
NASA APPROVAL 3-27-63
MIT APPROVAL 27 Feb 63

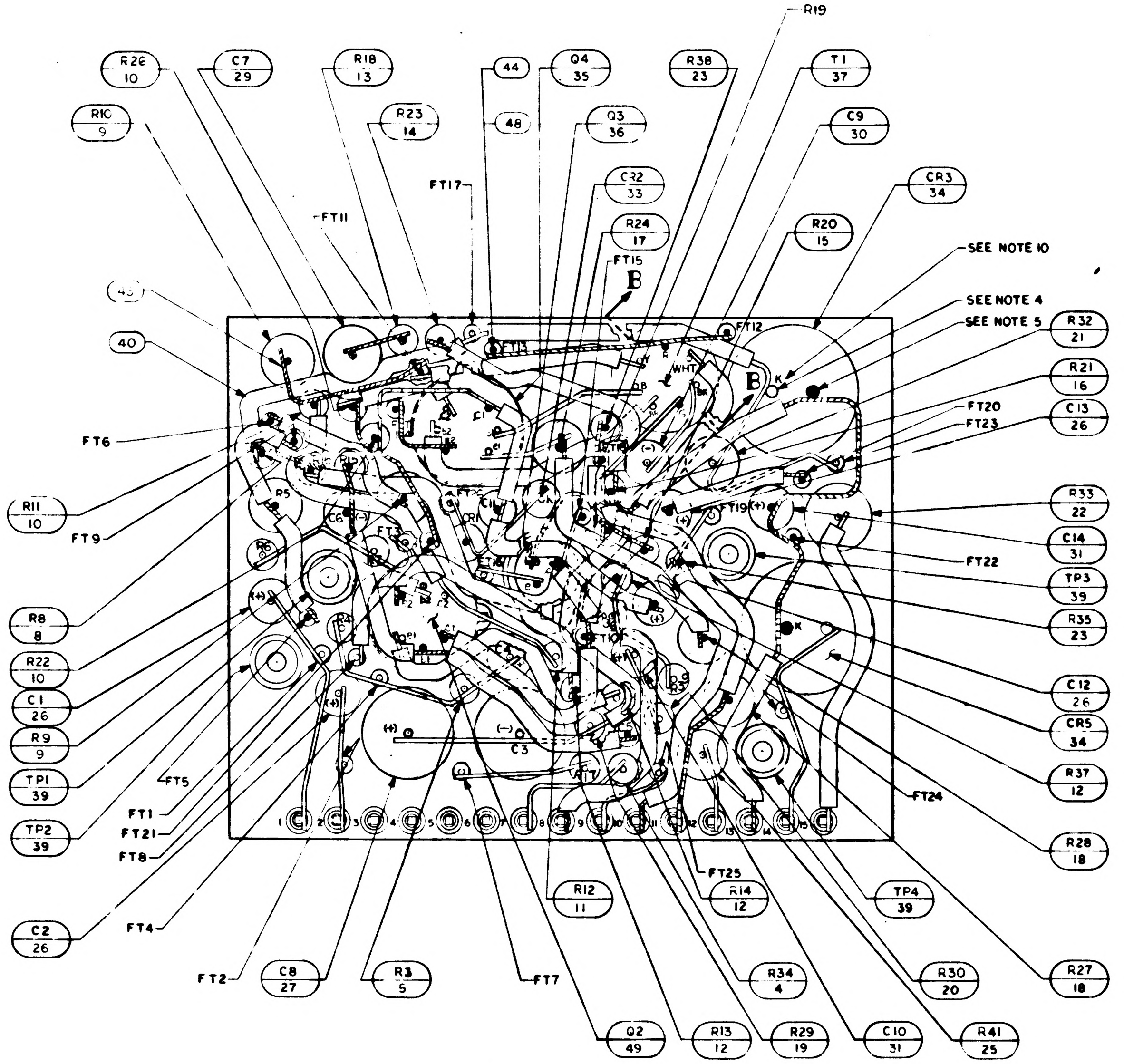
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO 1007017
SCALE 5/1
WT
SHEET 1 OF 1

1007017

27 1007017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R38 23
T1 37
R10 9
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Q3 36
C9 30
FT17
CR2 33
CR3 34
FT11
R24 17
R20 15
FT15
B
SEE NOTE 10
SEE NOTE 4
SEE NOTE 5
40
FT12
WHT
B
K
R32 21
R21 16
FT20
FT23
C13 26
FT6
R11 10
FT9
FT19
R33 22
C14 31
FT22
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R8 8
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FT21
FT8
FT4
C2 26
R35 23
C12 26
CR5 34
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FT25
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FT2
C8 27
R3 5
FT7
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R27 18
Q2 49
R13 12
R29 19
C10 31
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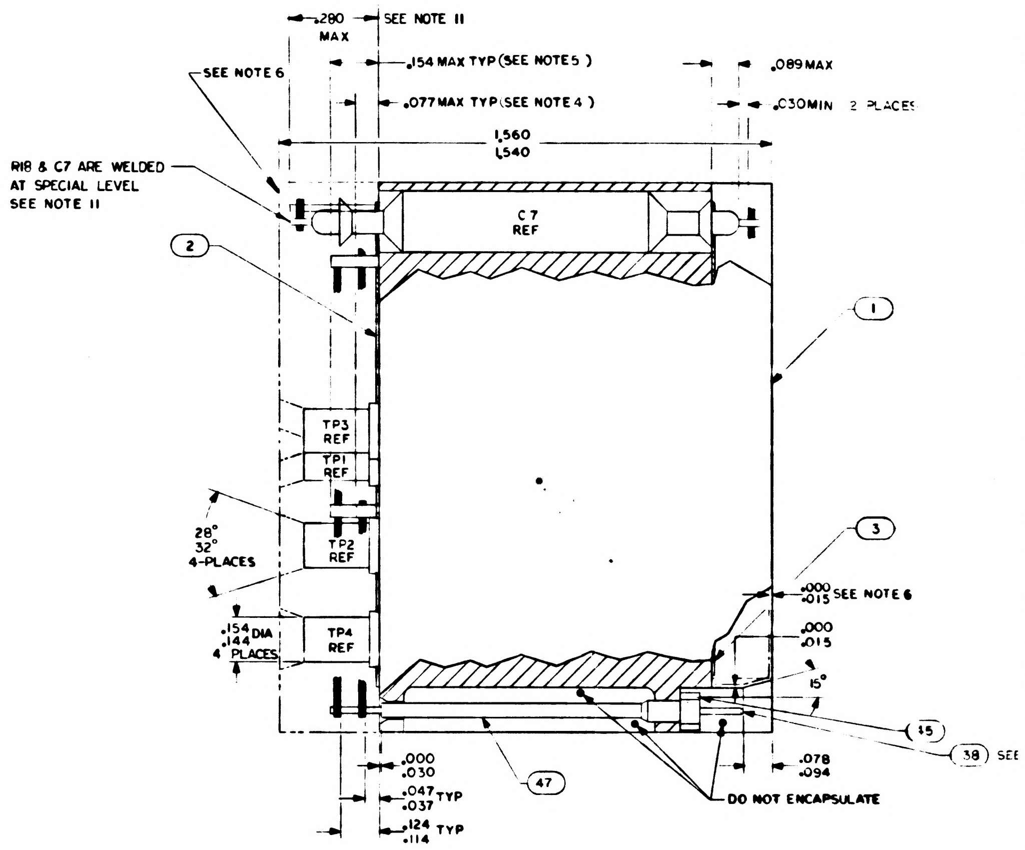
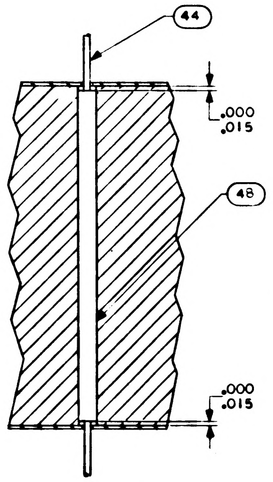

.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.000
.015 SEE NOTE 6
.000
.015
.154
.144 DIA
4 PLACES
TP4 REF
15°
35
38
SEE
.000
.030
.047
.037 TYP
.124
.114 TYP
47
.078
.094
DO NOT ENCAPSULATE

NOTES:

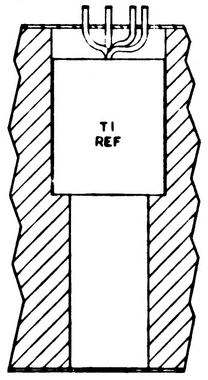
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING

.ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

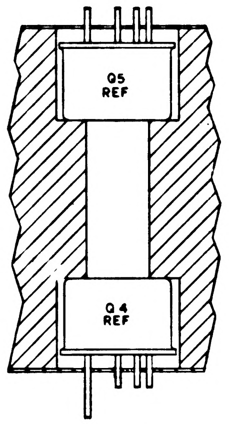
7. STAKE FIND NO. 4 THRU FIND NO. 37. FIND NO. 39. FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002002. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE.
11. ◕ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136


44
.000
.015
48
.000
.015

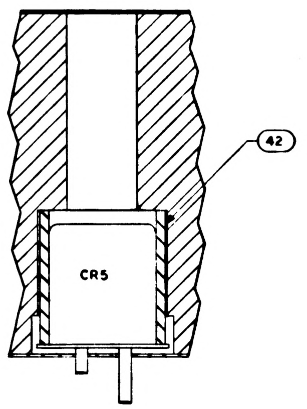
SECTION A-A



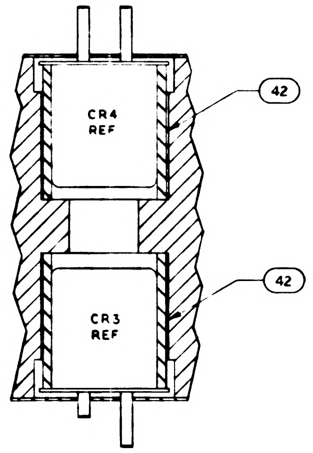
SECTION B-B


Q5 REF
Q4 REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D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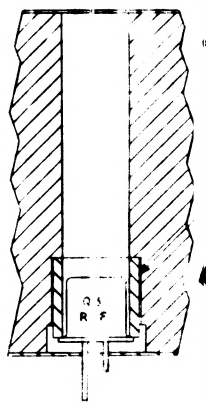
CR4 REF
42
CR3 REF

SECTION E-E

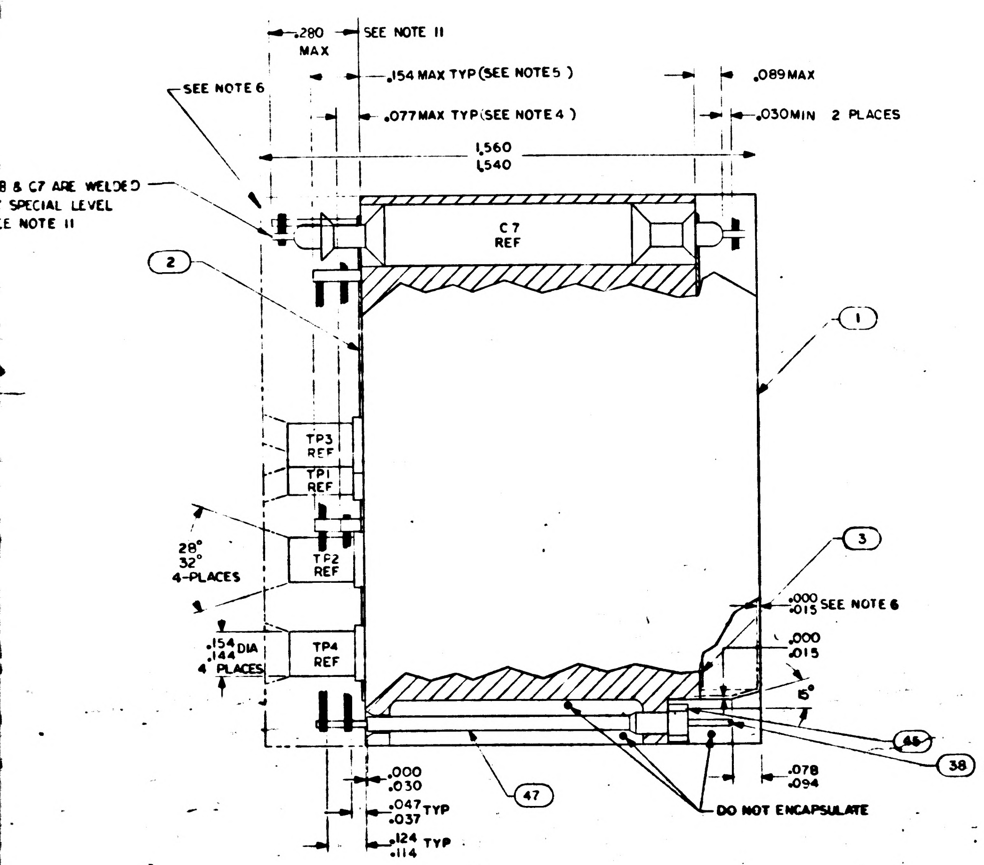


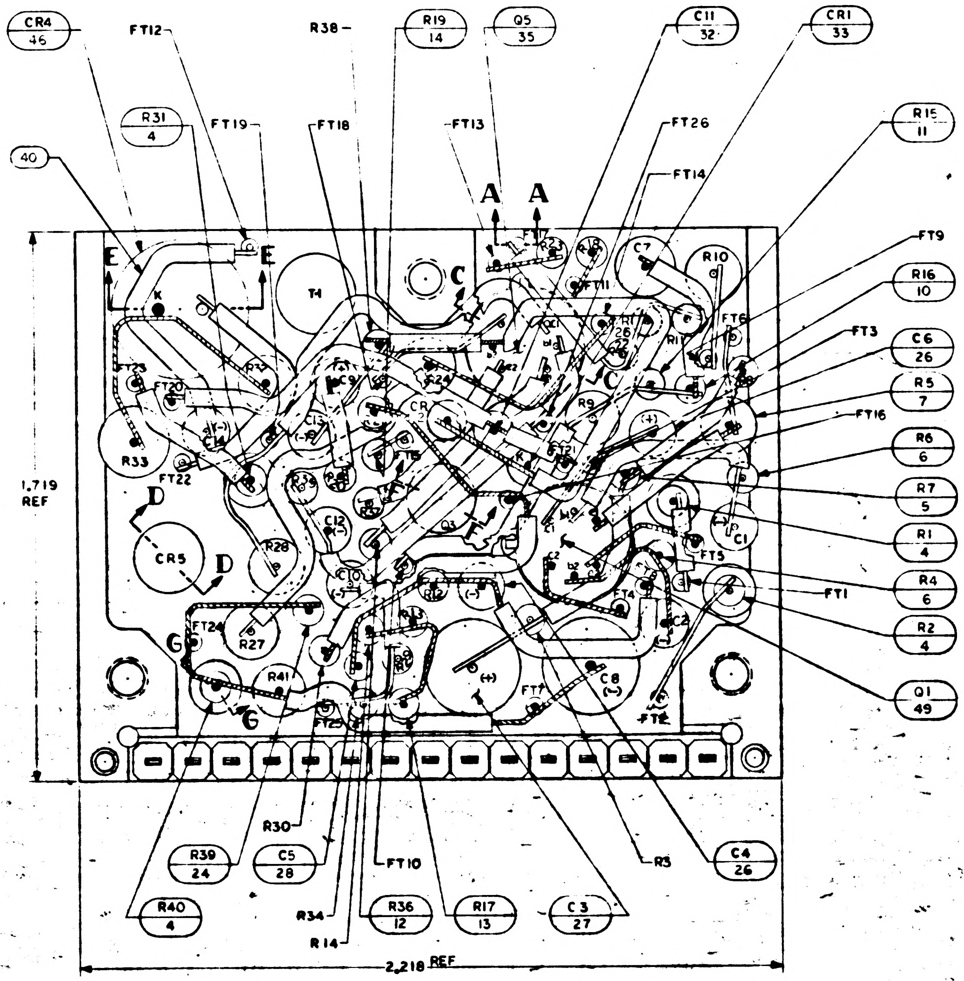
SECTION F-F

1/1007017

1007017 G

SYM	REVISIONS TDRR 06466 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00725	4-2-63	WK
B	REVISED PER TDRR 01005	[illegible]	WK
C	REVISED PER TDRR 01181	5-2-63	WK
D	REVISED PER TDRR 01711	6-24-63	WK
E	REVISED PER TDRR 04128	[illegible] 63	WK
F	REVISED PER TDRR 05482	[illegible] 63	WK
G	REVISED PER TDRR 06641	[illegible]	WK
H	REVISED PER TDRR 07009	27 MAR 64	JJJ
J	REVISED PER TDRR 07275	2 APR 64	[illegible]


.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
8 & C7 ARE WELDED
SPECIAL LEVEL
E NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
.154
.144 DIA
4 PLACES
TP4 REF
3
.000
.015 SEE NOTE 6
.000
.015
15°
45
38 SEE NOTE 13
.078
.094
DO NOT ENCAPSULATE
47
.000
.030
.047
.037 TYP
.124
.114 TYP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FT12
R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT26
R15 11
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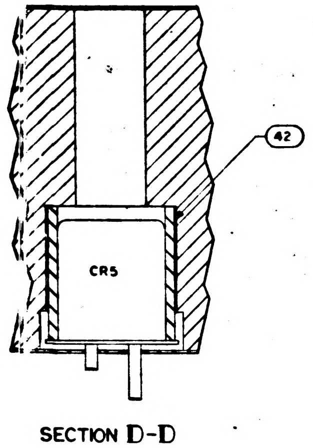
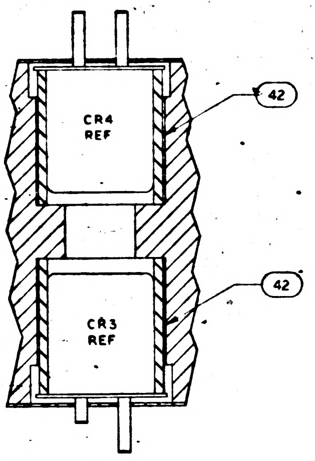
FT14
A
A
FT9
E
E
T4
C
C7
R10
R16 10
C6 26
FT3
R5 7
FT16
R6 6
R7 5
R1 4
R4 6
R2 2
Q1 49
FT1
FT5
FT4
FT2
C8
FT7
FT20
FT22
R33
FT23
1.719 REF
D
CR5
D
R28
FT24
G
R27
R41
G
R39 24
C5 28
R30
R34
R14
R40 4
R36 12
FT10
R17 13
C3 27
R5
C4 26
2.218 REF

TP	COMPONENT
1	R1
2	R2
3	R31
4	R40



SECTION D-D


CR4 REF
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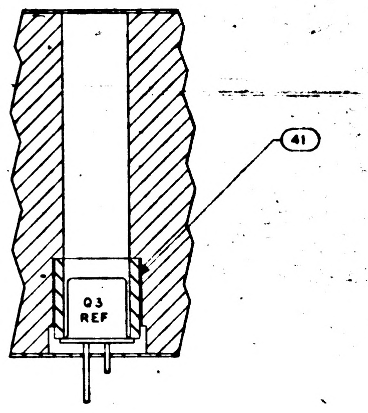
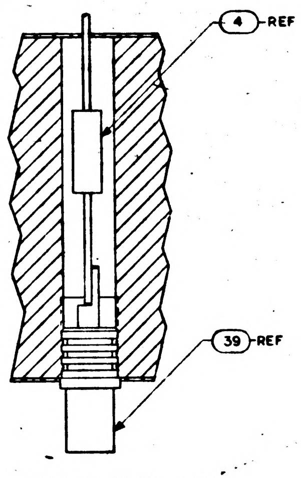
42
CR3 REF

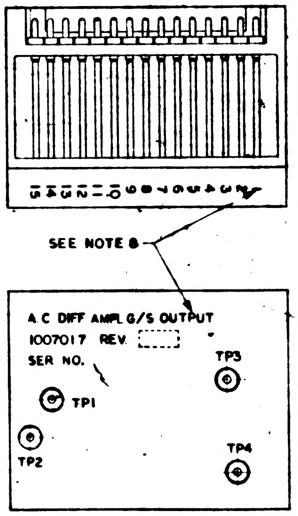
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO. 39 & FIND NO. 4


SEE NOTE 8
A C DIFF AMPL G/S OUTPUT
1007017 REV.
SER NO.
TP3
TP1
TP2
TP4

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1010376-2	TRANSISTOR	49
☒	1010032	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	48
AR	1006776 20	INSULATION SLEEVING	47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
1	1010355	TRANSFORMER	37
1	1010357-1	TRANSISTOR	36
2	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF .200V ± 10%	29
1	1006777-16	CAPACITOR, 220UUF .100V ± 10%	28
2	1006755-83	CAPACITOR, 15UF 35V, ± 10%	27
6	1006755-65	CAPACITOR, 0.47 UF, 35V ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 620Ω, 1/2W, ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W, ± 2%	24
2	1010369-96	RESISTOR, FIXED, COMP, INS. 430K, 1/8W, ± 5%	23
1	1010312-16	RESISTOR, 75 Ω, 2 W, ± 5%	22
1	1010312-14	RESISTOR, FIXED, M F, 50Ω, 2W, ± 5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED COMP. INS., 300K, 1/8W, ± 5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS. 240K, 1/8W, ± 5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP., INS. 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ± .02 XXX .005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
Contract NAS 9-497

DRAWN DATE 12-2-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 3-2-63
MIT APPROVAL 27 Feb 63

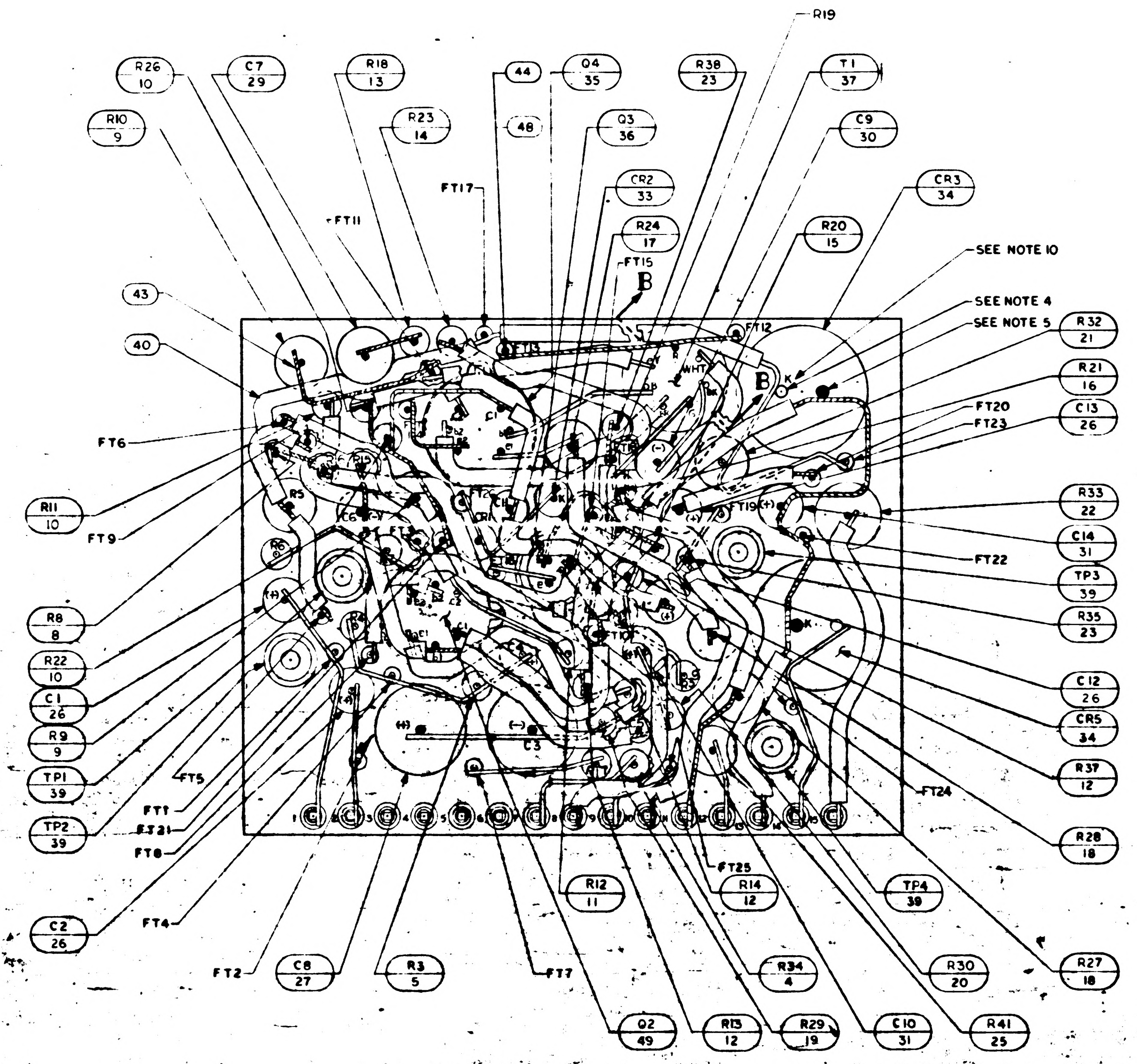
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

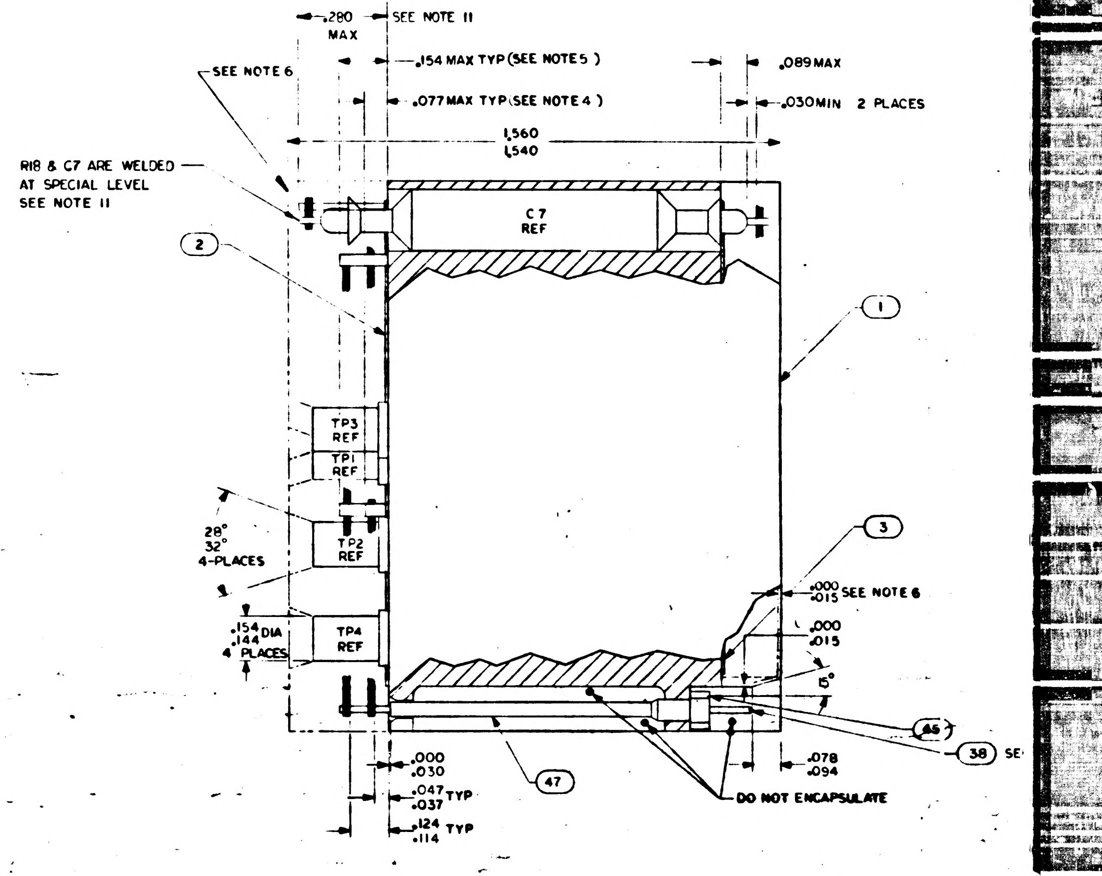
AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007017
SCALE 5/1 WT SHEET 1 OF 1

1007017

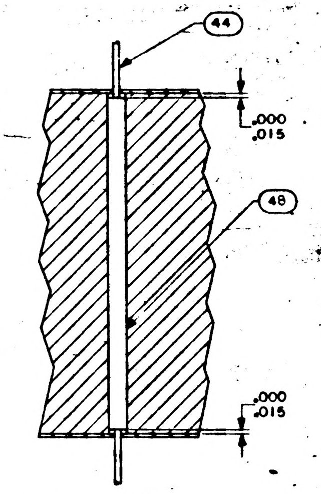
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO


R26 10
C7 29
R18 13
44
Q4 35
R38 23
T1 37
R19
R10 9
R23 14
48
Q3 36
C9 30
CR2 33
CR3 34
FT17
FT11
R24 17
FT15
B
R20 15
SEE NOTE 10
43
40
SEE NOTE 4
SEE NOTE 5
R32 21
R21 16
FT20
FT23
C13 26
FT6
R11 10
FT9
R33 22
C14 31
FT22
TP3 39
R35 23
R8 8
R22 10
C1 26
R9 9
TP1 39
TP2 39
FT5
FT1
FT21
FT8
FT4
C12 26
CR5 34
R37 12
FT24
R28 18
C2 26
FT2
C8 27
R3 5
FT7
R12 11
FT25
R14 12
TP4 38
R34 4
R30 20
R27 18
Q2 49
R13 12
R29 19
C10 31
R41 25
C3
WHT
K
(+)
(−)

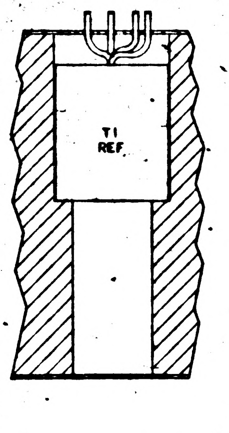

.280 MAX
SEE NOTE 11
SEE NOTE 6
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
2
C7 REF
1
TP3 REF
TP1 REF
28° 32° 4-PLACES
TP2 REF
.154 .144 DIA 4 PLACES
TP4 REF
3
.000 .015 SEE NOTE 6
.000 .015
15°
45
38
.000 .030
.047 .037 TYP
.124 .114 TYP
47
.078 .094
DO NOT ENCAPSULATE

NOTES:

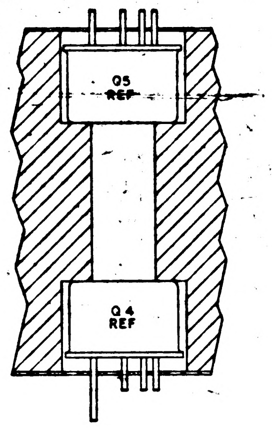
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
   UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO. 39, FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002002. CENTRILIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE.
11. ◐ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136


44
.000 .015
48
.000 .015

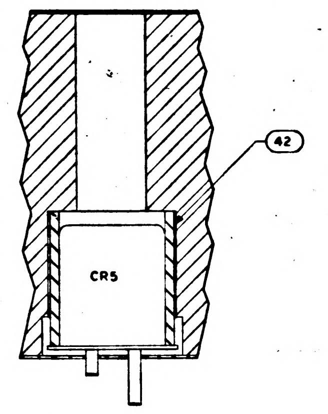
SECTION A-A



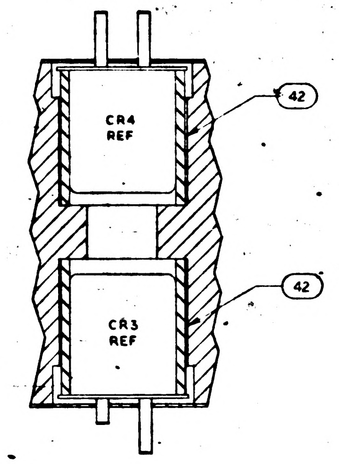
SECTION B-B


Q5 REF
Q4 REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D


CR4 REF
42
CR3 REF
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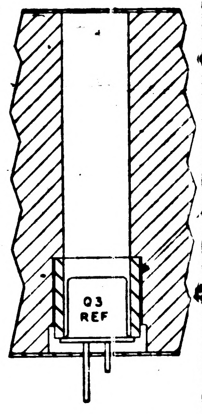
SECTION E-E



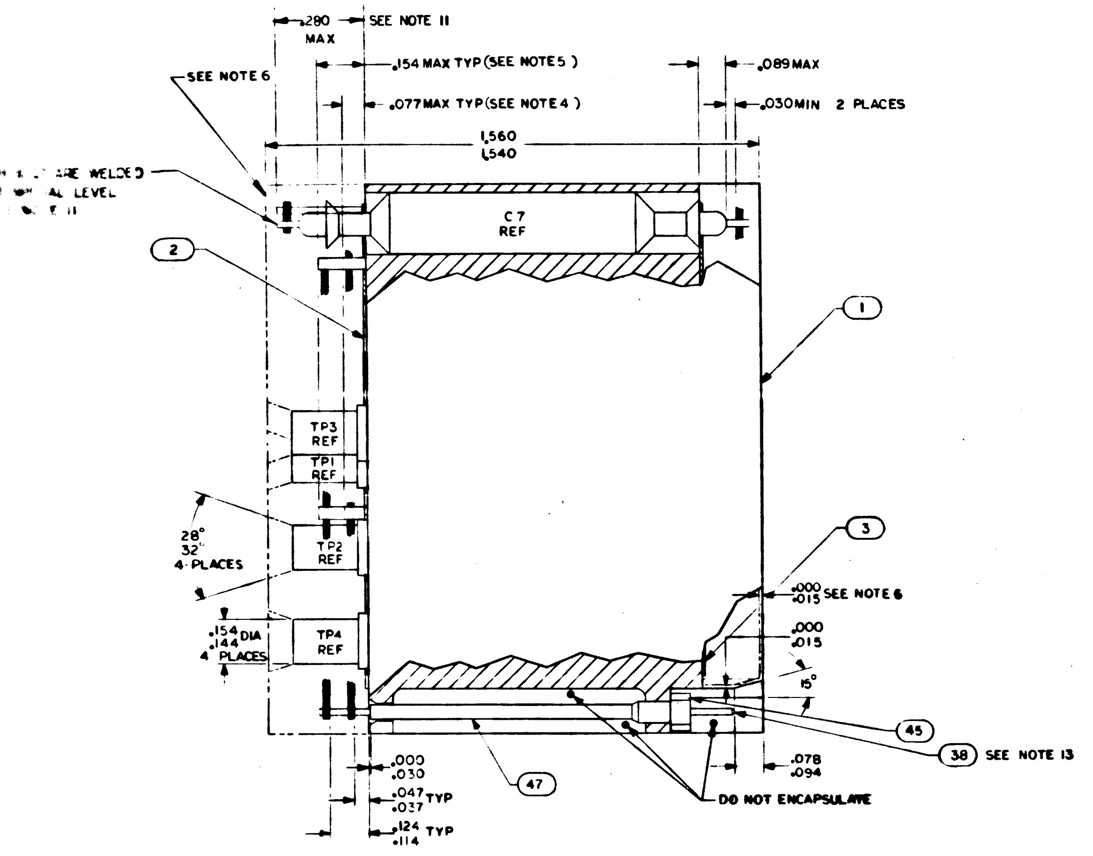
SECTION F-F

1

1007017 G

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00725	4-2-63	D.T. WK
B	REVISED PER TDRR 01005		D.T. WK
C	REVISED PER TDRR 01181	5-2-63	D.T. WK
D	REVISED PER TDRR 01711	6-24-63	J.A. WK
E	REVISED PER TDRR 04123	63	WK
F	REVISED PER TDRR 05482	63	WK
G	REVISED PER TDRR 06641		WK
H	REVISED PER TDRR 07009	27 MAR 64	JJJ
J	REVISED PER TDRR 07275	2 APR 64	
K	REVISED PER TDRR 07285	APR 64	JJJ

REVISIONS TDRR 00450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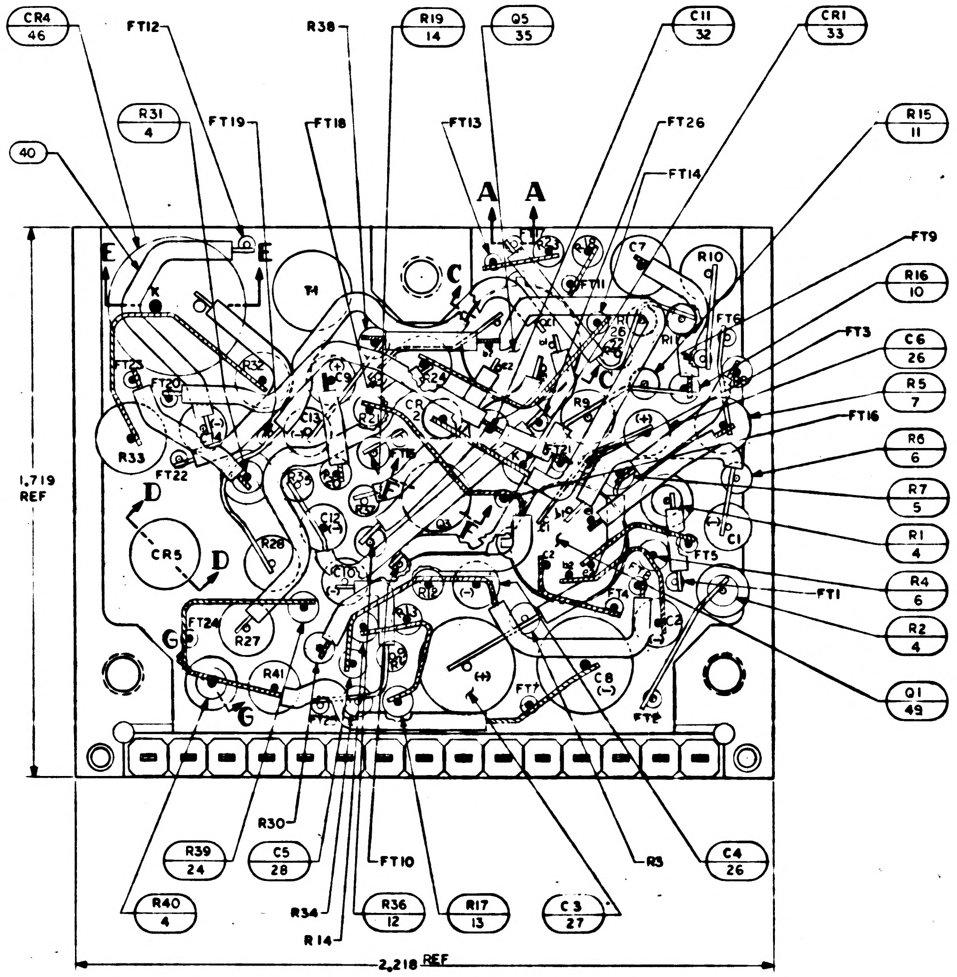
SEE NOTE 11
SEE NOTE 6
.154 MAX TYP (SEE NOTE 5)
.089 MAX
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
ARE WELDED
AL LEVEL
C7
REF
2
1
TP3
REF
TP1
REF
TP2
REF
TP4
REF
28°
32'
4 PLACES
.154
.144 DIA
4 PLACES
3
.000
.015 SEE NOTE 6
.000
.015
15°
45
38 SEE NOTE 13
.000
.030
.047
.037 TYP
.124
.114 TYP
47
.078
.094
DO NOT ENCAPSULATE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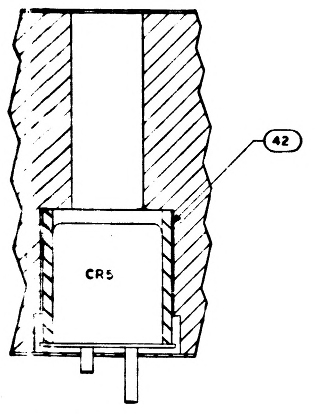
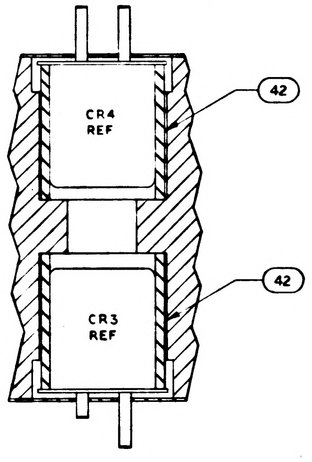
R38
R19
14
Q5
35
C11
32
CR1
33
40
R31
4
FT19
FT18
FT13
FT26
R15
11
FT14
A
A
FT9
R16
10
FT3
C6
26
R5
7
FT16
R6
6
R7
5
R1
4
R4
6
FT1
R2
4
Q1
49
1.719
REF
E
E
C
D
D
G
G
T1
R33
CR5
R27
R41
R10
C7
C8
FT22
FT20
FT24
FT5
R39
24
C5
28
R30
FT10
R34
R14
R36
12
R17
13
C3
27
R3
C4
26
R40
4
2.218 REF

TP	COMPONENT
1	R1
2	R2
3	R31
4	R40



SECTION D-D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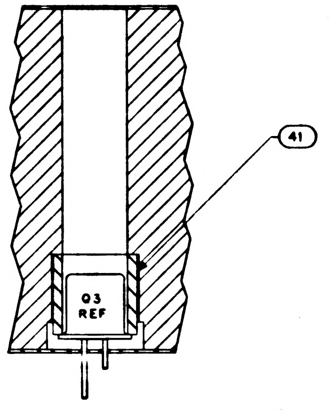
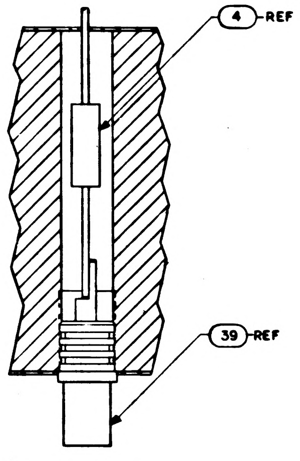
REF
42
CR3
REF
42

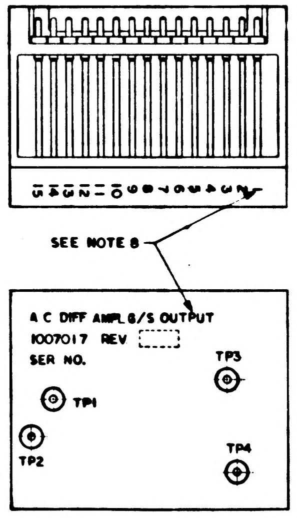
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO. 39 & FIND NO. 4


SEE NOTE 8
A C DIFF AMPL G/S OUTPUT
1007017 REV
SER NO.
TP1
TP2
TP3
TP4

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1010376-2	TRANSISTOR	49
	1010032	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	48
AR	1006776 20	INSULATION SLEEVING	47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357 -1	TRANSISTOR	36
2	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF ,200V, ± 10%	29
1	1006777-16	CAPACITOR, 220UUF ,100V ± 10%	28
2	1006755-83	CAPACITOR, 15UF 35V ± 10%	27
6	1006755-65	CAPACITOR, 0.47UF, 35V ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 20Ω, 1/2W, ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W, ± 2%	24
2	1010369-96	RESISTOR, FIXED, COMP, INS, 430K, 1/8W, ± 5%	23
1	1010312-16	RESISTOR, 75 Ω, 2W, ± 5%	22
1	1010312-14	RESISTOR, FIXED, M F, 50Ω, 2W, ± 5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED, W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED, COMP, INS, 300K, 1/8W, ± 5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP, INS, 240K, 1/8W, ± 5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP, INS, 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS XX ±.02 XXX ±.005
ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN DATE 12-2-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 3-27-63
MIT APPROVAL 27 FEB 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

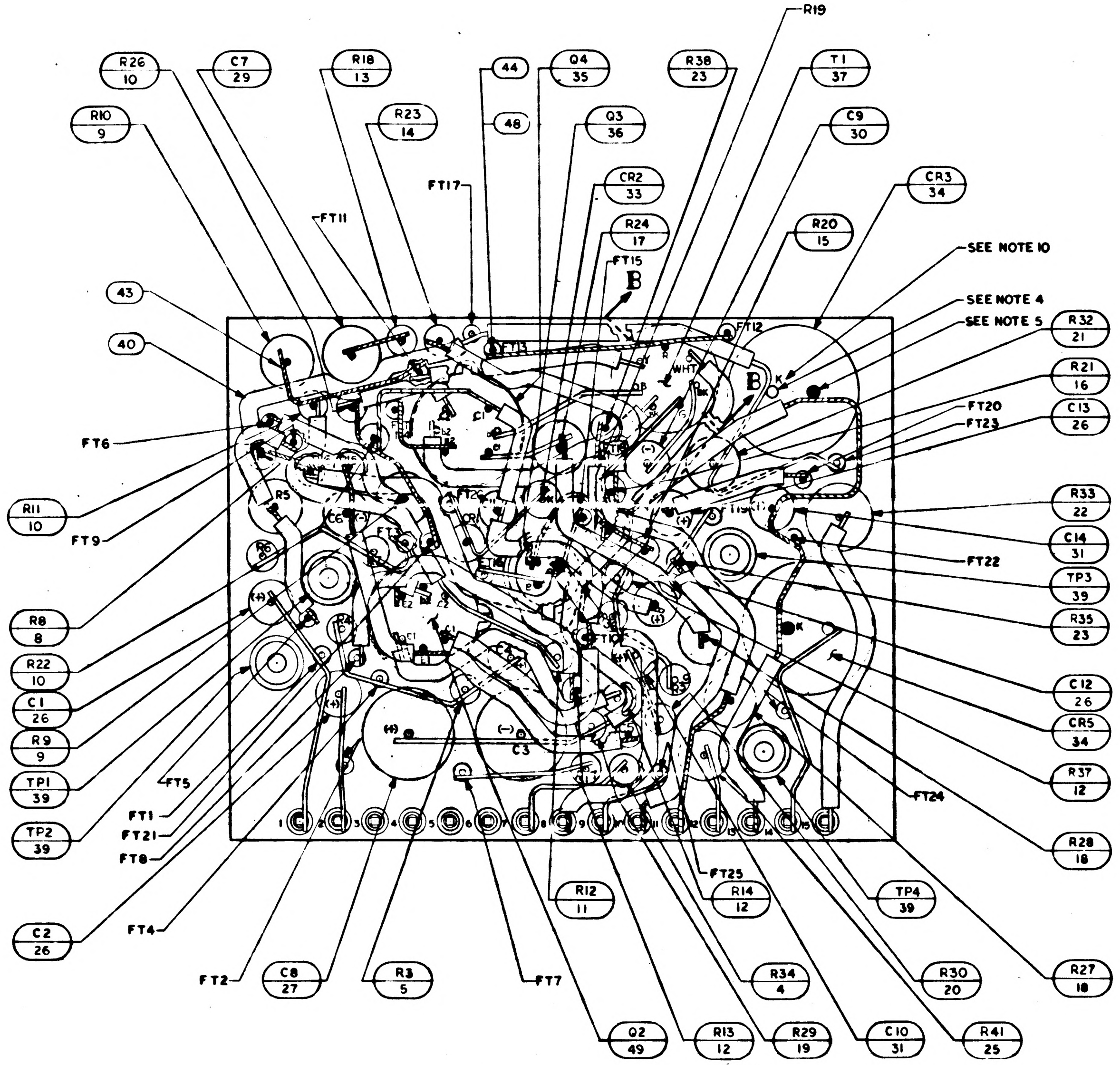
AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO 1007017
SCALE 5/1
WT
SHEET 1 OF 1

1007017 K

2

[illegible]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C7 29
R18 13
44
Q4 35
R38 23
T1 37
R10 9
R23 14
46
Q3 36
C9 30
FT17
CR2 33
CR3 34
FT11
R24 17
R20 15
FT15
SEE NOTE 10
B
SEE NOTE 4
SEE NOTE 5
R32 21
43
WHT
B
K
R21 16
40
FT20
FT23
C13 26
FT6
R11 10
R5
R33 22
FT9
C14 31
FT22
TP3 39
R8 8
R35 23
R22 10
C12 26
C1 26
CR5 34
R9 9
C3
TP1 39
FT5
R37 12
FT1
FT21
FT24
TP2 39
FT8
R28 18
FT25
FT4
R12 11
R14 12
TP4 39
C2 26
FT2
C8 27
R3 5
FT7
R34 4
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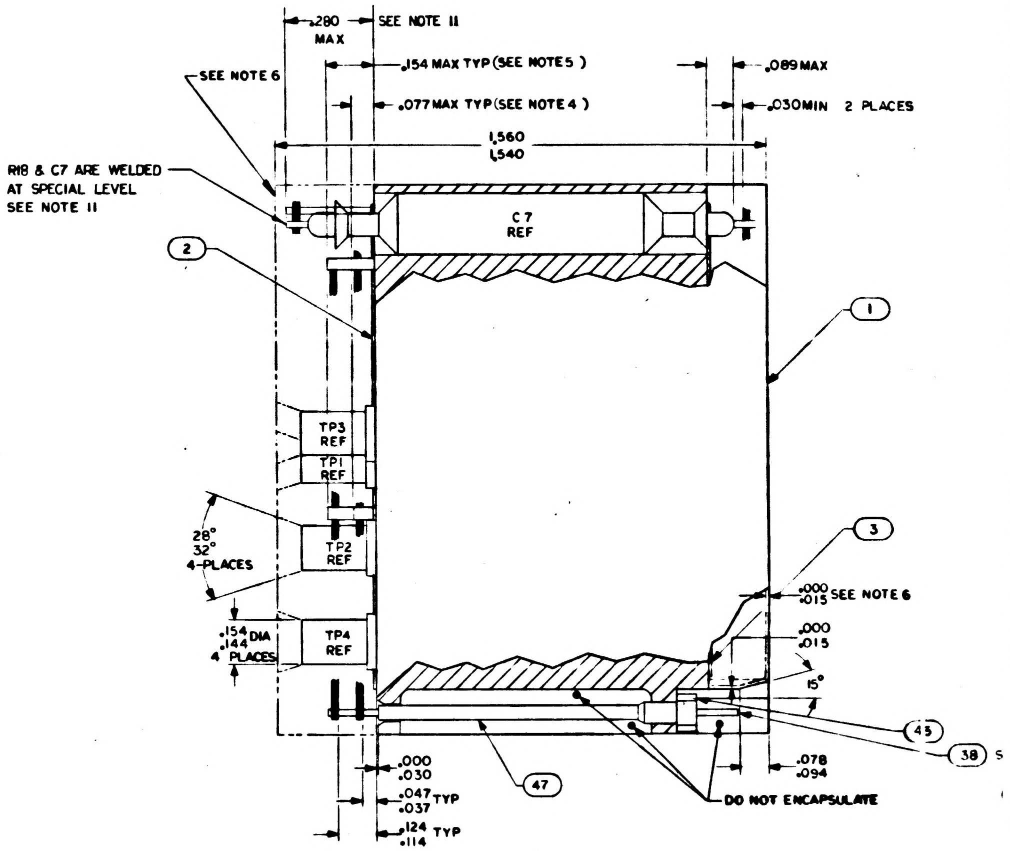
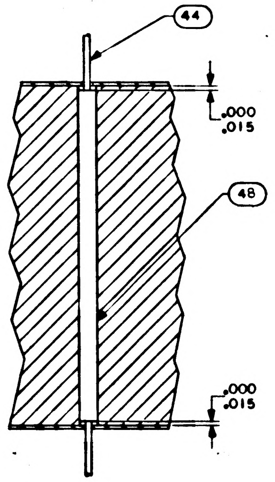
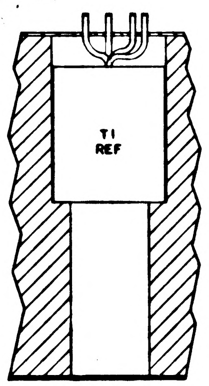
R27 18
Q2 49
R13 12
R29 19
C10 31
R41 25

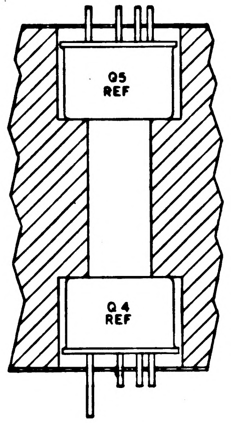

.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.000
.015 SEE NOTE 6
.154 DIA
.144
4 PLACES
TP4 REF
.000
.015
15°
45
38
.000
.030
.047
.037 TYP
.124
.114 TYP
47
.078
.094
DO NOT ENCAPSULATE


44
.000
.015
48
.000
.015

SECTION A-A



SECTION B-B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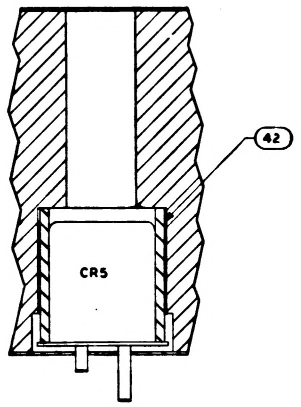
REF
Q4
REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



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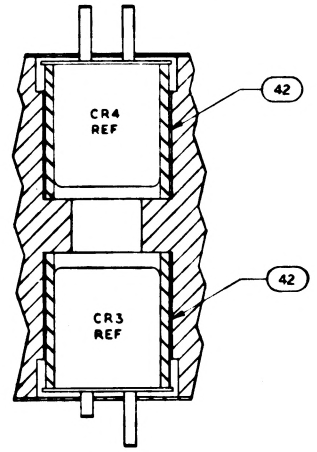
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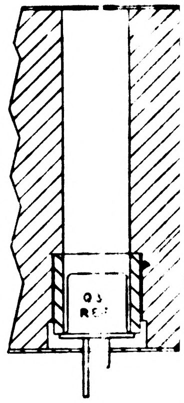
42
CR3
REF

SECTION E-E



SECTION F-F

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002005~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO. 39, FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002002. CENTRILIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE.
11. ◐ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136
14. PROCURE PER PS 1007017

1007017 L

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00725	1-2-63	D.T. WK
B	REVISED PER TDRR 01105	[illegible]	D.T. WK
C	REVISED PER TDRR 01181	5-2-63	D.T. WK
D	REVISED PER TDRR 01711	6-24-63	J.J.M. WK
E	REVISED PER TDRR 04123	Sept 63	[illegible] WK
F	REVISED PER TDRR 05482	27 [illegible] 63	[illegible] WK
G	REVISED PER TDRR 06641	[illegible]	[illegible] WK
H	REVISED PER TDRR 07009	27 MAR 64	JJJ AU
J	REVISED PER TDRR 07275	2 APR 64	JJJ W.D.
K	REVISED PER TDRR 07285	APR 64	JJJ C.F.P.
L	REVISED PER TDRR 10913	28 [illegible] 64	JJJ AU

REVISIONS TDRR 00456

TP	COMPONENT
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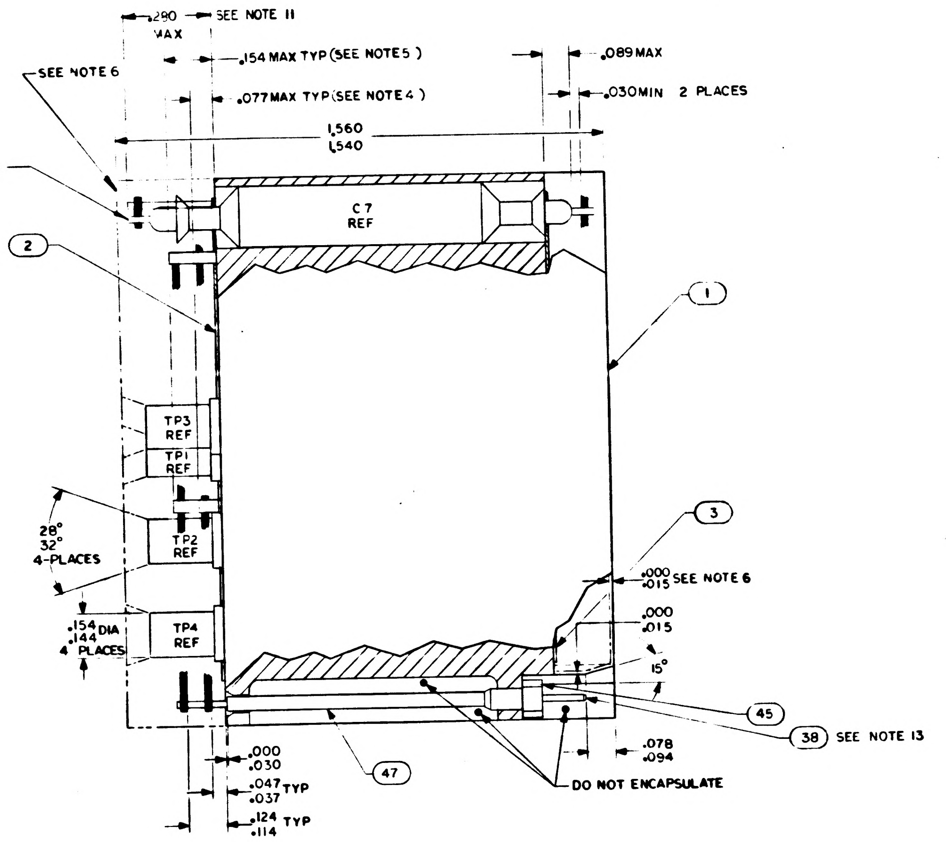
2	R2
3	R31
4	R40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SEE NOTE 11
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.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
SEE NOTE 6
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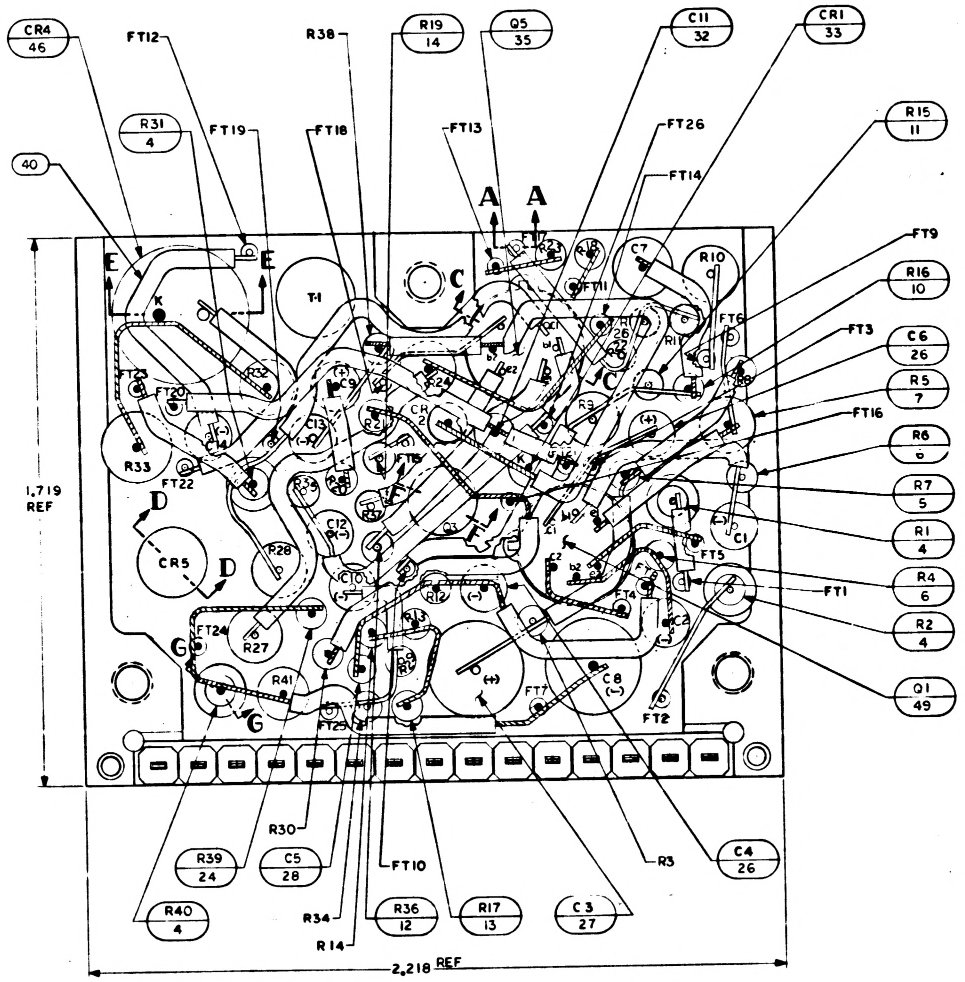
1.540
ARE WELDED
SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28°
32°
4-PLACES
.154
.144 DIA
4 PLACES
3
.000
.015 SEE NOTE 6
.000
.015
15°
45
38 SEE NOTE 13
47
DO NOT ENCAPSULATE
.078
.094
.000
.030
.047
.037 TYP
.124
.114 TYP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CR1 33
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FT13
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A
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FT9
E
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T1
C
R10
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FT3
C6 26
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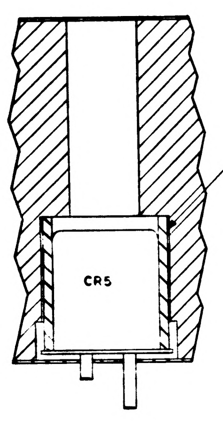
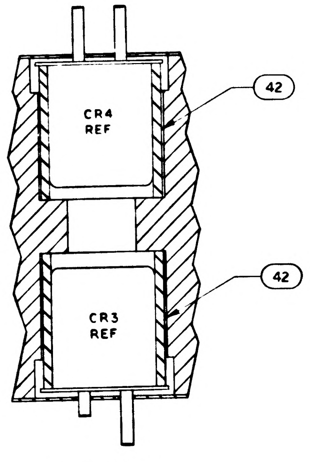
FT16
R6 8
R7 5
R1 4
R4 6
R2 4
Q1 49
FT1
FT5
C1
1.719 REF
R33
FT22
D
CR5
D
R28
FT24
G
R27
G
R41
FT25
C8
FT7
FT2
R39 24
C5 28
R30
FT10
R3
C4 26
R40 4
R34
R36 12
R17 13
C3 27
R14
2.218 REF

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1010376-2	TRANSISTOR	49
	1010032	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	48
AR	1006776 20	INSULATION SLEEVING	47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC 020 DIA	44
AR	1006757-1	WIRE ELEC 010 X 020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357 -1	TRANSISTOR	36
2	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF ,200V, ±10%	29
1	1006777-16	CAPACITOR, 220UUF ,100V, ±10%	28
2	1006755-83	CAPACITOR, 15UF 35V, ± 10%	27
6	1006755-65	CAPACITOR, 0.47 UF, 35V, ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 620Ω, 1/2W, ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W, ± 2%	24
2	1010369-96	RESISTOR, FIXED, COMP, INS., 430K, 1/8W, ± 5%	23
1	1010312-16	RESISTOR, 75 Ω, 2 W, ± 5%	22
1	1010312-14	RESISTOR, FIXED, M F, 50Ω, 2W, ± 5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED, W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED COMP, INS., 300K, 1/8W, ±5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS., 240K, 1/8W, ±5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP., INS. 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS



SECTION D-D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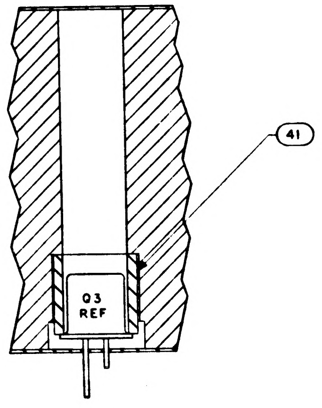
42
CR3 REF
42

SECTION E-E



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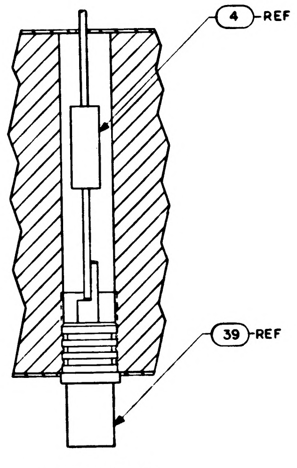
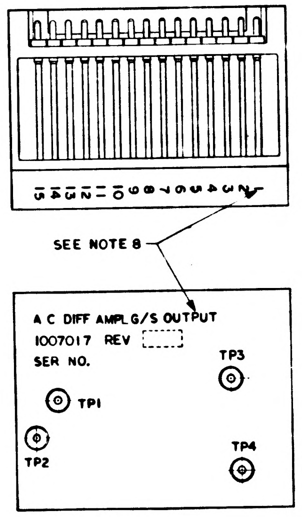


SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO. 39 & FIND NO. 4


SEE NOTE 8
A C DIFF AMPL G/S OUTPUT
1007017 REV
SER NO.
TP3
TP1
TP2
TP4

MARKING VIEW
SCALE 2/1

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//— DECIMALS XX ±.02 XXX .005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN DATE 12-2-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 2-27-63
MIT APPROVAL 27 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

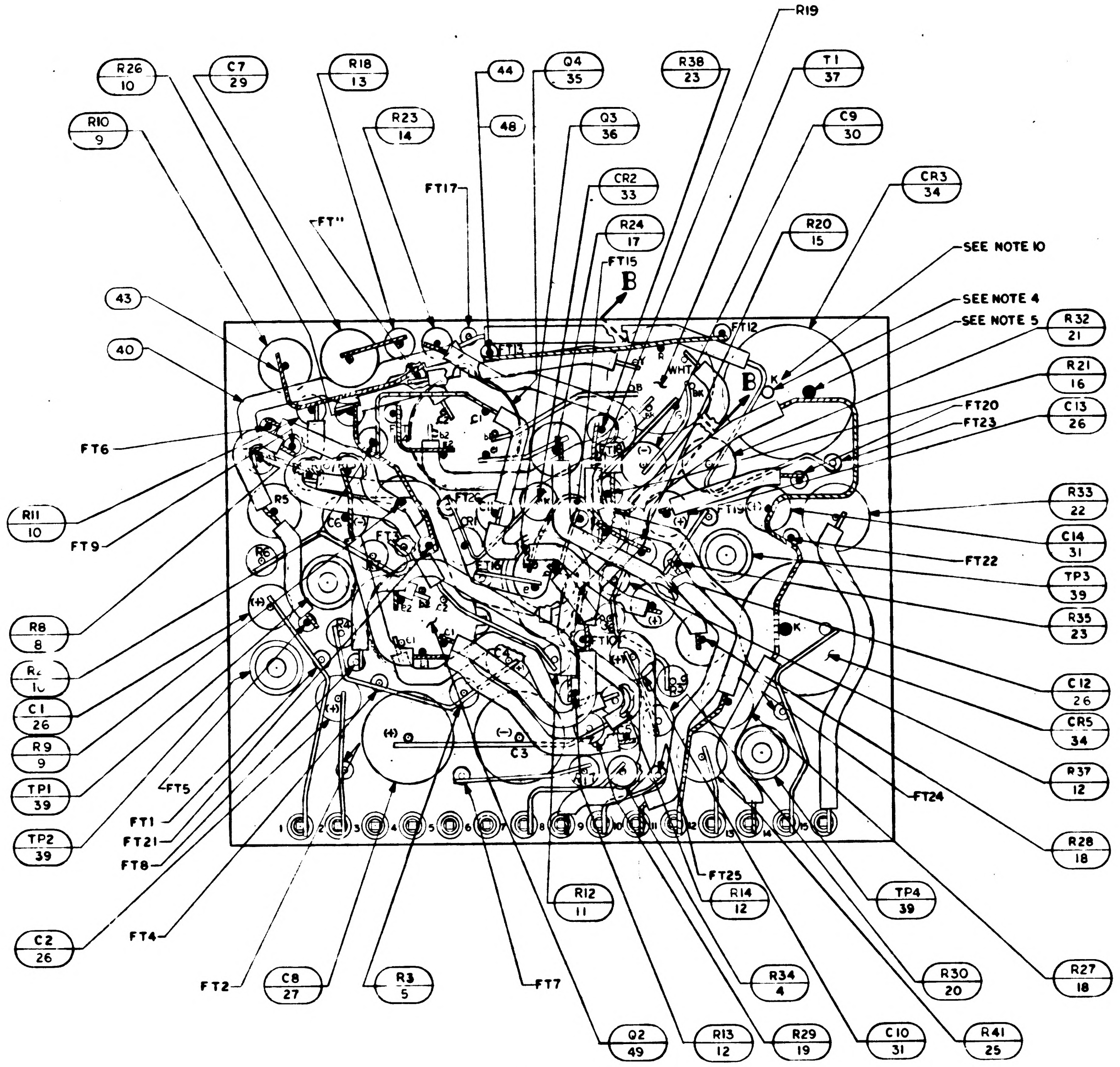
A C DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007017
SCALE 5/1 WT SHEET 1 OF 1

1007017 L

27/1007017

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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R38 23
R19
T1 37
R10 9
R23 14
48
Q3 36
C9 30
FT17
CR2 33
CR3 34
FT''
R24 17
R20 15
FT15
B
SEE NOTE 10
43
SEE NOTE 4
SEE NOTE 5
R32 21
40
FT12
R21 16
FT20
C13 26
FT23
FT6
R11 10
R33 22
FT9
C14 31
FT22
TP3 39
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R8 8
R4 10
C1 26
C12 26
CR5 34
R9 9
R37 12
TP1 39
FT5
FT24
FT1
FT21
R28 18
TP2 39
FT8
C3
FT25
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R14 12
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C2 26
FT4
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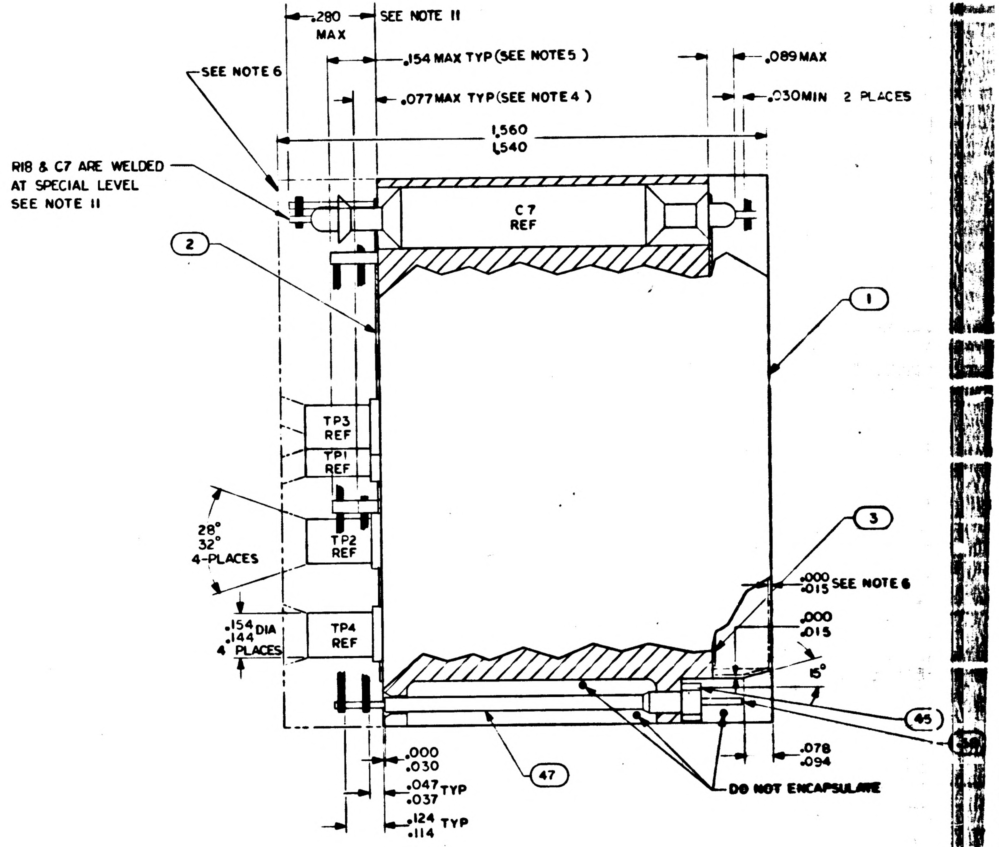
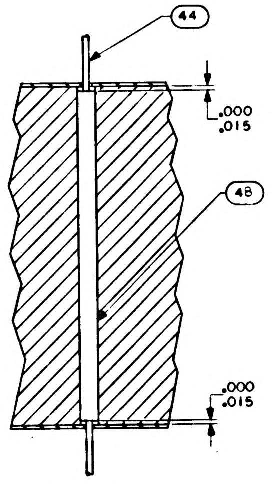
R41 25
K


.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.000
.015 SEE NOTE 6
.154
.144 DIA
4 PLACES
TP4 REF
.000
.015
15°
45
.000
.030
47
.078
.094
.047
.037 TYP
DO NOT ENCAPSULATE
.124
.114 TYP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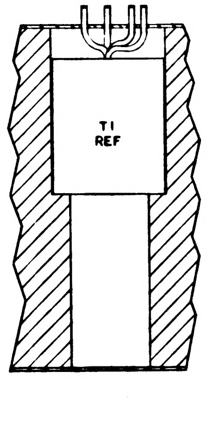
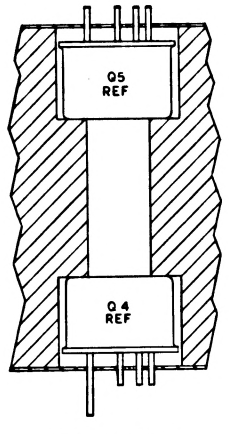
.015
48
.000
.015

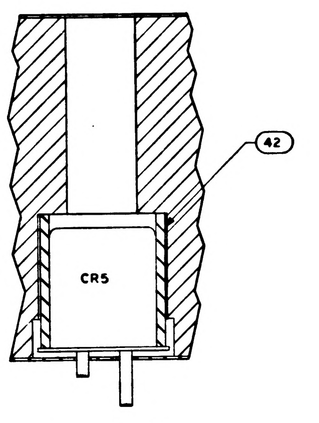
SECTION A-A



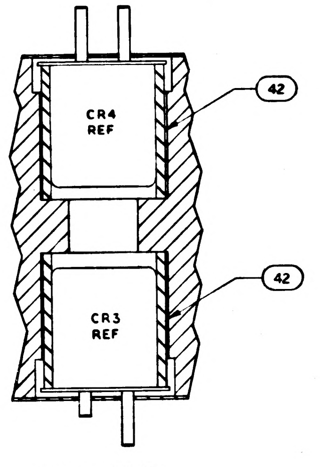
SECTION B-B


Q5 REF
Q4 REF

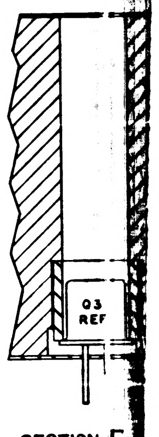
SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D


42
CR4 REF
42
CR3 REF

SECTION E-E



SECTION F-

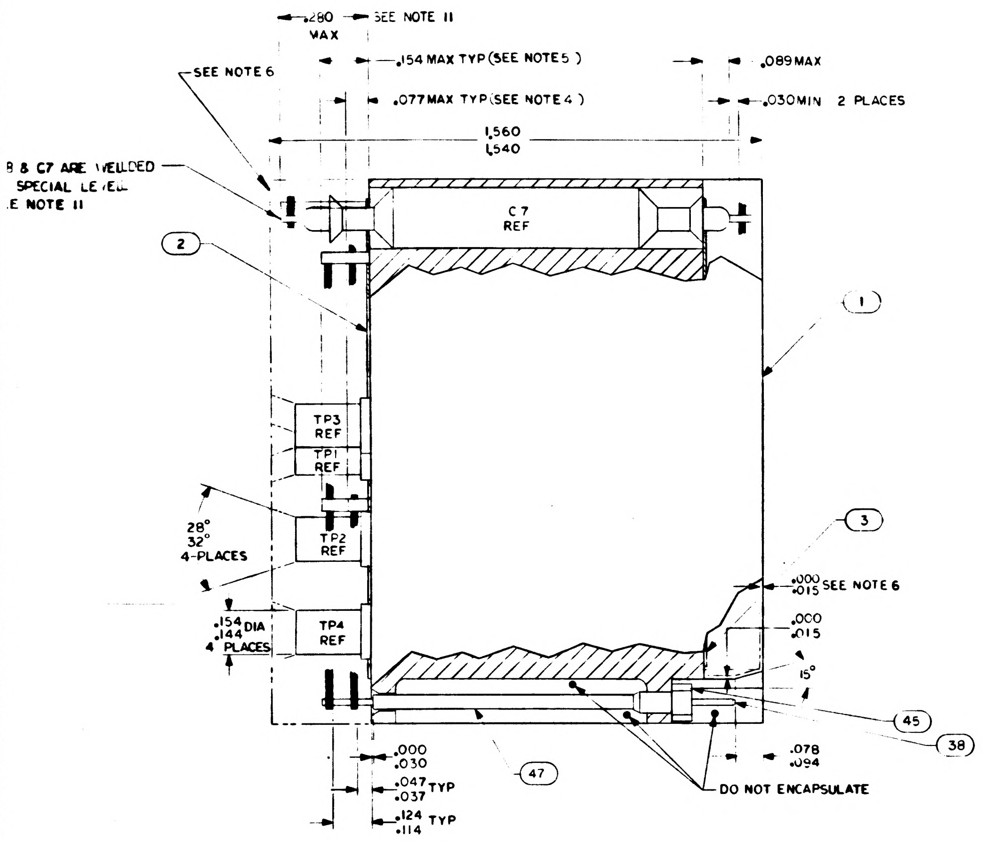
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO. 39, FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023 CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE.
11. ⊕ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136
14. [illegible]CURE PER PS 1007017

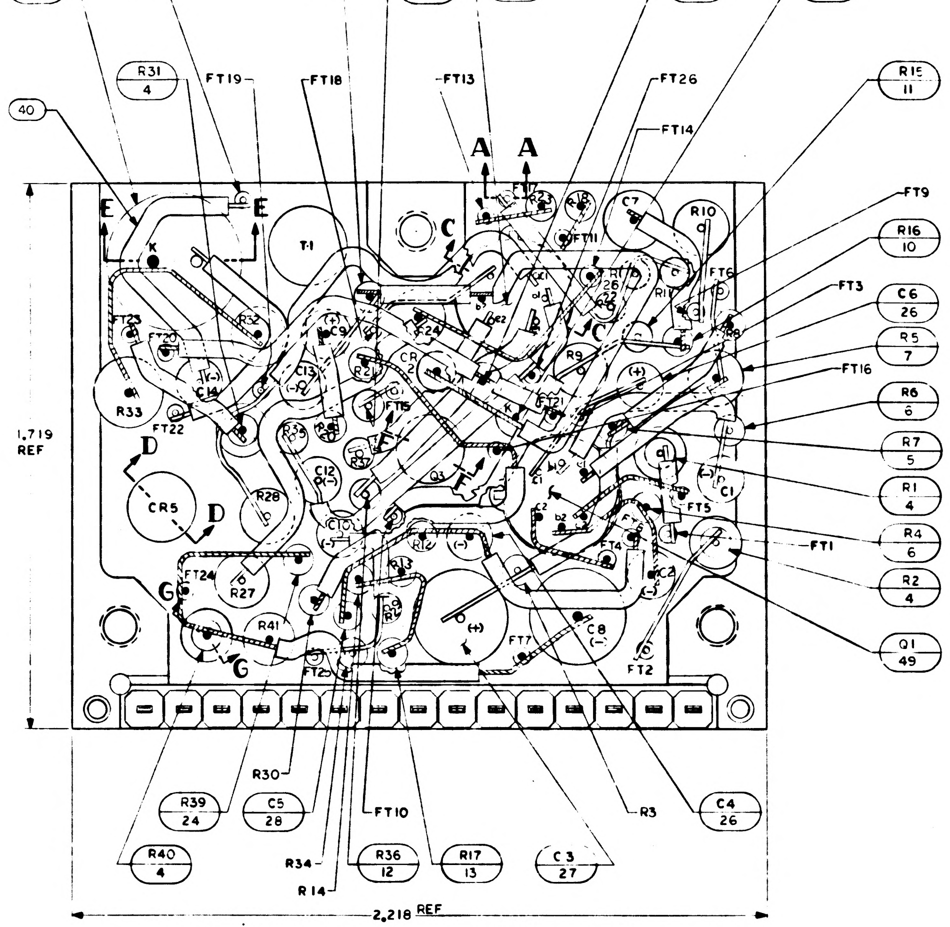
1007017 M

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00466		
A	REVISED PER TDRR 00725	4-2-63	J. T. WK
B	REVISED PER TDRR 01005	4-25-63	D.T. WK
C	REVISED PER TDRR 01181	5-2-63	D.T WK
D	REVISED PER TDRR 01711	6-24-63	JJM WK
E	REVISED PER TDRR 04128	3 Oct 63	EPK WK
F	REVISED PER TDRR 05482	27 Dec 63	WK
G	REVISED PER TDRR 06641		WK
H	REVISED PER TDRR 07009	27 MAR 64	JJJ AU
J	REVISED PER TDRR 07275	2 APR 64	JWP W.D
K	REVISED PER TDRR 07285	APR 64	JJJ C7P
L	REVISED PER TDRR 10913	28 JUL 64	JJJ AU
M	REVISED PER TDRR 7323	2 MAR 65	GM

TP	COMPONENT
1	R1
2	R2
3	R31
4	R40



.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
SEE NOTE 6
1.560
1.540
C8 & C7 ARE WELDED SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28° 32° 4-PLACES
TP2 REF
3
.000 .015 SEE NOTE 6
.000 .015
.154 .144 DIA 4 PLACES
TP4 REF
15°
45
38 SEE NOTE 13
.078 .094
.000 .030
.047 .037 TYP
.124 .114 TYP
47
DO NOT ENCAPSULATE



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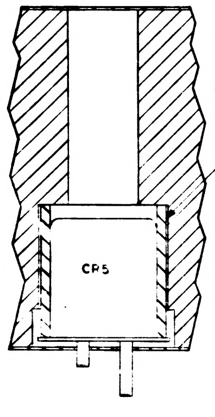
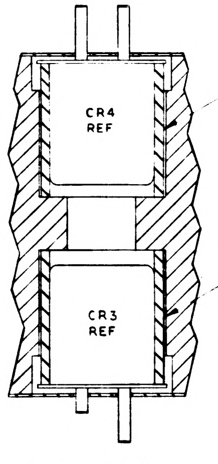
FT12
R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT26
R15 11
40
FT14
A
E
C
T-1
R10
FT9
R16 10
FT11
FT6
FT3
C6 26
R5 7
FT23
FT24
C9
R9
FT16
C14
C13
C10
R6 6
R33
FT22
1.719 REF
FT15
R7 5
C12
Q1
D
CR5
R28
FT5
R1 4
FT4
FT1
R4 6
R2 4
G
FT24
R27
C8
FT7
FT2
Q1 49
R41
R30
R39 24
C5 28
FT10
R3
C4 26
R40 4
R34
R14
R36 12
R17 13
C3 27
2.218 REF

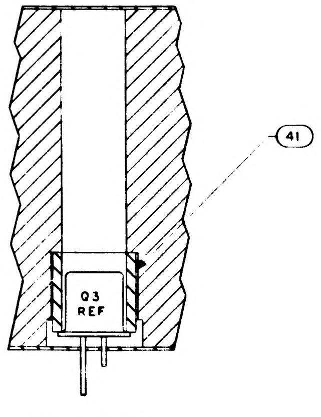


SECTION D-D

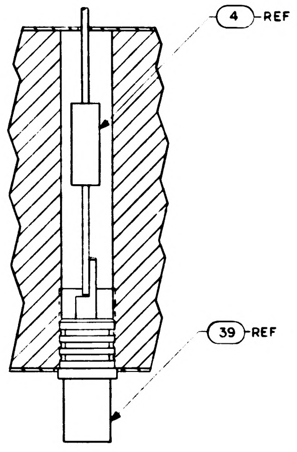


42
CR4 REF
42
CR3 REF

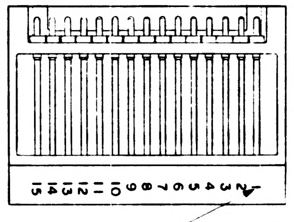
SECTION E-E

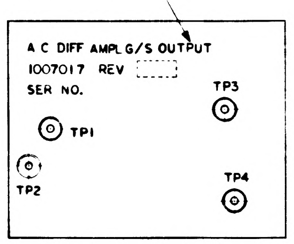


SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO.39 & FIND NO.4




A C DIFF AMPL G/S OUTPUT
1007017 REV
SER NO.

TP1
TP2
TP3
TP4

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1010376-2	TRANSISTOR	49
	1010032	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	48
AR	1006776-20	INSULATION SLEEVING	47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006762-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357-1	TRANSISTOR	36
2	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF, 200V, ±10%	29
1	1006777-16	CAPACITOR, 220UUF, 100V, ±10%	28
2	1006755-83	CAPACITOR, 15UF 35V, ± 10%	27
6	1006755-65	CAPACITOR, 0.47 UF, 35V ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F. 620 Ω. 1/2W ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F. 2.2K. 1/4W ±2%	24
2	1010369-96	RESISTOR, FIXED, COMP. INS. 430K. 1/8W, ± 5%	23
1	1010312-16	RESISTOR, 75 Ω. 2W. ± 5%	22
1	1010312-14	RESISTOR, FIXED, M F. 50Ω, 2W, ± 5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F. 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W ± 2%	15
2	1010369-92	RESISTOR, FIXED COMP. INS. 300K, 1/8W, ±5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F. 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS. 240K, 1/8W, ±5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W. 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W. 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP., INS. 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F. 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//— DECIMALS XX ± .02 XXX ± .005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO Contract NAS 9-497
DRAWN W. Dell Ome DATE 12-2-63
CHECKED R. Kunzler 19 Feb 63
APPROVAL 25 Feb
APPROVAL R. Test 25 FEB 63
NASA APPROVAL W. J. Rhine 3-22-63
MIT APPROVAL W. Kuffa 27 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

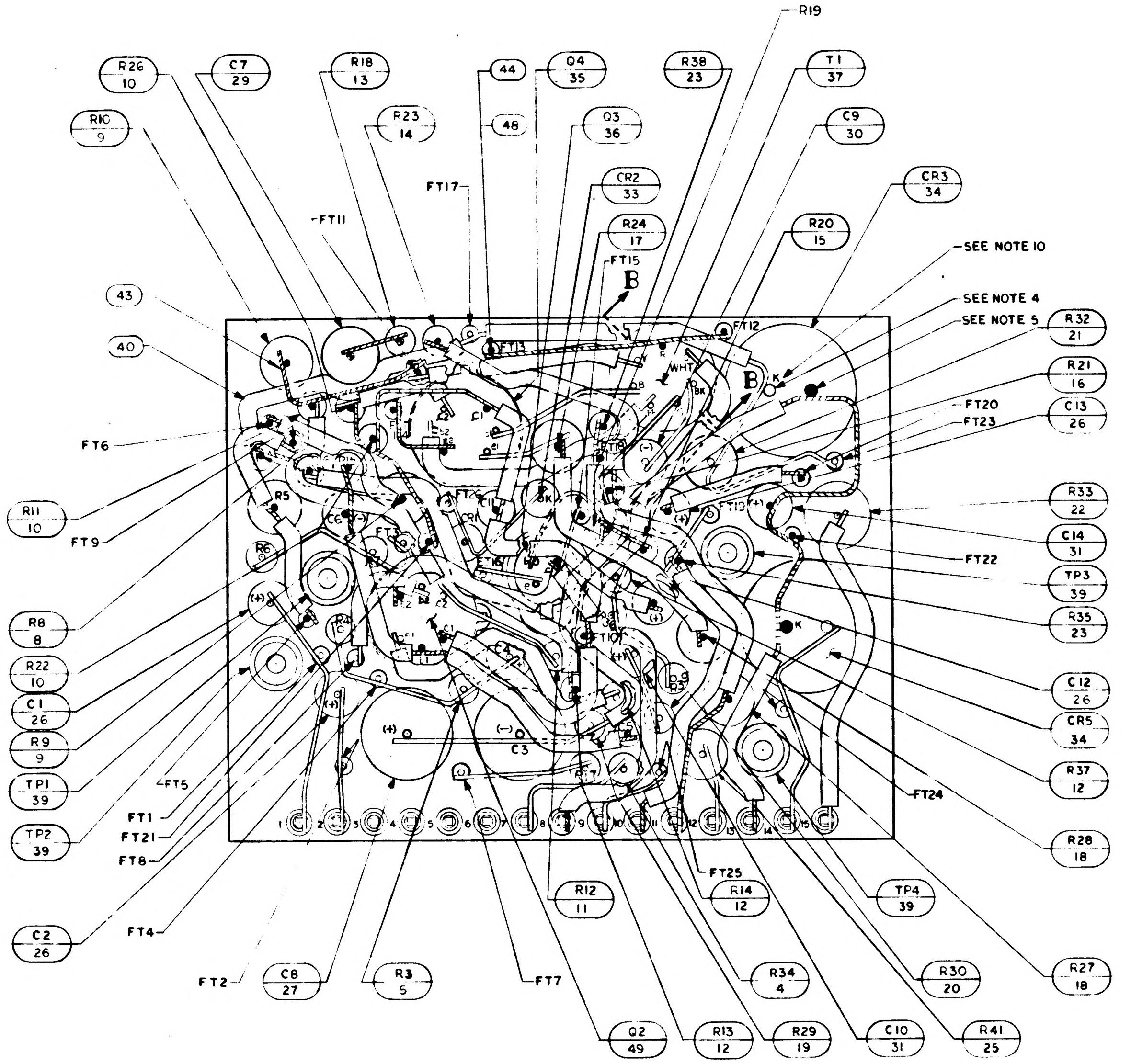
AC DIFFERENTIAL AMPLIFIER
G/S OUTPUT
ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO 1007017
SCALE 5/1
SHEET 1 OF 1

1007017 M

27/1007017

[illegible]


R19
R26 10
C7 29
R18 13
44
Q4 35
R38 23
T1 37
R10 9
R23 14
48
Q3 36
C9 30
FT17
CR2 33
CR3 34
FT11
R24 17
R20 15
FT15
B
SEE NOTE 10
43
SEE NOTE 4
SEE NOTE 5
R32 21
FT12
40
FT13
WHT
B
R21 16
FT20
C13 26
FT23
FT6
R5
R11 10
FT9
R33 22
C14 31
FT22
TP3 39
R8 8
R35 23
R22 10
C12 26
C1 26
CR5 34
R9 9
(+)
(−)
C3
R37 12
TP1 39
FT5
FT24
FT1
TP2 39
FT21
FT8
R28 18
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
R12 11
R14 12
TP4 39
FT25
C2 26
FT4
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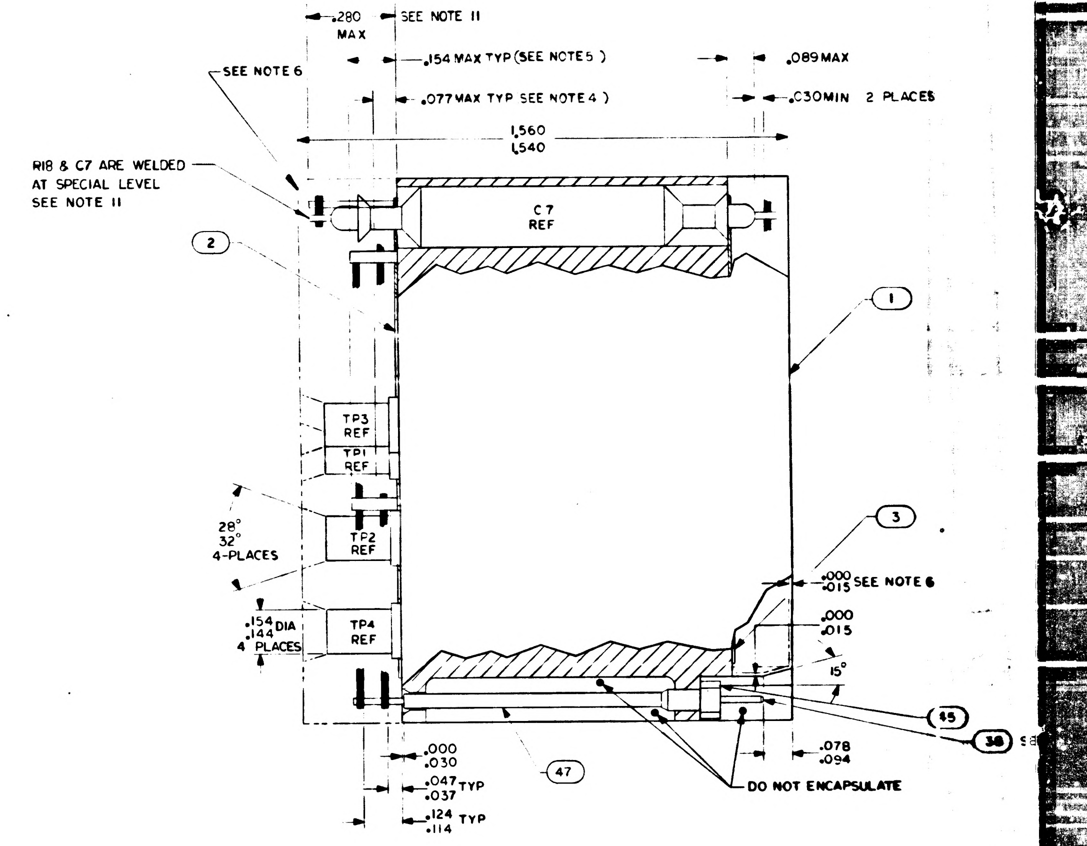
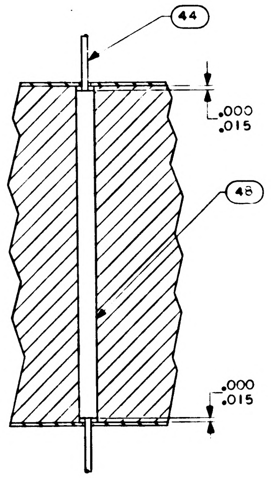
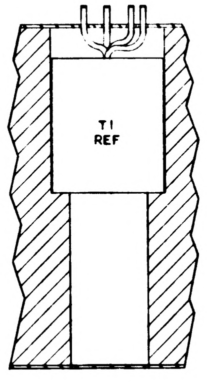
FT2
C8 27
R3 5
FT7
Q2 49
R13 12
R29 19
C10 31
R41 25

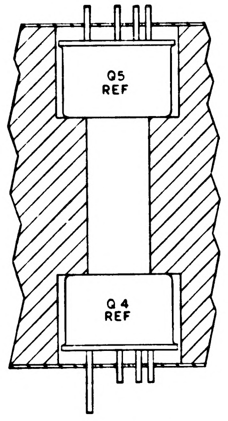

.280 MAX
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.000
.015 SEE NOTE 6
.154
.144 DIA
4 PLACES
TP4 REF
.000
.015
15°
45
38 SE
.000
.030
.047
.037 TYP
.124
.114 TYP
47
.078
.094
DO NOT ENCAPSULATE


44
.000
.015
46
.000
.015

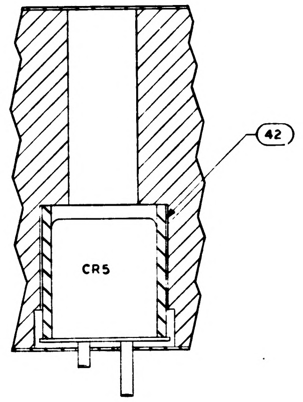
SECTION **A-A**



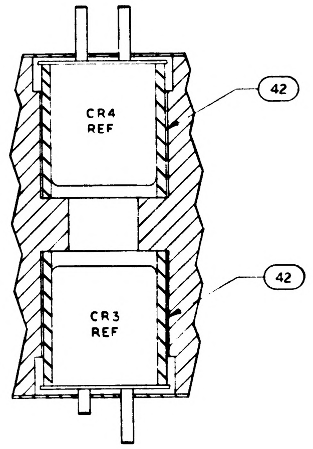
SECTION **B-B**


Q5 REF
Q4 REF

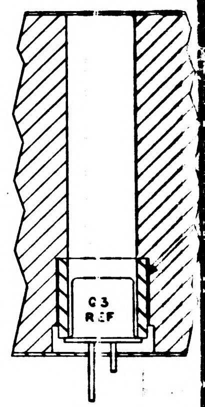
SECTION **C-C**
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION **D-D**


CR4 REF
42
42
CR3 REF

SECTION **E-E**



SECTION **F-F**

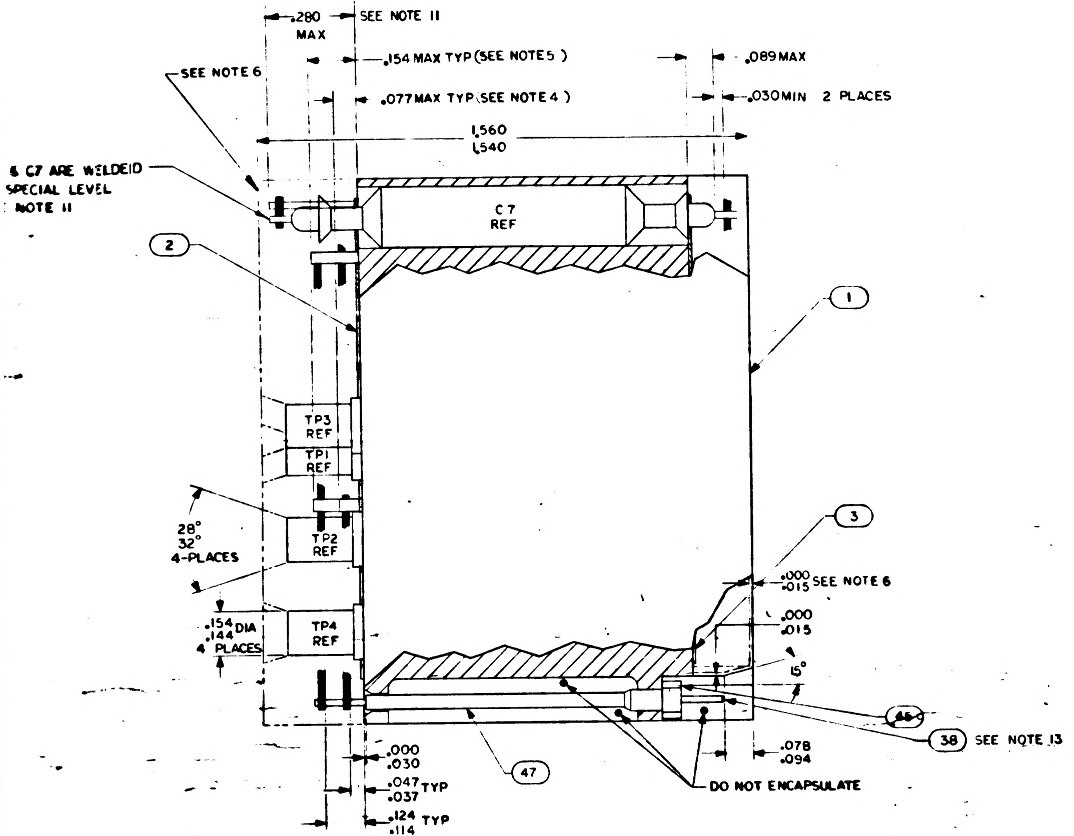
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
   UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. STAKE FIND NO. 4 THRU FIND NO. 37. FIND NO. 39. FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023 CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE
11. ◐ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136
14. FP CURE PER PS 1007017
15. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND 1002 8 TYPE I.

1/1007017

N	1007017

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00725	[illegible]	WK
B	REVISED PER TDRR 01005	[illegible]	WK
C	REVISED PER TDRR 01181	5-2-63	WK
D	REVISED PER TDRR 01711	6-26-63	WK
E	REVISED PER TDRR 04128	63	WK
F	REVISED PER TDRR 05482	63	WK
G	REVISED PER TDRR 06641	[illegible]	WK
H	REVISED PER TDRR 07009	27 MAR 64	JJJ
J	REVISED PER TDRR 07275	2 APR 64	JJJ
K	REVISED PER TDRR 07285	7 APR 64	JJJ
L	REVISED PER TDRR 10913	28 JUL 64	JJJ
M	REVISED PER TDRR 17823	12 MAR 65	GM
N	REVISED PER TDRR 19461	2 JUN 65	J.E.L.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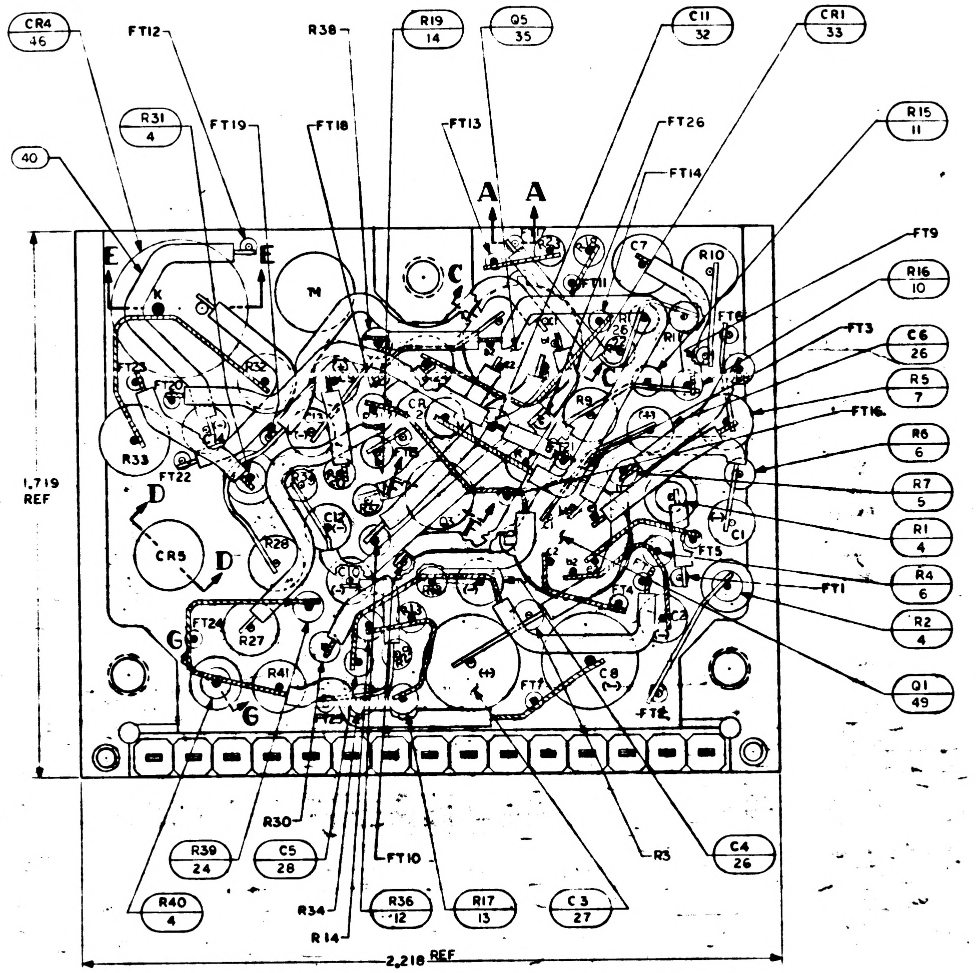
SEE NOTE 11
SEE NOTE 6
.154 MAX TYP (SEE NOTE 5)
.089 MAX
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
R6 & C7 ARE WELDED SPECIAL LEVEL NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28° 32° 4-PLACES
.154 .144 DIA 4 PLACES
3
.000 .015 SEE NOTE 6
.000 .015
15°
48
38 SEE NOTE 13
.078 .094
.000 .030
.047 .037 TYP
.124 .114 TYP
47
DO NOT ENCAPSULATE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FT12
R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT26
R15 11
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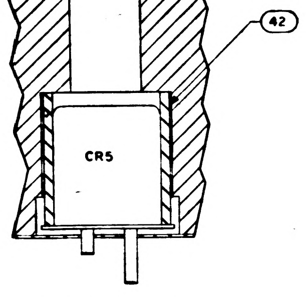
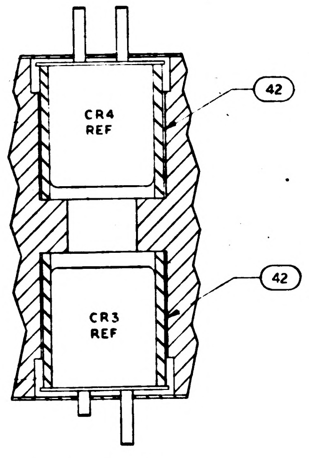
A
A
E
E
T1
C
C7
R10
FT9
R16 10
FT3
C6 26
R5 7
FT16
R6 6
R7 5
R1 4
R4 6
R2 4
Q1 49
FT1
FT5
C1
FT2
C8
FT7
FT22
R33
CR5
D
D
R28
FT24
R27
R41
G
G
1.719 REF
R39 24
C5 28
R30
FT10
R40 4
R34
R36 12
R17 13
C3 27
R14
R3
C4 26
2.218 REF

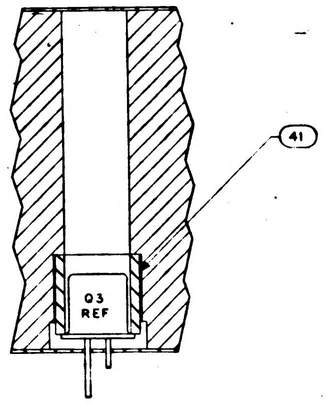
TP	COMPONENT
1	R1
2	R2
3	R31
4	R40



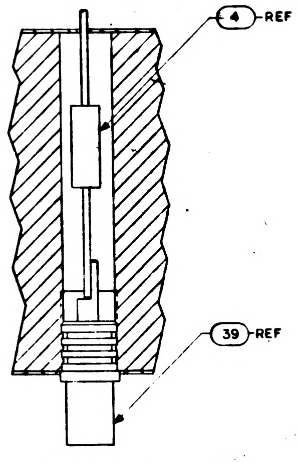
SECTION D-D


CR4 REF
CR3 REF
42
42

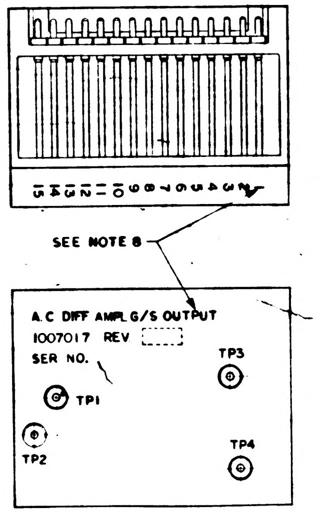
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO. 39 & FIND NO. 4


SEE NOTE 8
A.C DIFF AMPL G/S OUTPUT
1007017 REV
SER NO.
TP3
TP1
TP2
TP4

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1010376-2	TRANSISTOR	49
	1010032	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	48
AR	1006776-20	INSULATION SLEEVING	47
1	1010290-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357-1	TRANSISTOR	36
2	1010376-1	TRANSISTOR	35
2	1010290-1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF 200V, ± 10%	29
1	1006777-16	CAPACITOR, 220UUF, 100V ± 10%	28
2	1006755-83	CAPACITOR, 15UF 35V ± 10%	27
6	1006755-65	CAPACITOR, 0.47UF, 35V ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 620Ω, 1/2W ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W ± 2%	24
2	1010369-96	RESISTOR, FIXED, COMP. INS. 430K, 1/8W ± 5%	23
1	1010312-16	RESISTOR, 75 Ω, 2 W, ± 5%	22
1	1010312-14	RESISTOR, FIXED, M F, 50Ω, 2W ± 5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 5K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED, W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150Ω, 1/10W ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED, COMP. INS. 300K, 1/8W ± 5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP. INS. 240K, 1/8W ± 5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP. INS. 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007163	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//— DECIMALS XX ±.02 XXX .005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497

DRAWN R. Dell'Osso DATE 12-2-63
CHECKED
APPROVAL
APPROVAL 25 FEB 63
NASA APPROVAL 2-27-63
MIT APPROVAL 27 Feb 63

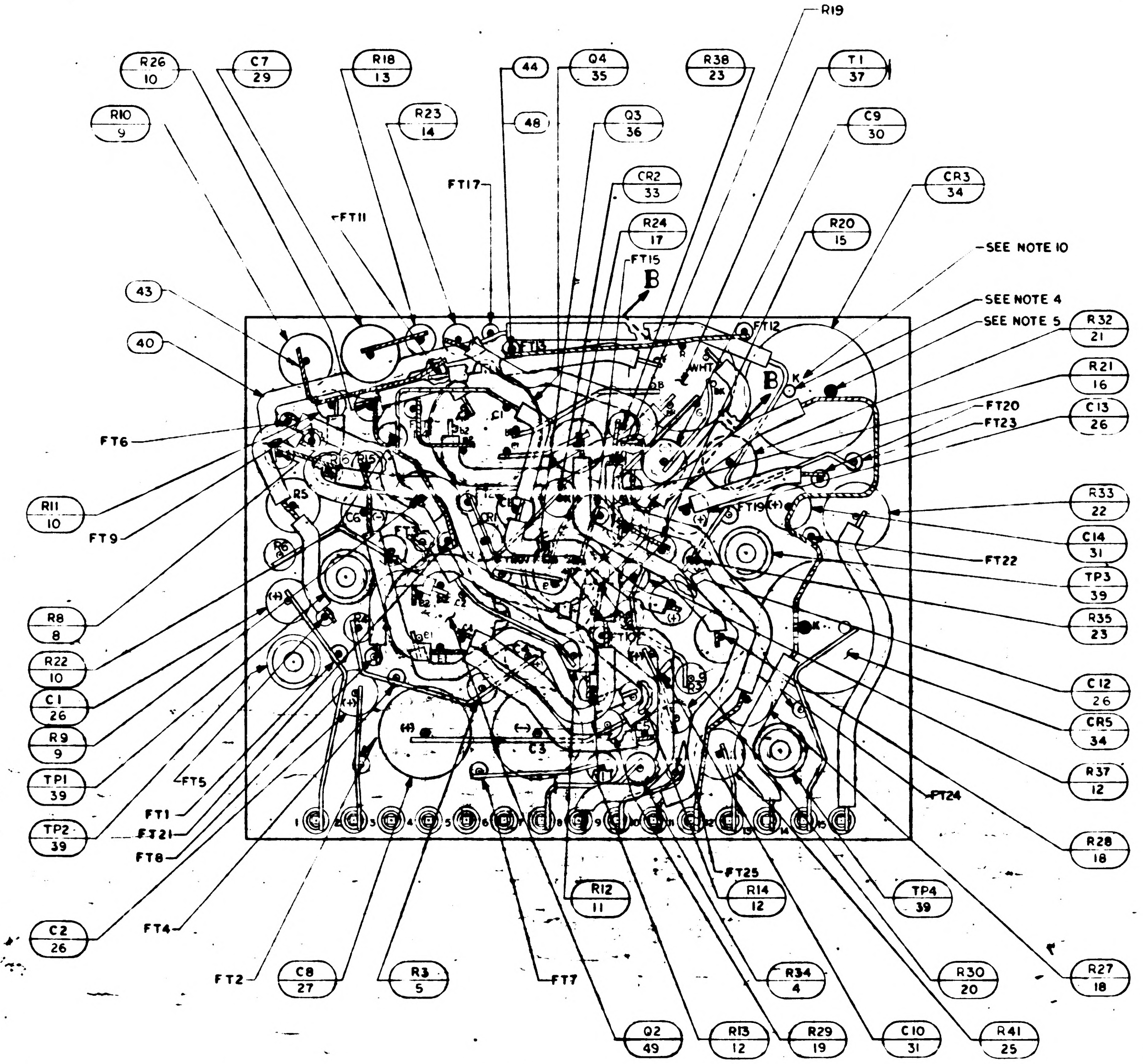
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

A C DIFFERENTIAL AMPLIFIER
G/S OUTPUT
ASSEMBLY

CODE IDENT NO. 80230
SIZE J
NASA DRAWING NO. 1007017
SCALE 5/1
WT
SHEET 1 OF 1

1007017

2/1007017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R10 9
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C9 30
FT17
CR2 33
CR3 34
FT11
R24 17
R20 15
FT15
SEE NOTE 10
B
FT12
SEE NOTE 4
SEE NOTE 5
R32 21
43
40
R21 16
C13 26
FT20
FT23
FT6
FT19
R11 10
FT9
R33 22
C14 31
FT22
TP3 39
R8 8
R35 23
R22 10
C1 26
C12 26
CR5 34
R9 9
TP1 39
FT5
R37 12
FT1
FT21
TP2 39
FT8
PT24
R28 18
FT25
R12 11
R14 12
TP4 39
C2 26
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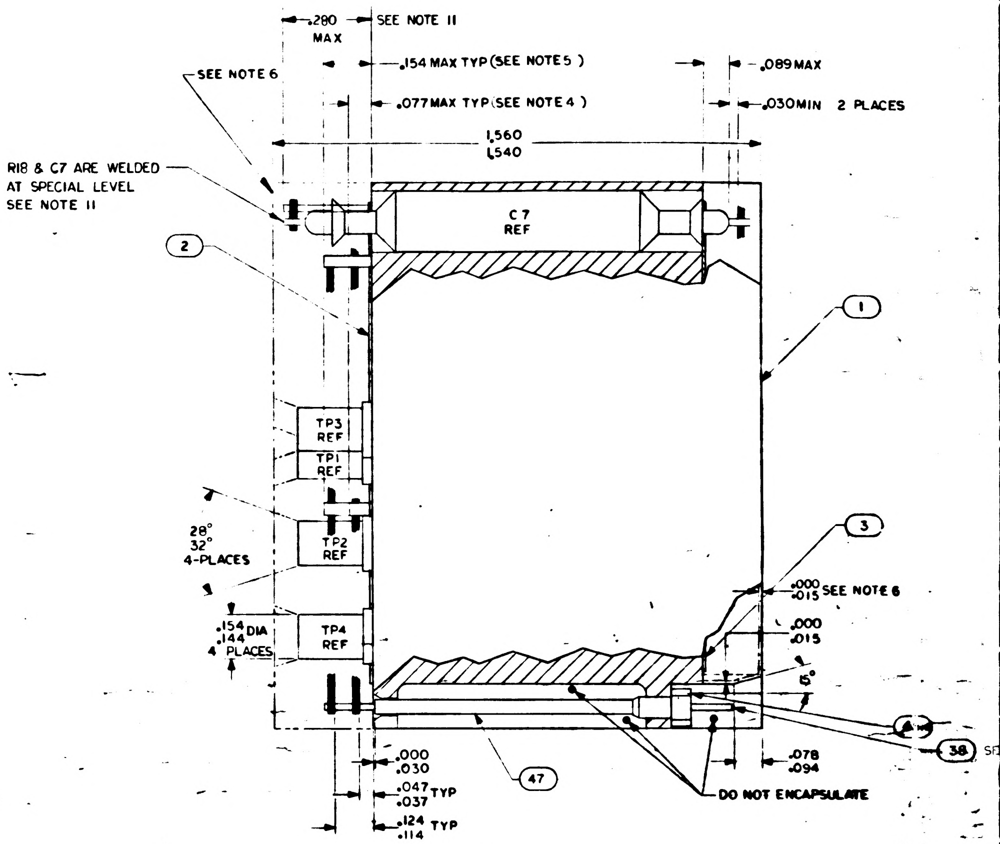
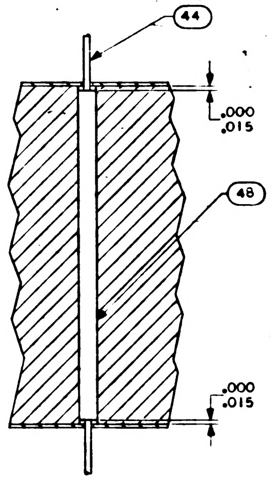
R13 12
R29 19
C10 31
R41 25


.280 MAX
SEE NOTE 11
SEE NOTE 6
.154 MAX TYP (SEE NOTE 5)
.089 MAX
.077 MAX TYP (SEE NOTE 4)
.030 MIN 2 PLACES
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.000
.015 SEE NOTE 6
.154
.144 DIA 4 PLACES
TP4 REF
.000
.015
15°
38
.000
.030
.047
.037 TYP
.124
.114 TYP
47
.078
.094
DO NOT ENCAPSULATE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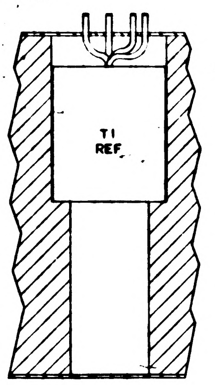
.000
.015
48
.000
.015

SECTION A-A



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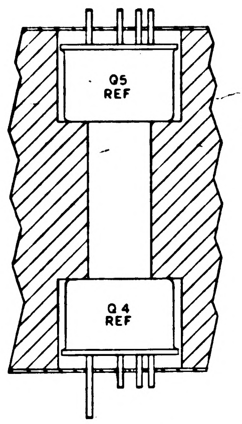
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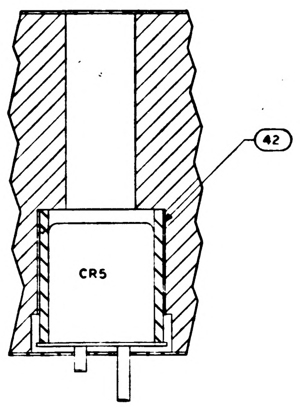
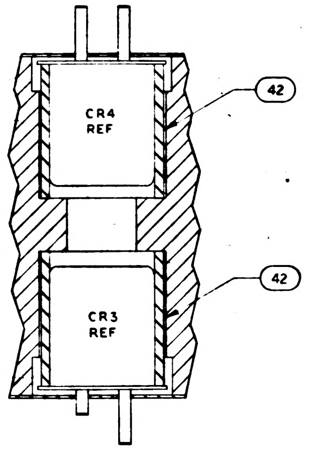
Q4 REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D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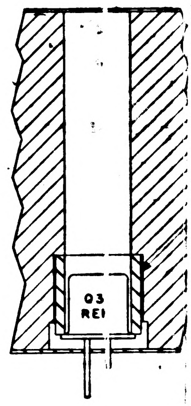
42
CR3 REF

SECTION E-E



SECTION F-F

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO. 39, FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009
Ⓛ 8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023 CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE
11. ⊕ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136
14. PROCURE PER PS 1007017
15. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND 1002187 TYPE I.~~
16. CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND 1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.

TABLE I

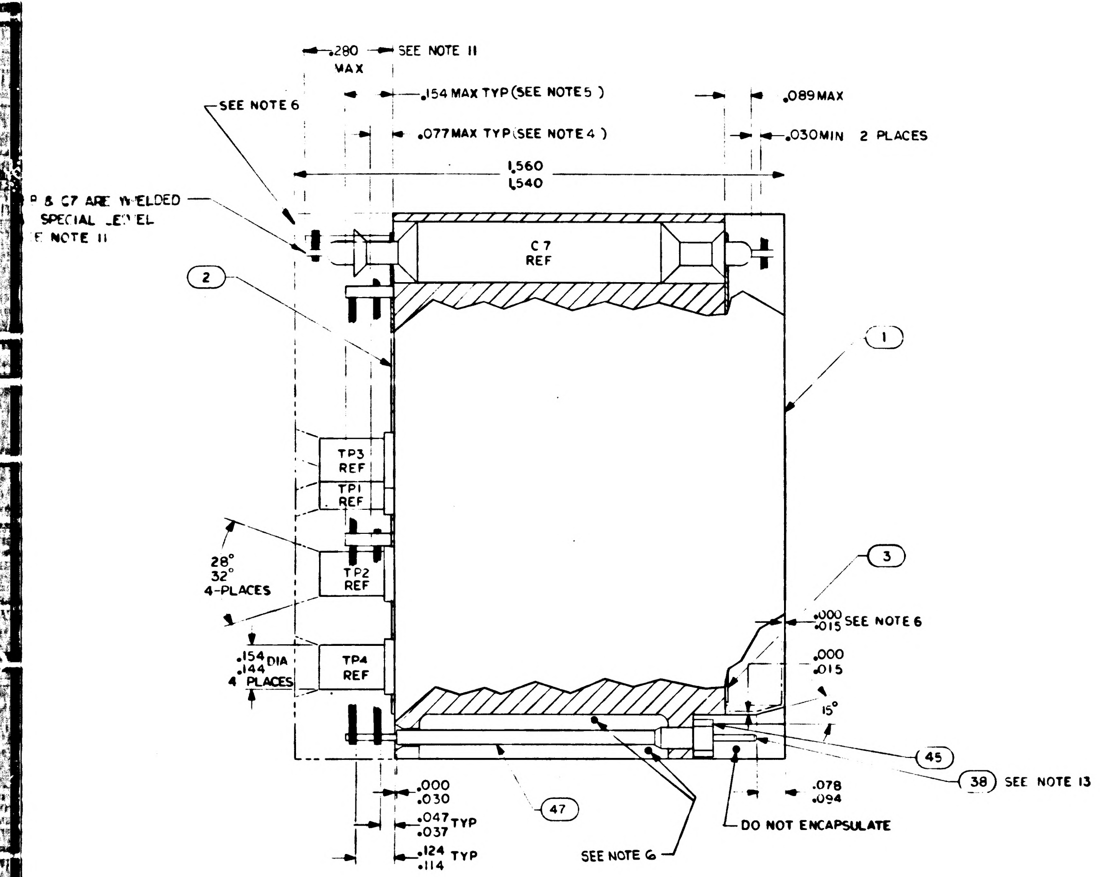
CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA. .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA. .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03±.03 OF EXTERNAL EDGE

1/1007017

1007017 P

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00725	4-2-63	DT WK
B	REVISED PER TDRR 01025	4-25-63	DT WK
C	REVISED PER TDRR 01181	5-2-63	DT WK
D	REVISED PER TDRR 01711	6-24-63	JJM WK
E	REVISED PER TDRR 04127	3 Oct 63	EPK WK
F	REVISED PER TDRR 05482	27 Dec 63	WK
G	REVISED PER TDRR 06641	[illegible]	EPK WK
H	REVISED PER TDRR 07009	27 MAR 64	JJJ AU
J	REVISED PER TDRR 07275	2 APR 64	JJM W.D.
K	REVISED PER TDRR 07285	APR 64	JJJ C7P
L	REVISED PER TDRR 109 3	28 JUL 64	JJJ AU
M	REVISED PER TDRR 7323	2 MAR 65	GM EF
N	REVISED PER TDRR 1943	[illegible]	JEL
P	REVISED PER TDRR 195-5	[illegible]	[illegible]

REVISIONS TDRR 00466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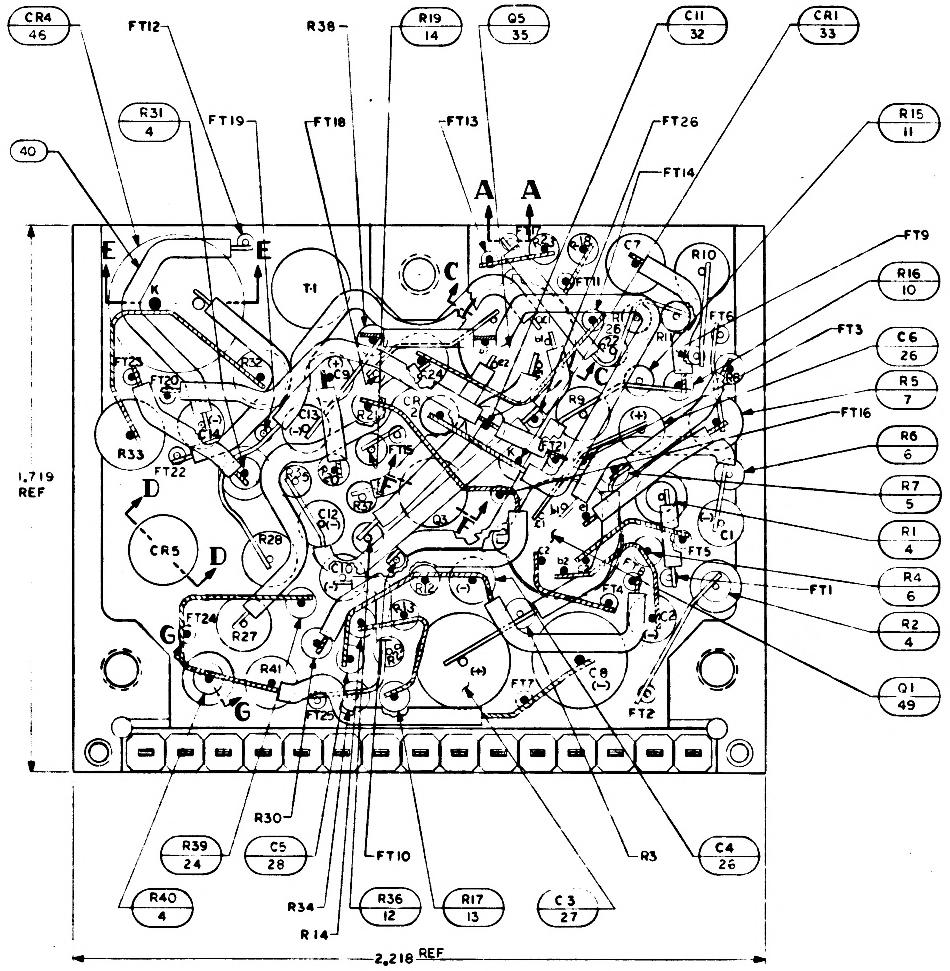
SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
1.560
1.540
SEE NOTE 6
R & C7 ARE WELDED
SPECIAL LEVEL
E NOTE 11
2
1
C7 REF
TP3 REF
TP1 REF
TP2 REF
TP4 REF
28°
32°
4-PLACES
.154
.144 DIA
4 PLACES
3
.000
.015 SEE NOTE 6
.000
.015
15°
45
38 SEE NOTE 13
.078
.094
DO NOT ENCAPSULATE
SEE NOTE 6
47
.000
.030
.047
.037 TYP
.124
.114 TYP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CR1 33
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FT13
FT26
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A
A
FT14
FT9
E
E
C
T1
C7
R10
R16 10
FT6
FT3
C6 26
R5 7
FT16
R6 6
R7 5
R1 4
R4 6
R2 4
Q1 49
FT1
FT25
FT20
R32
R33
FT22
D
CR5
D
R28
1.719 REF
R27
FT24
G
G
R41
FT23
FT7
FT2
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C5 28
R30
FT10
R40 4
R34
R14
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R3
C4 26
2.218 REF

TP	COMPONENT
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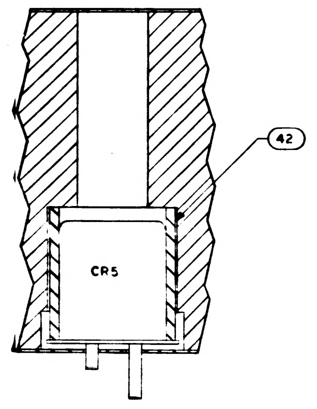
4	R40



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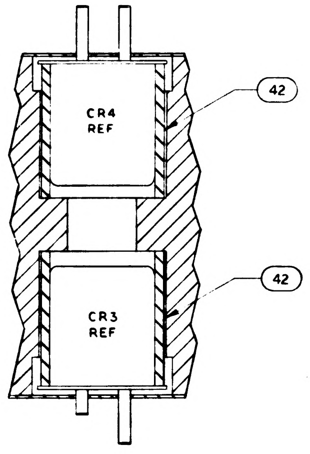
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CR3 REF
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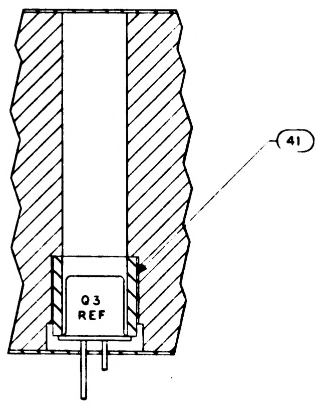
SECTION E-E



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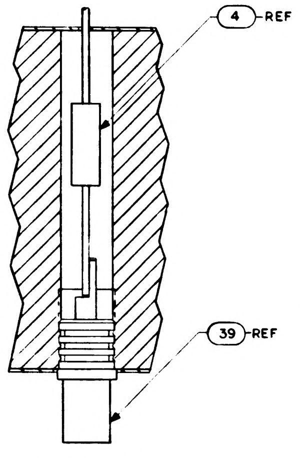
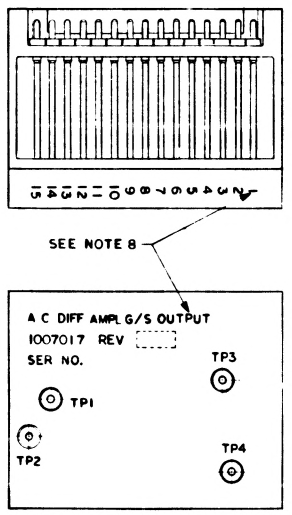


SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO.39 & FIND NO.4


SEE NOTE 8
A C DIFF AMPL G/S OUTPUT
1007017 REV
SER NO.
TP1
TP2
TP3
TP4

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1010376-2	TRANSISTOR	49
⨯	1010032	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	48
AR	1006776 20	INSULATION SLEEVING	47
1	1010831-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC 020 DIA	44
AR	1006757-1	WIRE ELEC 010 X 020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
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1	1010357 -1	TRANSISTOR	36
2	1010376 -1	TRANSISTOR	35
2	1010831 -1	DIODE	34
2	1010385	DIODE	33
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1	1006777 - 16	CAPACITOR, 220UUF ,100V ±10%	28
2	1006755 - 83	CAPACITOR, 15UF 35V, ± 10%	27
6	1006755 - 65	CAPACITOR, 0.47 UF, 35V ± 10%	26
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2	1010369 - 96	RESISTOR, FIXED, COMP. INS. 430K, 1/8W, ± 5%	23
1	1010312 - 16	RESISTOR, 75 Ω, 2W, ± 5%	22
1	1010312 - 14	RESISTOR, FIXED, M F, 50Ω, 2W, ± 5%	21
1	1006750 - 32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750 - 73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377 - 51	RESISTOR, FIXED W W, 5K, 1/10W, ± 1%	18
1	1010377 - 108	RESISTOR, FIXED, W W, 150Ω, 1/10W, ± 1%	17
1	1006750 - 49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750 - 60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369 - 92	RESISTOR, FIXED COMP. INS. 300K, 1/8W, ± 5%	14
2	1006750 - 50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750 - 8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ± 2%	12
2	1010369 - 90	RESISTOR, FIXED, COMP., INS., 240K, 1/8W, ± 5%	11
4	1006750 - 66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377 - 109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750 - 70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377 - 107	RESISTOR, FIXED, W W, 100Ω, 1/10W, ± 1%	7
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5	1006750 - 56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029 - 2	INSULATOR, BOTTOM	3
1	1008029 - 1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± // DECIMALS XX ±.02 XXX ±.005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL //
HEAT TREATMENT //
FINAL FINISH //

MIT
INSTRUMENTATION LAB
Cambridge Mass
Contract NAS 9-497

DRAWN W Dell'Aqua DATE 12-2-63
CHECKED
APPROVAL
APPROVAL 25 FEB 63
NASA APPROVAL W J Rhine 3-22-63
MIT APPROVAL 27 Feb 63

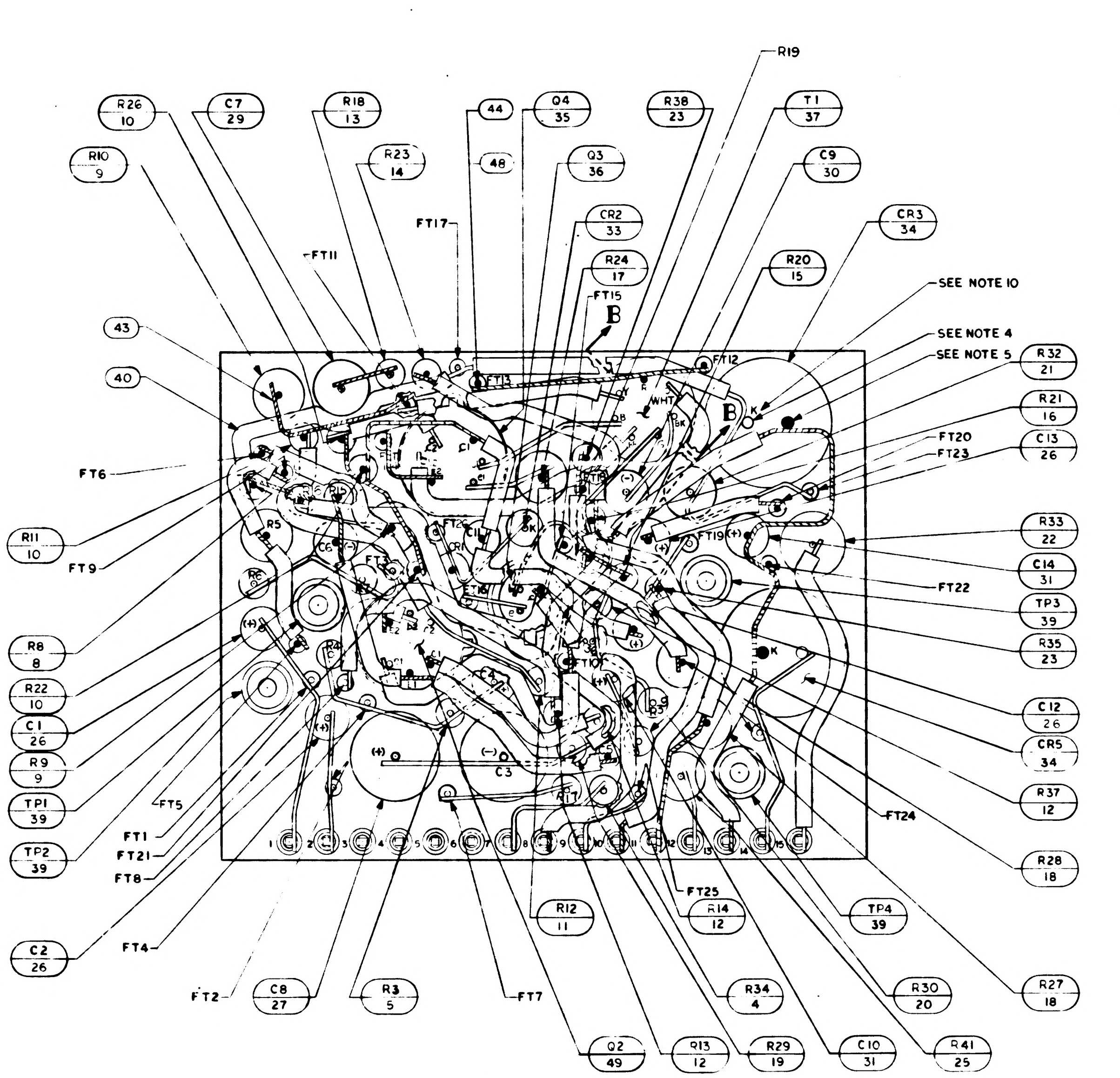
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO 80230 SIZE J NASA DRAWING NO 1007017
SCALE 5/1 WT SHEET 1 OF 1

1007017 P

2/1007017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CR2 33
CR3 34
FT11
R24 17
R20 15
SEE NOTE 10
FT15
B
43
SEE NOTE 4
SEE NOTE 5
R32 21
40
FT12
WHT
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R21 16
C13 26
FT20
FT23
FT6
R11 10
FT9
R33 22
C14 31
FT22
TP3 39
R8 8
R35 23
R22 10
C1 26
C12 26
CR5 34
R9 9
TP1 39
FT5
R37 12
TP2 39
FT1
FT21
FT8
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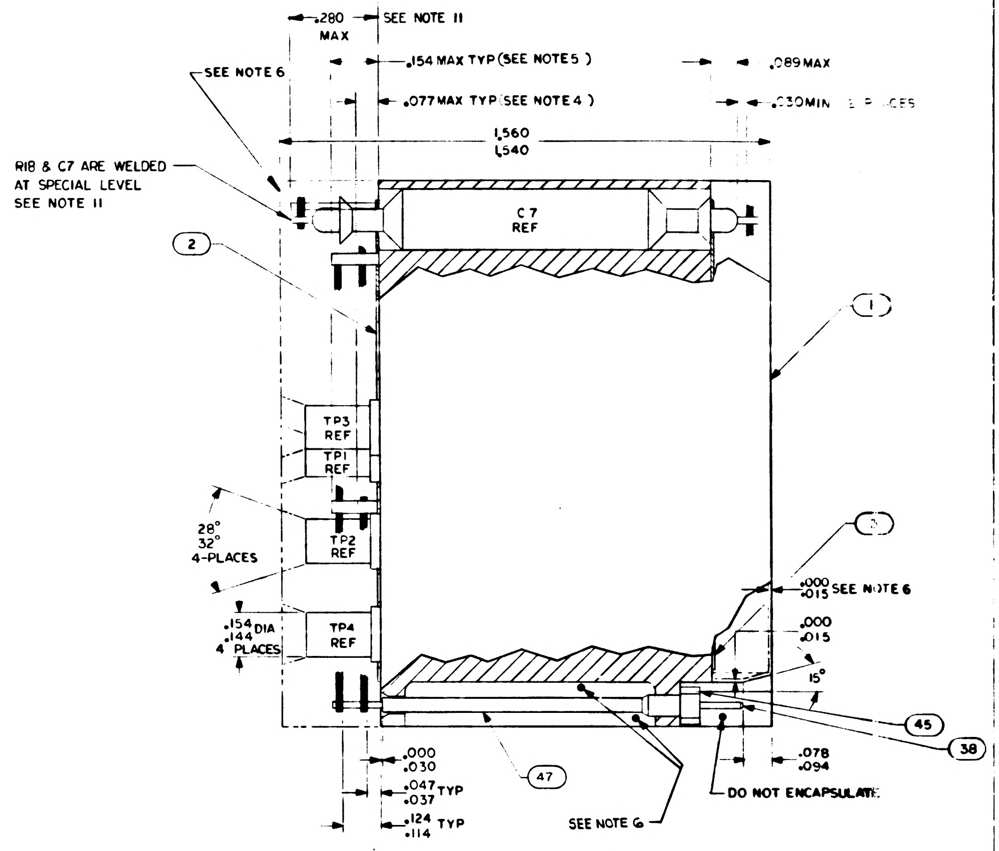
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SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.089 MAX
SEE NOTE 6
.077 MAX TYP (SEE NOTE 4)
.030 MIN
1.560
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
.000
.015 SEE NOTE 6
.154
.144 DIA
4 PLACES
TP4 REF
.000
.015
15°
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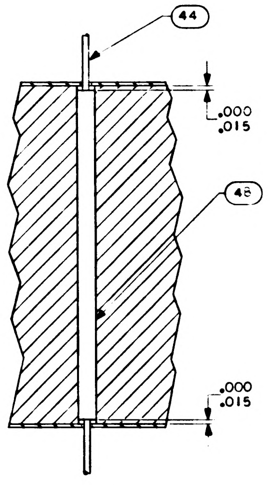
38
.000
.030
.047
.037 TYP
.124
.114 TYP
47
.078
.094
DO NOT ENCAPSULATE
SEE NOTE 6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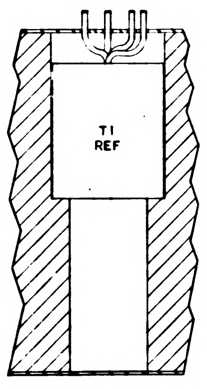
SECTION A-A



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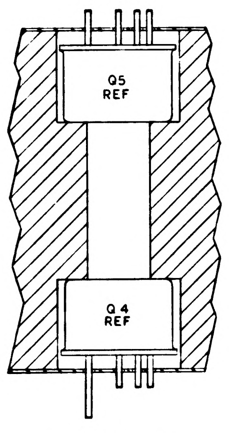
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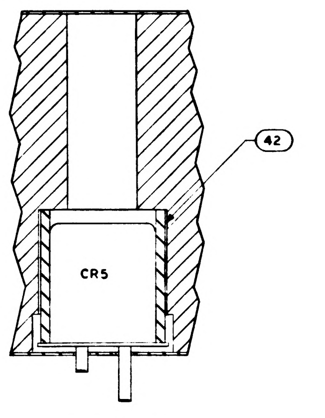
SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



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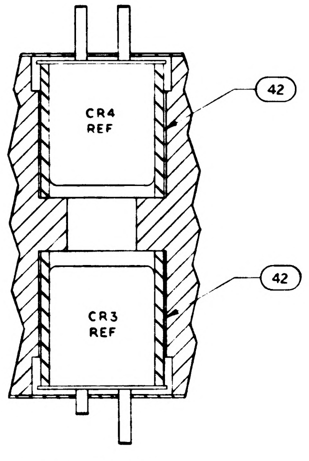
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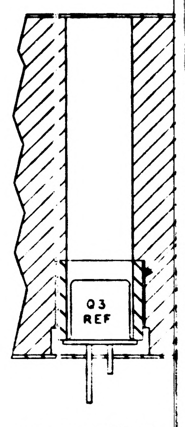
CR3 REF

SECTION E-E



SECTION F-F

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. STAKE FIND NO. 4 THRU FIND NO. 37. FIND NO. 39, FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009 METHOD H.
8. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023 CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE.
11. ◔ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136
14. PROCURE PER PS 1007017
15. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND 1002187 TYPE I.~~
16. ~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND 1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~
17. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON & ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.
18. EXCEPT FOR HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND 1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS CONNECTOR PIN BLADES & INSULATORS TO BE FREE FROM PAINT.

~~TABLE I~~

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03±.03 OF EXTERNAL EDGE

1007017 R

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00725	3-2-63	D.T. WK
B	REVISED PER TDRR 01005	[illegible]	D.T. WK
C	REVISED PER TDRR 01181	5-2-63	D.T. WK
D	REVISED PER TDRR 01711	6-24-63	JJM WK
E	REVISED PER TDRR 04127	3 Sept 63	[illegible] WK
F	REVISED PER TDRR 05432	[illegible] 63	[illegible] WK
G	REVISED PER TDRR 06641	[illegible]	[illegible] WK
H	REVISED PER TDRR 07009	27 MAR 64	JJJ AU
J	REVISED PER TDRR 07275	2 APR 64	JJJ A.D.
K	REVISED PER TDRR 07285	APR 64	JJJ CTP
L	REVISED PER TDRR 10913	28 JUL 64	JJJ AU
M	REVISED PER TDRR 17823	12-MAR 65	GM EF
N	REVISED PER TDRR 19461	2 JUN 65	J.E.L. [illegible]
P	REVISED PER TDRR 19545	[illegible]	JW
R	REVISED PER TDRR 23301	22 [illegible]	LK EF

REVISIONS TDRR 00406

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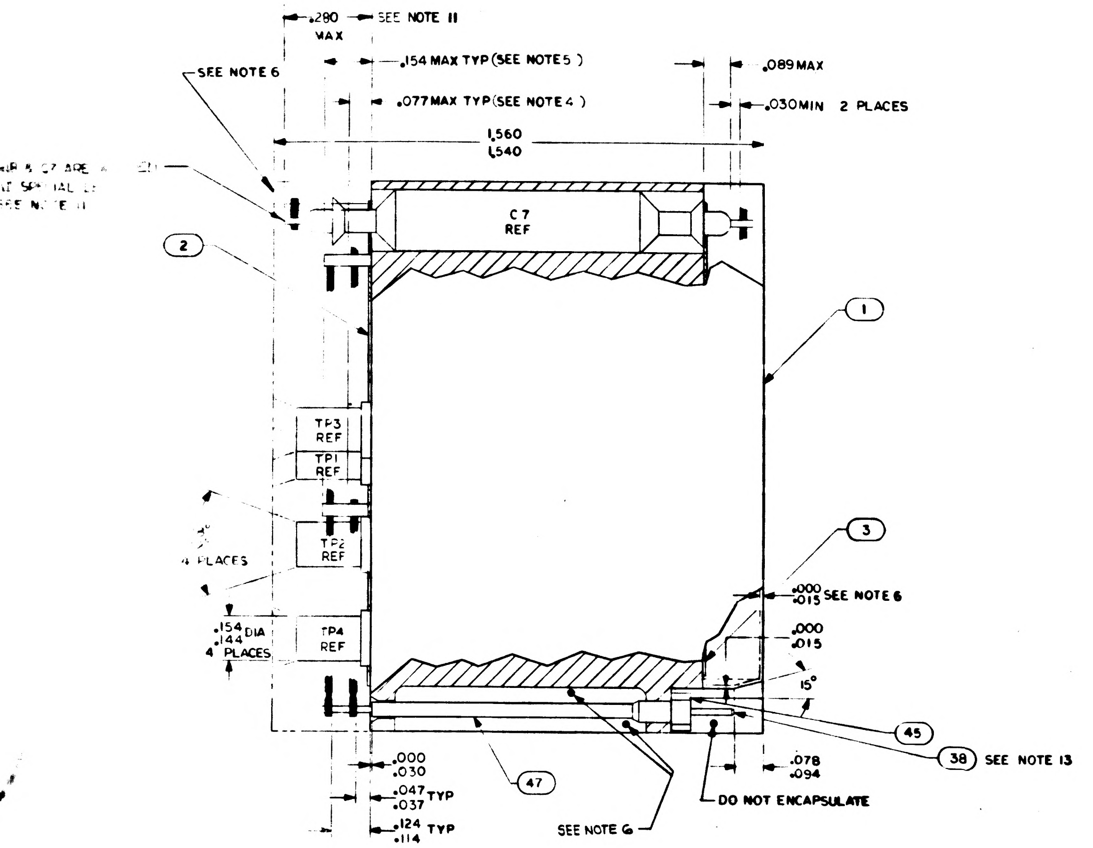
3	R31
4	R40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SEE NOTE 11
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
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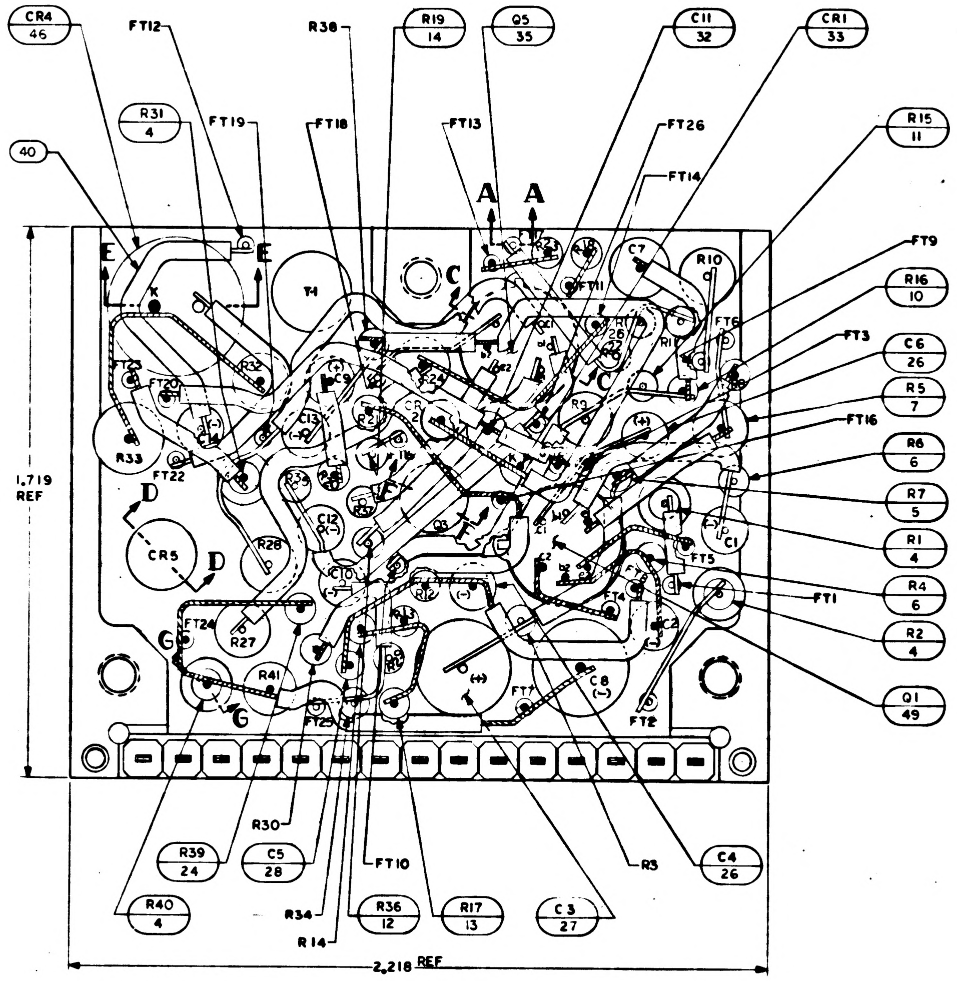
.030 MIN 2 PLACES
1.560
1.540
SEE NOTE 6
C7 REF
2
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
4 PLACES
.154
.144 DIA
4 PLACES
3
.000
.015 SEE NOTE 6
.000
.015
15°
45
38 SEE NOTE 13
.078
.094
DO NOT ENCAPSULATE
SEE NOTE 6
47
.000
.030
.047
.037 TYP
.124
.114 TYP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C11 32
CR1 33
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FT18
FT13
FT26
R15 11
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A
A
E
E
C
FT9
R16 10
T1
C7
R10
FT6
FT3
C6 26
R5 7
FT16
R6 6
FT23
FT20
R32
R33
FT22
D
D
CR5
R28
C12
C13
C14
R7 5
R1 4
R4 6
R2 4
FT5
FT1
T4
C2
C1
FT24
R27
R41
C8
FT7
FT2
Q1 49
G
G
FT25
1.719 REF
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FT10
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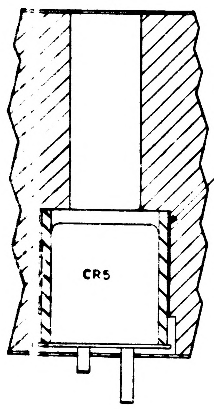
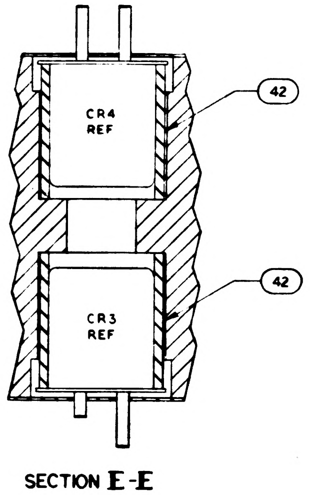
R34
R14
R36 12
R17 13
C3 27
2.218 REF



SECTION D-D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CR3 REF
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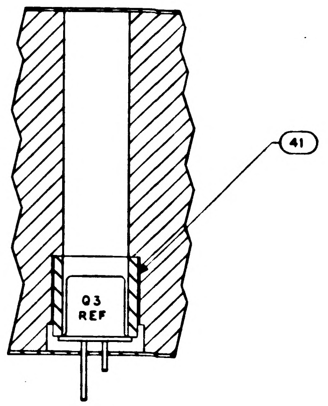
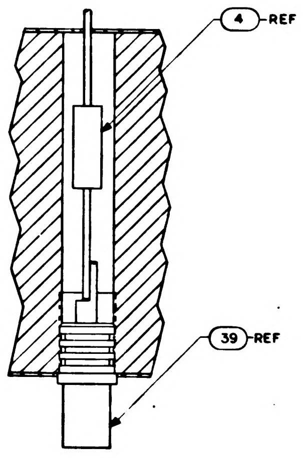
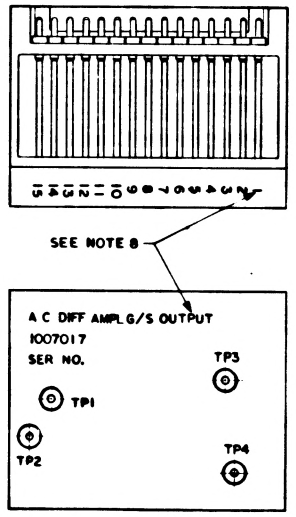
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO. 39 & FIND NO. 4


SEE NOTE 8
TP1
TP2
TP3
TP4

A C DIFF AMPL G/S OUTPUT
1007017
SER NO.

MARKING VIEW
SCALE 2/1

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2	1010376-2	TRANSISTOR	49
	1010032	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING	48
AR	1006776 20	INSULATION SLEEVING	47
1	1010831-2	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006757-8	WIRE ELEC .020 DIA	44
AR	1006757-1	WIRE ELEC .010 X .020	43
3	1008025-3	INSULATOR BUSHING	42
1	1008025-1	INSULATOR BUSHING	41
AR	1006776-21	INSULATION SLEEVING	40
4	1010292-2	TEST POINT	39
15	1006782-4	CONTACT, WRAPOST MALE MIN	38
1	1010335	TRANSFORMER	37
1	1010357 -1	TRANSISTOR	36
2	1010376 -1	TRANSISTOR	35
2	1010831 -1	DIODE	34
2	1010385	DIODE	33
1	1006777-27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755-69	CAPACITOR, 1.0UF 35V, ± 10%	31
1	1006755-57	CAPACITOR, 0.1UF 35V, ± 10%	30
1	1010264-13	CAPACITOR, 0.01UF, 200V, ±10%	29
1	1006777-16	CAPACITOR, 220UUF, 100V, ±10%	28
2	1006755-83	CAPACITOR, 15UF 35V, ± 10%	27
6	1006755-65	CAPACITOR, 0.47UF, 35V, ± 10%	26
1	1006760-27	RESISTOR, FIXED, M F, 620 Ω, 1/2W, ± 5%	25
1	1006750-40	RESISTOR, FIXED, M F, 2.2K, 1/4W, ± 2%	24
2	1010369-96	RESISTOR, FIXED, COMP. INS., 430K, 1/8W, ± 5%	23
1	1010312-16	RESISTOR, 75 Ω, 2W, ± 5%	22
1	1010312-14	RESISTOR, FIXED, M F, 50 Ω, 2W, ± 5%	21
1	1006750-32	RESISTOR, FIXED, M F, 1K, 1/4W, ± 2%	20
1	1006750-73	RESISTOR, FIXED, M F, 51K, 1/4W, ± 2%	19
2	1010377-51	RESISTOR, FIXED W W, 5K, 1/10W, ± 1%	18
1	1010377-108	RESISTOR, FIXED, W W, 150 Ω, 1/10W, ± 1%	17
1	1006750-49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ± 2%	16
1	1006750-60	RESISTOR, FIXED, M F, 15K, 1/4W, ± 2%	15
2	1010369-92	RESISTOR, FIXED COMP. INS., 300K, 1/8W, ± 5%	14
2	1006750-50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ± 2%	13
4	1006750-8	RESISTOR, FIXED, M F, 100 Ω, 1/4W, ± 2%	12
2	1010369-90	RESISTOR, FIXED, COMP., INS., 240K, 1/8W, ± 5%	11
4	1006750-66	RESISTOR, FIXED, M F, 27K, 1/4W, ± 2%	10
2	1010377-109	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± 1%	9
1	1006750-70	RESISTOR, FIXED, M F, 39K, 1/4W, ± 2%	8
1	1010377-107	RESISTOR, FIXED, W W, 100 Ω, 1/10W, ± 1%	7
2	1010369-97	RESISTOR FIXED, COMP., INS., 470K, 1/8W, 5%	6
2	1006750-67	RESISTOR, FIXED, M F, 30K, 1/4W, ± 2%	5
5	1006750-56	RESISTOR, FIXED M F, 10K, 1/4W, ± 2%	4
1	1008029-2	INSULATOR, BOTTOM	3
1	1008029-1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//— DECIMALS XX ±.02 XXX .005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN [illegible] DATE 12-2-63
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible] 26 FEB 63
NASA APPROVAL W. J. [illegible] 5-22-69
MIT APPROVAL [illegible] 27 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

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SIZE J
NASA DRAWING NO. 1007017
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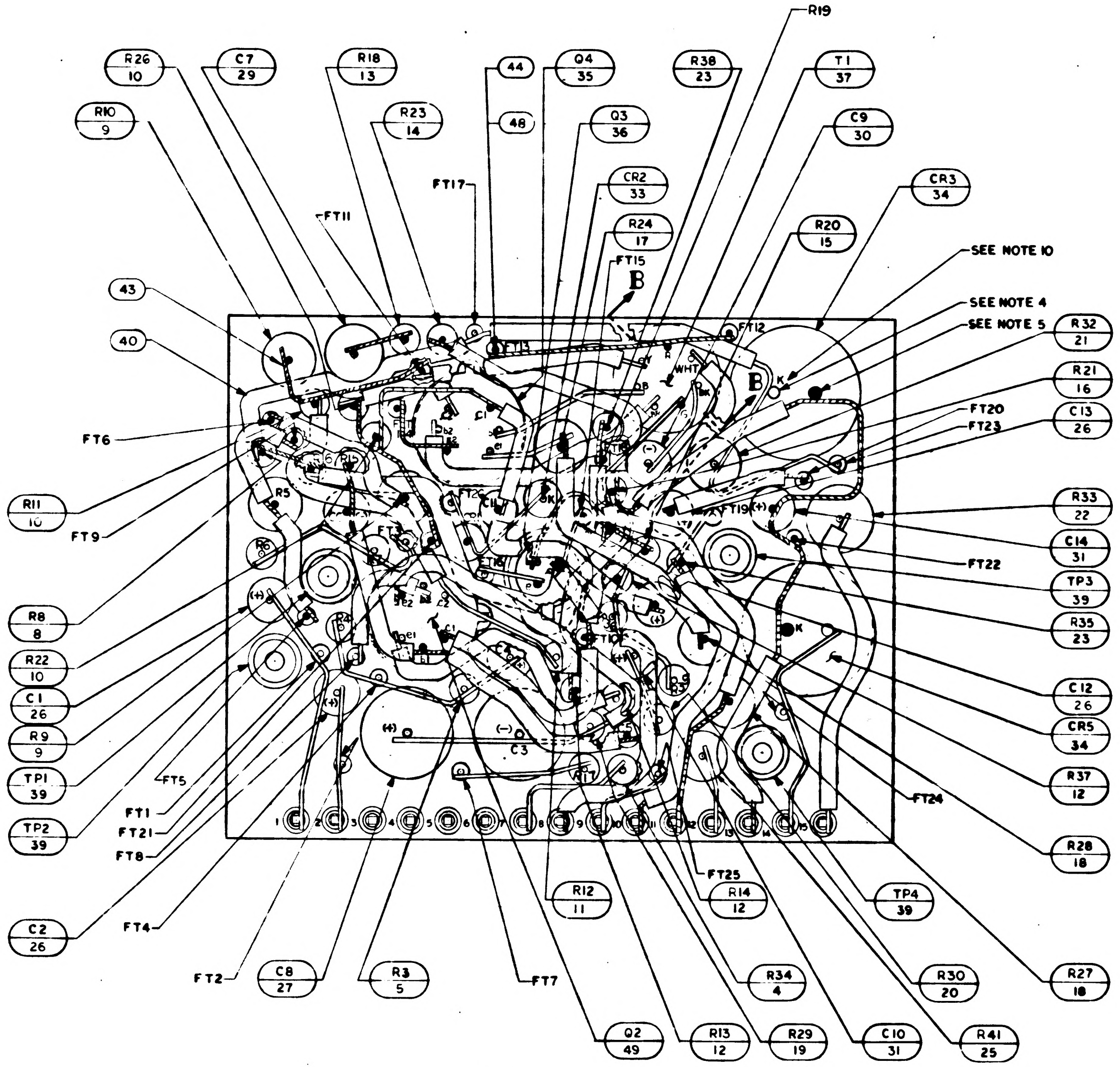
WT
SHEET 1 OF 1

1007017 R

27 1007017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FT11
CR2 33
CR3 34
R24 17
FT15
B
R20 15
SEE NOTE 10
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SEE NOTE 4
SEE NOTE 5
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FT12
R21 16
FT20
C13 26
FT23
FT6
R33 22
C14 31
R11 10
FT9
FT22
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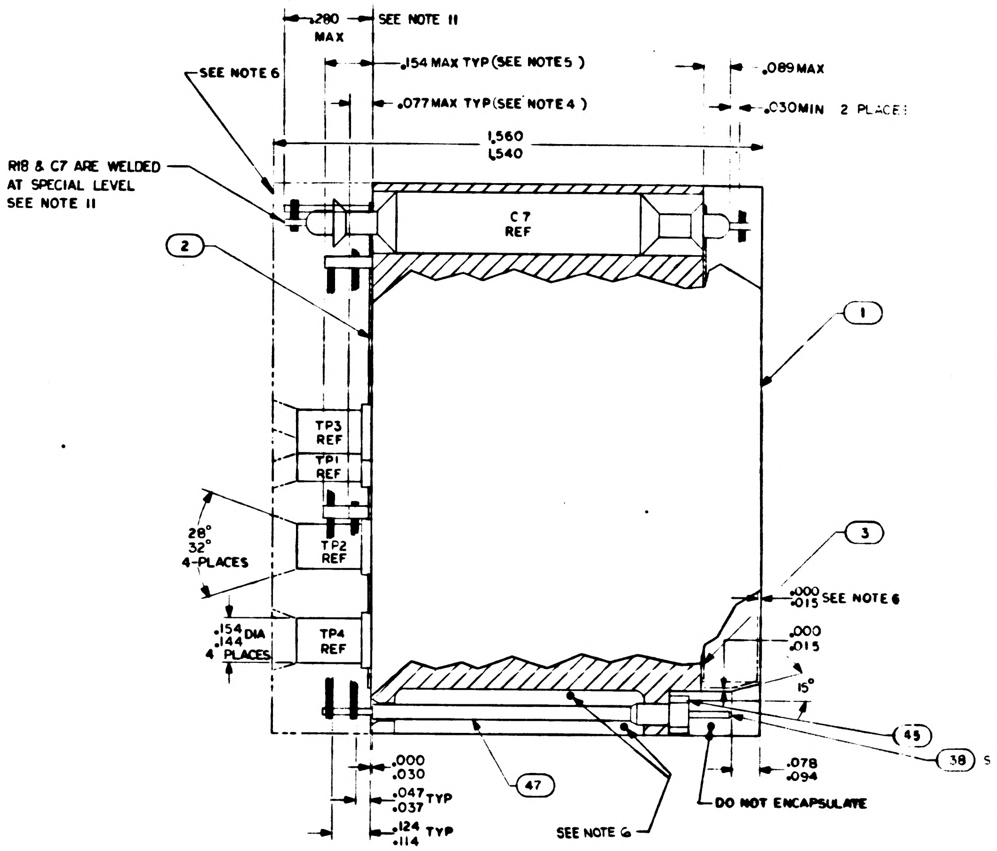
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SEE NOTE 11
SEE NOTE 6
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.077 MAX TYP (SEE NOTE 4)
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.030 MIN 2 PLACES
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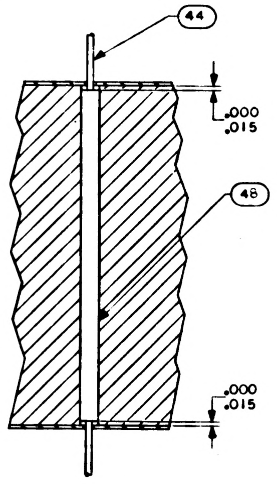
1.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
1
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
3
.000
.015 SEE NOTE 6
.154
.144 DIA
4 PLACES
TP4 REF
.000
.015
15°
45
38
.000
.030
.047
.037 TYP
.124
.114 TYP
47
SEE NOTE 6
DO NOT ENCAPSULATE
.078
.094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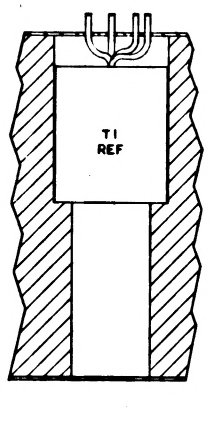
SECTION A-A



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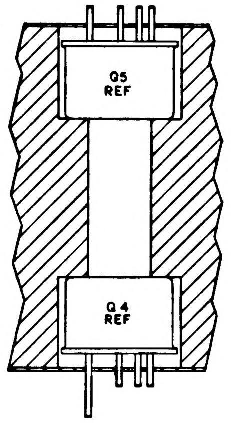
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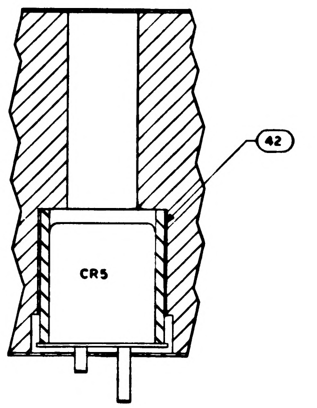
REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



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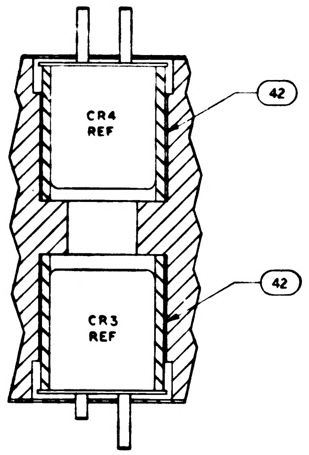
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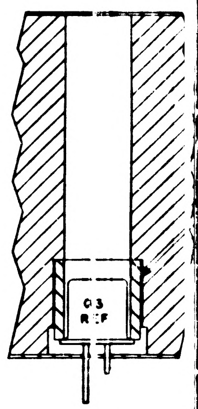
SECTION E-E



SECTION F-F

NOTES:

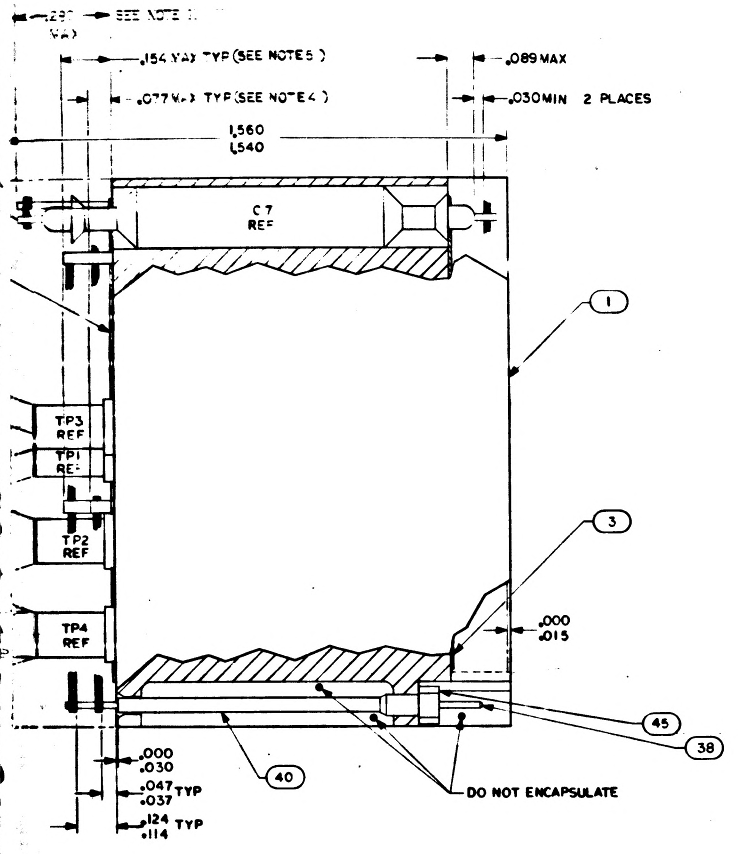
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002008~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO. 39, FIND NO 41, FIND NO. 42 AND FIND NO. 46 PER ND 1002009 METHOD J.
8. Ⓛ MARK PIN NUMBERS .08 HIGH (WHITE) ~~AND SERIALIZE~~ AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002019. SERIALIZE PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE.
11. ◕ DENOTES SPECIAL LEVEL
12. + DENOTES POLARITY OF CAPACITOR
13. MUST MEET REQUIREMENTS OF ND 1002136
14. PROCURE PER PS 1007017
15. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND 1002187 TYPE I.~~
16. ~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND 1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~
17. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON & ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.
18. EXCEPT FOR HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND 1002279, USING 1010922 PRIMER AND 1008809-4 PAINT. CONNECTOR PIN-BLADES AND INSULATORS TO BE FREE OF PAINT.

~~TABLE I~~

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA, .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA, .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ± .03 OF EXTERNAL EDGE

1/1007017

REVISIONS TDRR 00460			
SYM	DESCRIPTION	DATE	APPROVAL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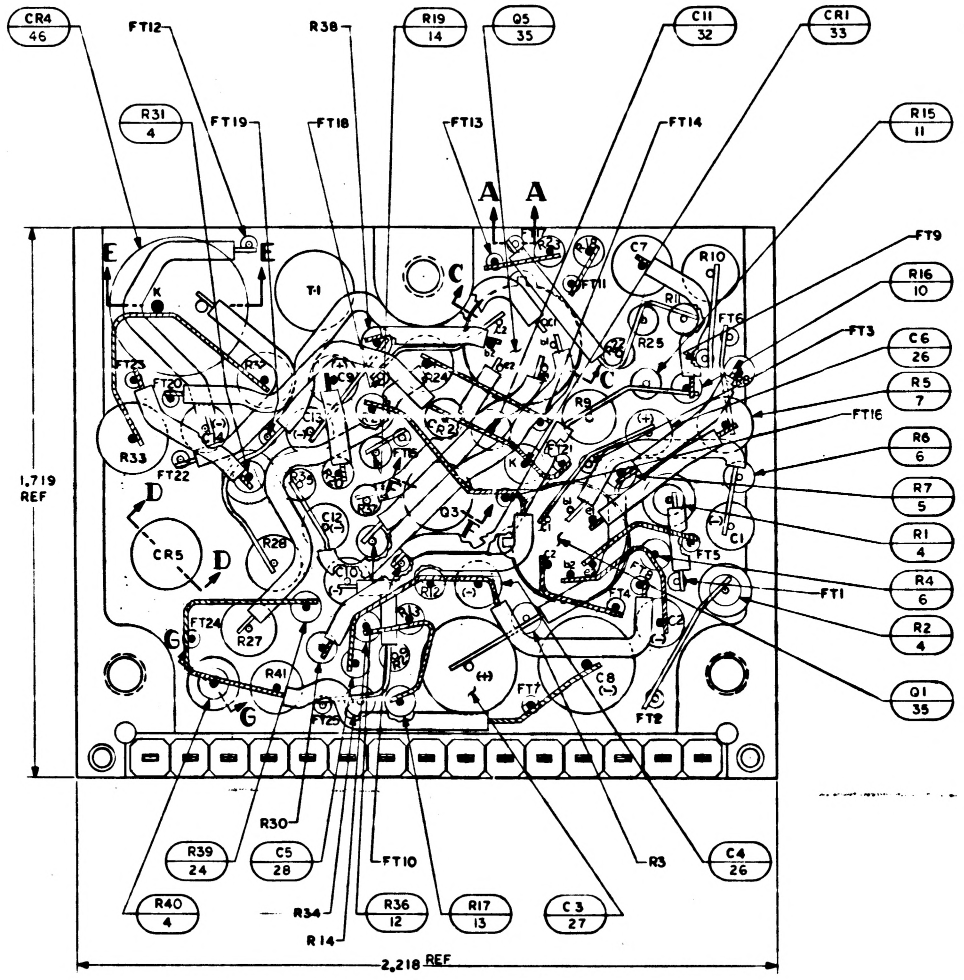
.154 MAX TYP (SEE NOTE 5)
.077 MAX TYP (SEE NOTE 4)
.089 MAX
.030 MIN 2 PLACES
1.560
1.540
C7 REF
1
TP3 REF
TP1 REF
TP2 REF
TP4 REF
3
.000
.015
45
38
40
DO NOT ENCAPSULATE
.000
.030
.047
.037 TYP
.124
.114 TYP


CR4 46
FT12
R38
R19 14
Q5 35
C11 32
CR1 33
R31 4
FT19
FT18
FT13
FT14
R15 11
A A
E E
C C
T-1
C7
R10
FT9
R16 10
FT3
C6 26
R5 7
FT16
R6 6
R7 5
R1 4
R4 6
R2 4
FT1
Q1 35
1.719 REF
CR5
D D
R33
R28
R27
R41
G G
FT24
FT20
FT22
FT23
FT5
FT7
FT2
FT11
R25
R24
R9
Q3
C8
C12
C1
R30
R39 24
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FT10
R3
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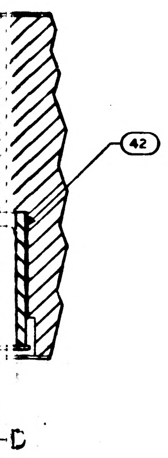
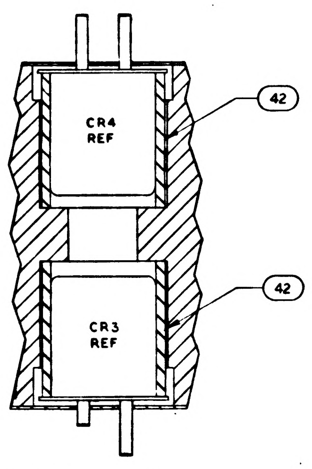
C3 27
R14
2.218 REF

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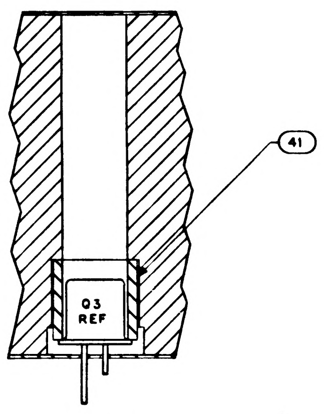
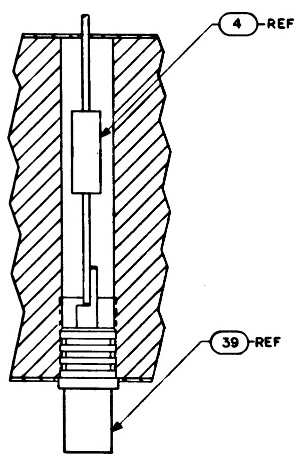
CR3 REF
42

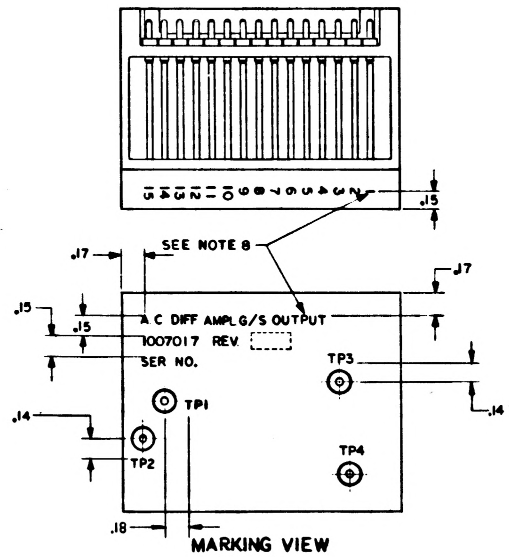
SECTION E-E



SECTION F-F



SECTION G-G
4-PLACES
TYP INSTALLATION
FOR FIND NO.39 & FIND NO.4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.15
SEE NOTE 8
.17
.17
.15
.15
A C DIFF AMPL G/S OUTPUT
1007017 REV.
SER NO.
TP3
TP1
.14
TP2
TP4
.14 TYP
.18

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010032	SCHEMATIC	REF
			48
			47
1	1010290—	DIODE	46
15	1006775	INSULATOR, WRAPOST MALE MIN	45
AR	1006787-2	WIRE ELEC .020 DIA	44
AR	1006757—1	WIRE ELEC .010 X .020	43
3	1008025—3	INSULATOR BUSHING	42
1	1008025—1	INSULATOR BUSHING	41
AR	1006776—21	INSULATION SLEEVING	40
4	1010292—2	TEST POINT	39
15	10106782—4	CONTACT, WRAPOST MALE MIN	38
1	1010335 —	TRANSFORMER	37
1	1010357 —	TRANSISTOR	36
4	1010376 —1	TRANSISTOR	35
2	1010290 —	DIODE	34
2	1010385 —	DIODE	33
1	1006777 — 27	CAPACITOR, .0033UF .100V, ± 10%	32
2	1006755 — 69	CAPACITOR, 1.0UF 35V, ±20%	31
1	1006755 — 57	CAPACITOR, 0.1UF 35V, ±20%	30
1	1010264 — 13	CAPACITOR, 0.01UF ,200V,±10%	29
1	1006777 — 16	CAPACITOR, 220UUF ,100V,±10%	28
2	1006755 — 83	CAPACITOR, 15UF 35V, ±20%	27
6	1006755 — 65	CAPACITOR, 0.47 UF, 35V ±20%	26
1	1006760 — 27	RESISTOR, FIXED, M F, 620Ω, 1/2W, ±5%	25
1	1006750 — 40	RESISTOR, FIXED, M F, 2.2K, 1/4W, ±5%	24
2	1010369 — 96	RESISTOR, FIXED, COMP, INS., 430K, 1/4W, ±5%	23
1	1010389 —	RESISTOR, 43Ω, 3W, ±1%	22
1	1010312 —	RESISTOR, FIXED, M F, 36Ω, 2W, ±5%	21
1	1006750 — 32	RESISTOR, FIXED, M F, 1K, 1/4W, ±5%	20
1	1006750 — 73	RESISTOR, FIXED, M F, 51K, 1/4W, ±5%	19
2	1010377 — 51	RESISTOR, FIXED, W W, 5K, 1/10W, ±1%	18
1	1010377 —	RESISTOR, FIXED, W W, 300Ω, 1/10W, ±1%	17
1	1006750 — 49	RESISTOR, FIXED, M F, 5.1K, 1/4W, ±5%	16
1	1006750 — 60	RESISTOR, FIXED, M F, 15K, 1/4W, ±5%	15
2	1010369 — 92	RESISTOR, FIXED, COMP, INS., 300K, 1/4W, ±5%	14
2	1006750 — 50	RESISTOR, FIXED, M F, 5.6K, 1/4W, ±5%	13
4	1006750 — 8	RESISTOR, FIXED, M F, 100Ω, 1/4W, ±5%	12
2	1010369 — 90	RESISTOR, FIXED, COMP., INS., 240K, 1/4W, ±5%	11
4	1006750 — 66	RESISTOR, FIXED, M F, 27K, 1/4W, ±5%	10
2	1010377 —	RESISTOR, FIXED, W W, 7.5K, 1/10W, ± %	9
1	1006750—70	RESISTOR, FIXED, M F, 39K, 1/4W, ±5%	8
1	1010377—	RESISTOR, FIXED, W W, 200Ω, 1/10W, ±5%	7
2	1010369—97	RESISTOR FIXED, COMP., INS. 470K, 1/4W, 5%	6
2	1006750—67	RESISTOR, FIXED, M F, 30K, 1/4W, ±5%	5
5	1006750—56	RESISTOR, FIXED M F, 10K, 1/4W, ±5%	4
1	1008029—2	INSULATOR, BOTTOM	3
1	1008029—1	INSULATOR, TOP	2
1	1008035	HEATSINK	1

LIST OF MATERIALS

1007102	
1007101	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN DATE 12-2-63
CHECKED
APPROVAL 25 Feb 63
APPROVAL 26 Feb 63
NASA APPROVAL W. J. R 2-27-63
MIT APPROVAL 27 Feb 63

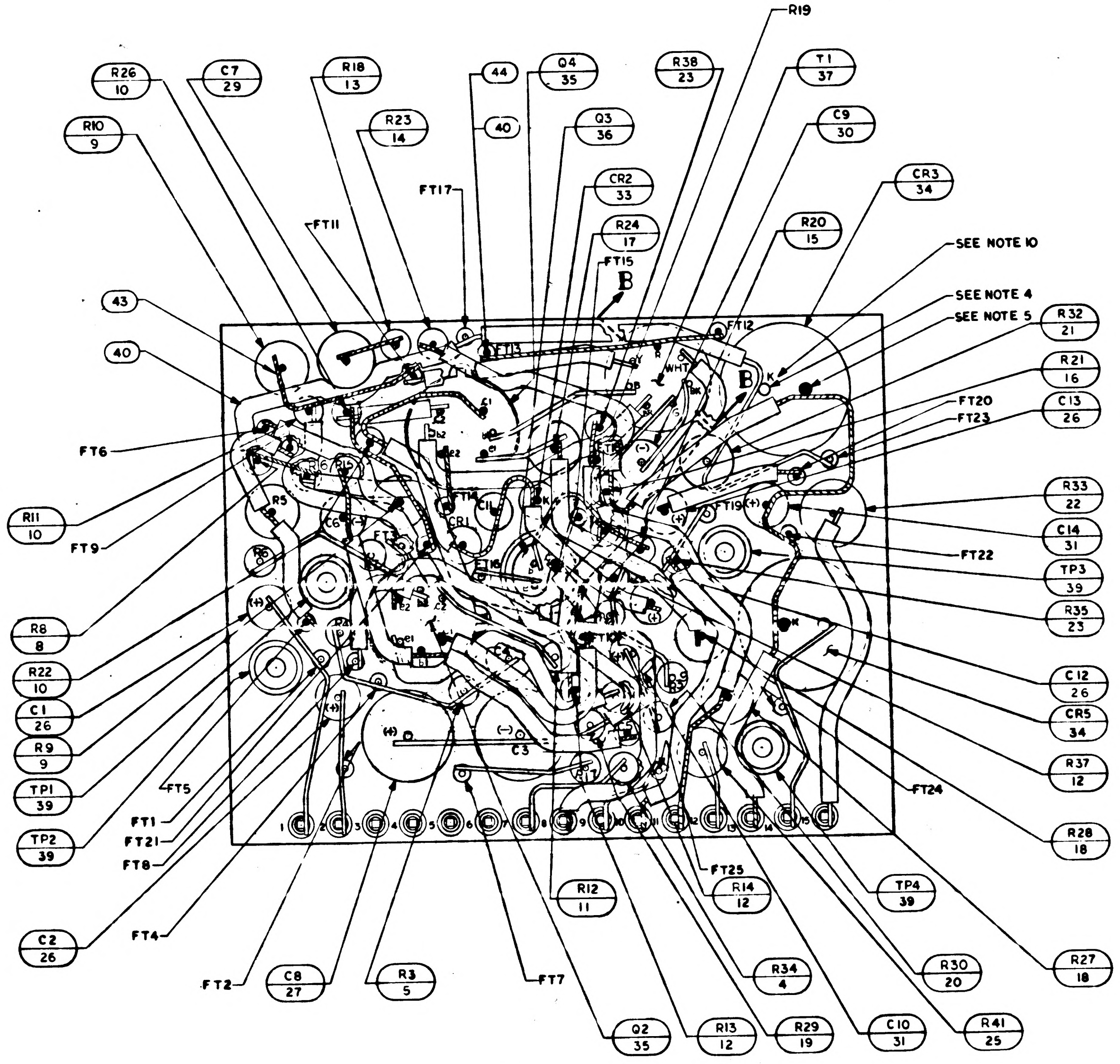
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007017
SCALE 5/1 | WT | SHEET 1 OF 1

NOTICE — [illegible]

1005011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R26 10
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R38 23
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CR2 33
CR3 34
FT17
FT11
R24 17
R20 15
FT15
B
SEE NOTE 10
SEE NOTE 4
SEE NOTE 5
R32 21
43
FT12
R21 16
40
C13 26
FT20
FT23
FT6
R33 22
R11 10
C14 31
FT9
FT22
TP3 39
R35 23
R8 8
C12 26
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C1 26
R9 9
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FT5
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FT1
FT21
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FT8
FT25
R12 11
R14 12
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FT4
C2 26
R34 4
R30 20
R27 18
FT2
C8 27
R3 5
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Q2 35
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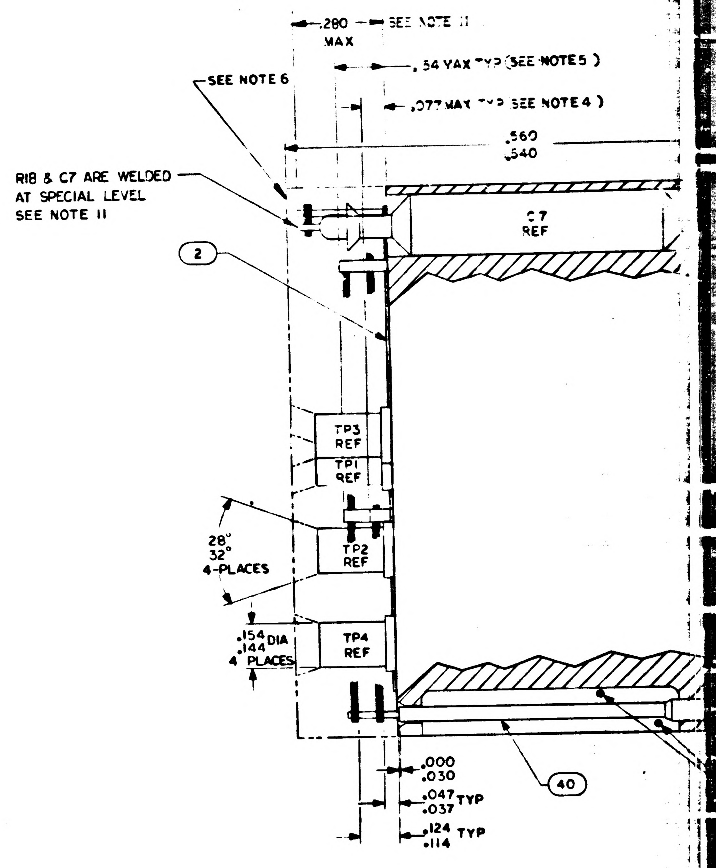
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SEE NOTE 11
.34 MAX TYP (SEE NOTE 5)
SEE NOTE 6
.077 MAX TYP SEE NOTE 4)
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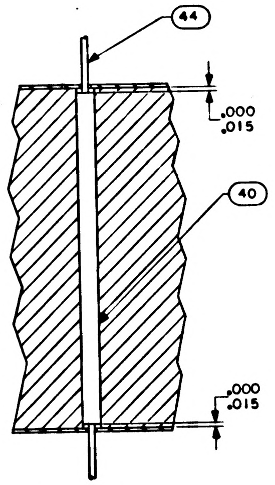
.540
R18 & C7 ARE WELDED AT SPECIAL LEVEL SEE NOTE 11
C7 REF
2
TP3 REF
TP1 REF
28°
32°
4-PLACES
TP2 REF
.154
.144
DIA
4 PLACES
TP4 REF
.000
.030
.047
.037
TYP
.124
.114
TYP
40

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM)
7. STAKE FIND NO. 4 THRU FIND NO. 37, FIND NO 39, FIND NO 41, FIND NO 42 AND FIND NO 46 PER ND 1002009
8. MARK .100/.060 HIGH WHITE PER ND1002019
9. AR DENOTES AS REQUIRED
10. K INDICATES CATHODE SIDE OF DIODE
11. ⊕ DENOTES SPECIAL LEVEL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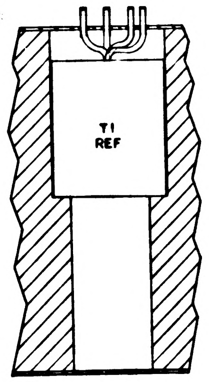
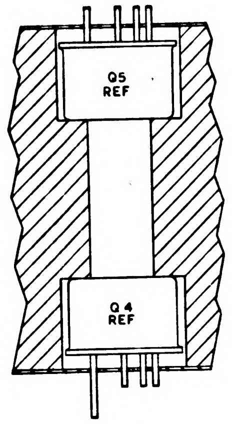
SECTION A-A



SECTION B-B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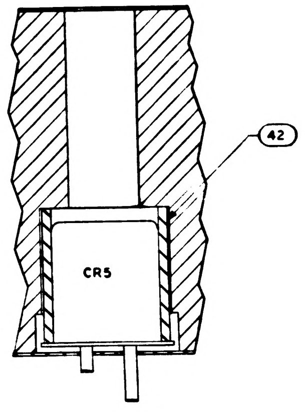
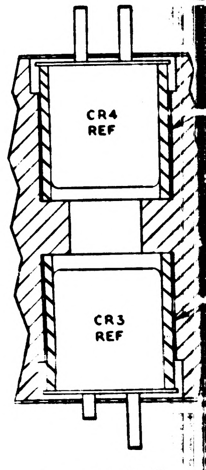
Q4 REF

SECTION C-C
2-PLACES
TYP INSTALLATION
FOR FIND NO. 35



SECTION D-D


CR4 REF
CR3 REF

SECTION E-E

APOLLO G&N Specification
PS-1007017
31 January 1964
Class A Release
TDRR 06055

PROCUREMENT SPECIFICATION

FOR

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 4 inclusive.

PROCUREMENT SPECIFICATION

FOR

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT

The purpose of this document is to establish the requirements for the procurement of the AC Differential Amplifier G/S Output for use in the APOLLO Guidance and Navigation Equipment.

W.A. Kupfer 31 Jan 64
MIT/IL DATE

W.S. Swingle 1/31/64
NASA/MSC APPROVAL DATE

PROCUREMENT SPECIFICATION

FOR

AC DIFFERENTIAL AMPLIFIER G/S OUTPUT

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the AC Differential Amplifier G/S Output, Drawing 1007017, hereafter called the amplifier.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007017	Final Test Method for AC Differential Amplifier G/S Output

DRAWINGS

APOLLO G&N

1007017	AC Differential Amplifier G/S Output
1010032	AC Differential Amplifier G/S Output, Schematic Diagram (For Reference Only)

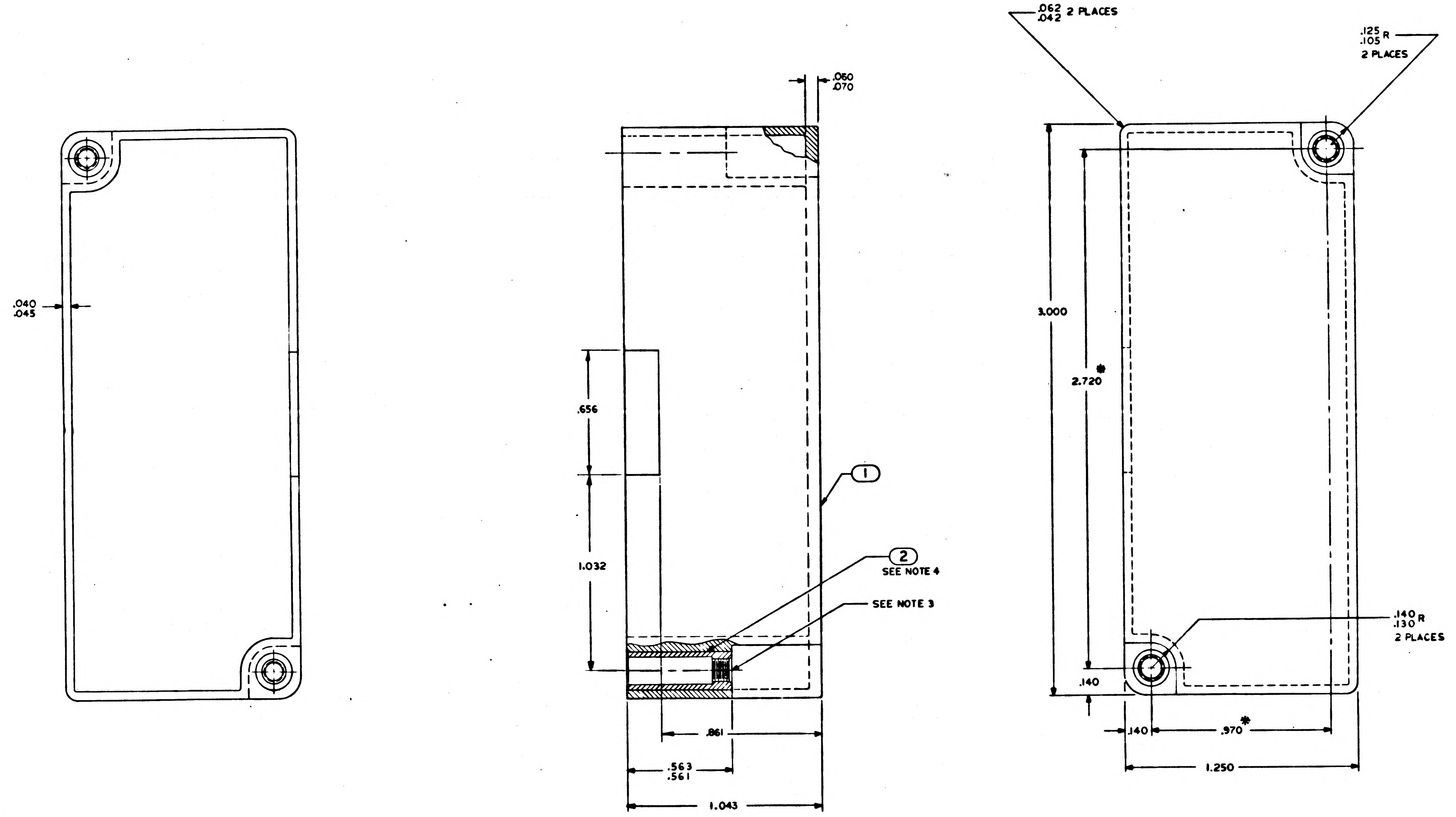
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

(M)

REVISIONS TDRR00668

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01189	5-8-63	5-9-63 WK



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: (G.E. LEXAN WATER CLEAR) PER G & N D1002134
3. MOLDING TO BE FLUSH WITH THREADED END OF FIND NO. 2 .
4. FIND NO. 2 TO BE FREE OF FOREIGN MATTER
5. UNLESS OTHERWISE SPECIFIED
   ALL INSIDE RADII .010 MAX
6. 125√ ALL OVER
7. * TOLERANCE ±.003

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1008001-1	RETAINER, SCREW	2
1	1007018-1	HOUSING MODULE, MOLDED	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007026	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN L.J. Berkeley DATE 2-5-63
CHECKED R.P. Kingsbury 7 Feb 63
APPROVAL
APPROVAL 2-25-63
NASA APPROVAL W. J. Rhine 3-27-63
MIT APPROVAL 27 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HOUSING MODULE
IRIG PREAMP
MOLDED

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007018
SCALE 4/1
WT
SHEET 1 OF 1

1007018 A

INCHES
PHOTOGRAPHIC SCALE ONLY

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REVISIONS TDRR00668

SYM	DESCRIPTION	DATE	APPROVAL
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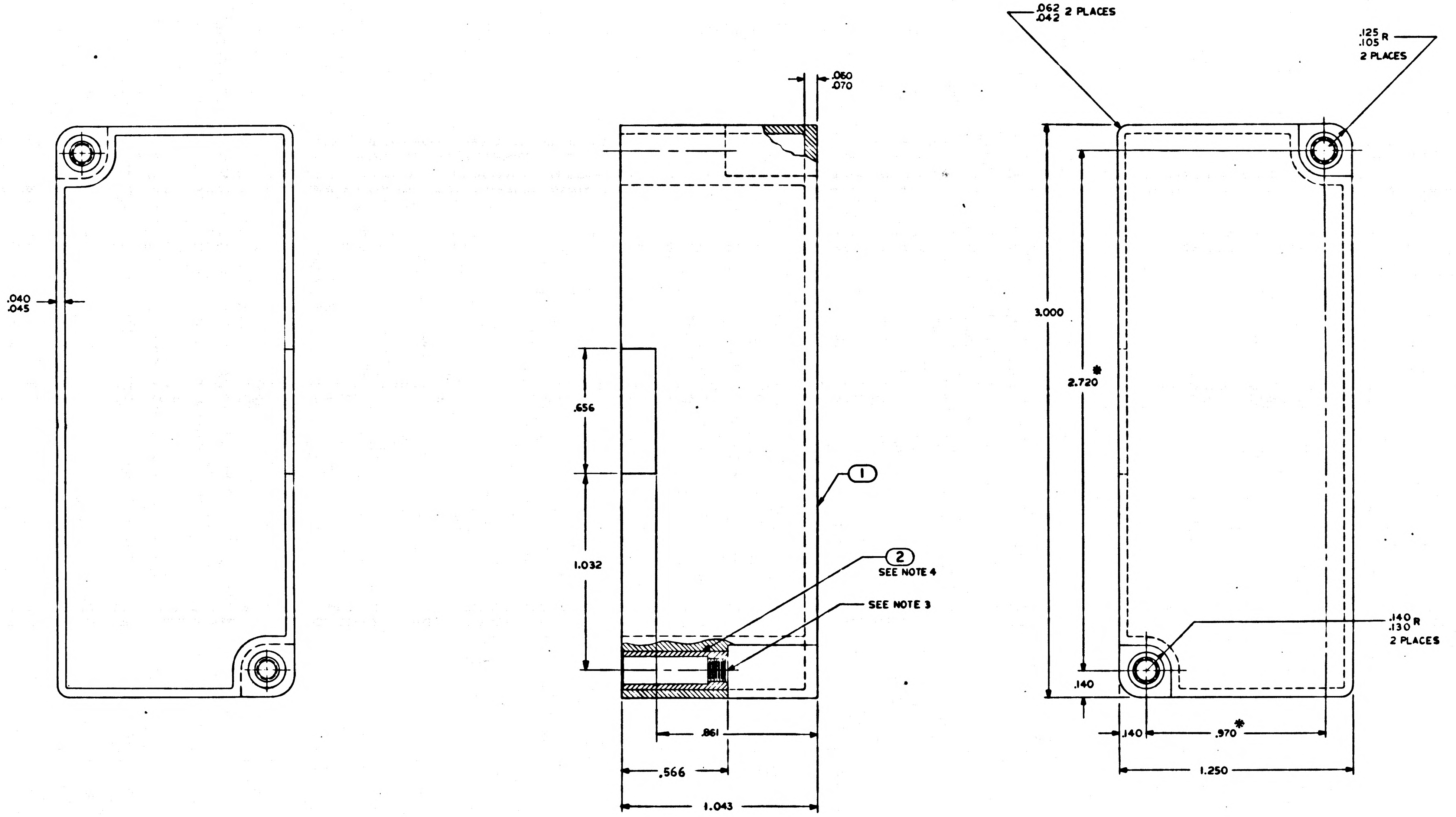
B	REVISED PER TDRR 01681	6-14-63	



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: (G.E. LEXAN WATER CLEAR) PER G&ND1002134
3. MOLDING TO BE FLUSH WITH THREADED END OF FIND NO. 2 .
4. FIND NO. 2 TO BE FREE OF FOREIGN MATTER
5. UNLESS OTHERWISE SPECIFIED
   ALL INSIDE RADII .010 MAX
6. 125✓ ALL OVER
7. * TOLERANCE ±.003

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1008001-1	RETAINER, SCREW	2
1	1007018-1	HOUSING MODULE, MOLDED	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007026	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//— DECIMALS ± .005 ANGLES ± —//—
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN L.J. Berkeley DATE 2-5-63
CHECKED R.L. Kingsbury 7 Mar 63
APPROVAL
APPROVAL A.C. Smith 3-28-63
NASA APPROVAL W.J. Rhine 3-27-63
MIT APPROVAL 27 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HOUSING MODULE
IRIG PREAMP
MOLDED

CODE IDENT NO. SIZE E NASA DRAWING NO 1007018
SCALE 4/1 WT SHEET 1 OF 1

1007018 B

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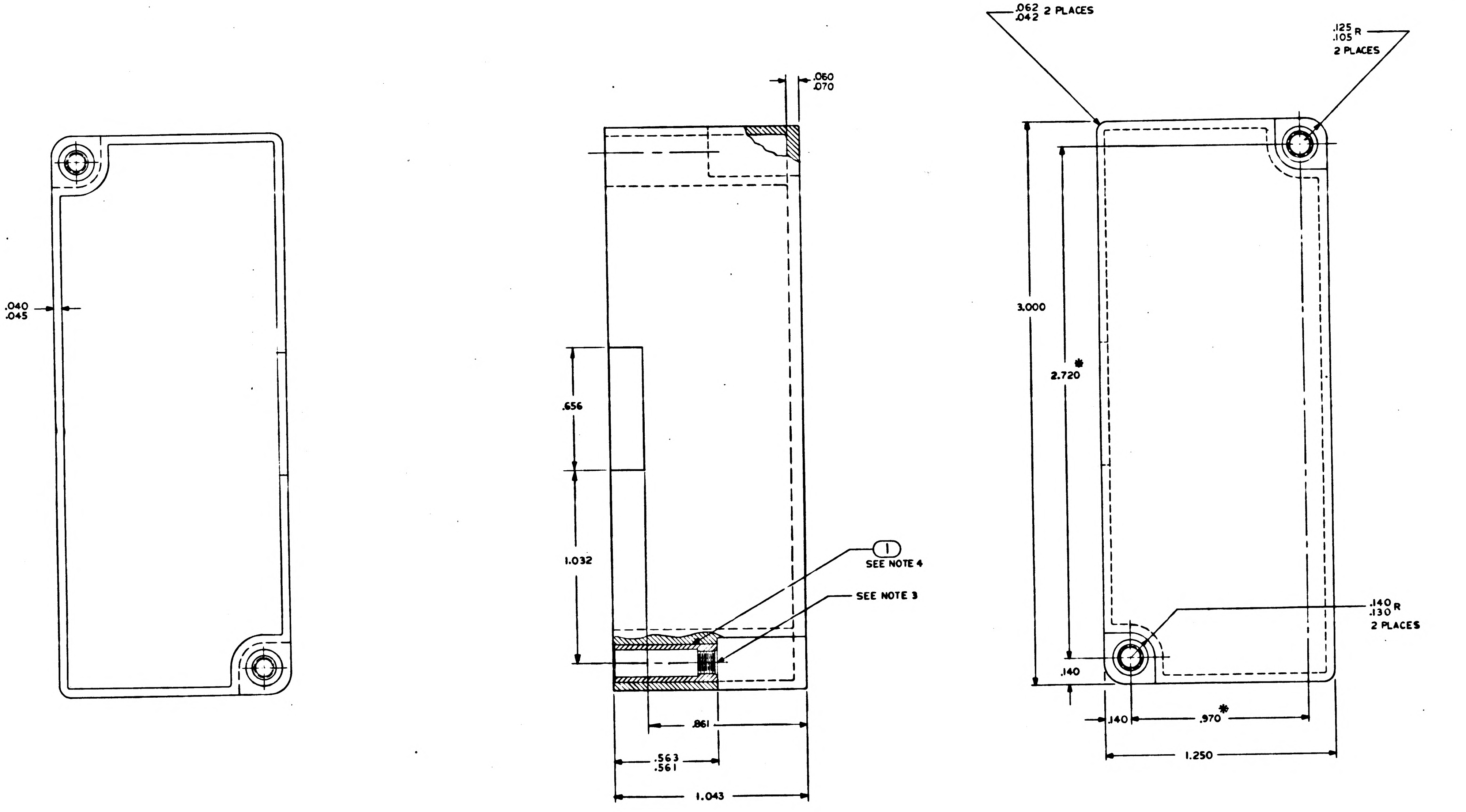
REVISIONS TDRR00558

SYM	DESCRIPTION	DATE	APPROVAL



NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: (G.E. LEXAN WATER CLEAR)
3. MOLDING TO BE FLUSH THREADED END FIND NO.1
4. FIND NO.1 TO BE FREE OF FOREIGN MATTER
5. UNLESS OTHERWISE SPECIFIED
   ALL INSIDE RADII .010 MAX
6. 125√ ALL OVER
7. * TOLERANCE ±.003

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1008001-1	RETAINER, SCREW	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007026	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO
CONTRACT
DRAWN L.O. Berkeley DATE 2-3-63
CHECKED R.P. Kingsbury 7 Feb 63
APPROVAL
APPROVAL L.C. Smith 2-25-63
NASA APPROVAL W. J. Rhine 3-27-63
MIT APPROVAL W. Geoffer 27 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

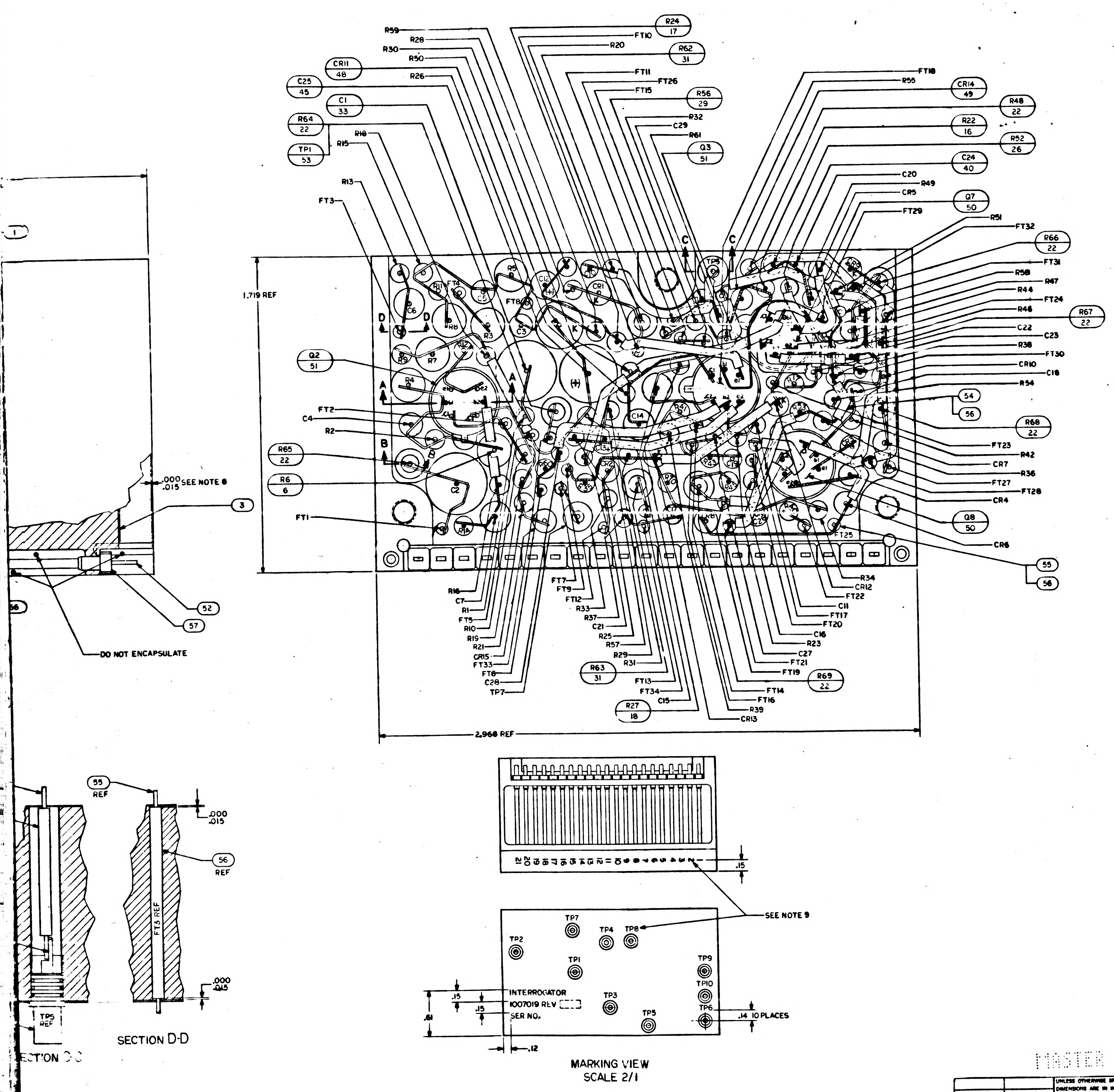
HOUSING MODULE
IRIG PREAMP
MOLDED

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007018
SCALE 4/1
WT
SHEET 1 OF 1

1007018

	1007019

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00466		
A	REVISED PER TDRR 00721	4-3-63	DT W



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R28
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R50
R26
R24 17
R20
FT10
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FT11
FT26
FT15
R56 29
R32
C29
R61
Q3 51
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C25 45
C1 33
R64 22
TP1 53
R18
R15
R13
FT3
FT18
R55
CR14 49
R48 22
R22 16
R52 26
C24 40
C20
R49
CR5
FT29
Q7 50
R51
FT32
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R58
R47
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FT24
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C23
R38
FT30
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C18
R54
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56
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R42
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R36
FT27
FT28
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Q8 50
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C11
FT17
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C16
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C27
FT21
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R39
CR13
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FT2
C4
R2
R65 22
R6 6
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C7
R1
FT5
R10
R19
R21
CR15
FT33
FT6
C28
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FT7
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R37
C21
R25
R57
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R27 18
2.968 REF
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DO NOT ENCAPSULATE
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FT3 REF
TP5 REF
.15
SEE NOTE 9
TP7
TP4
TP8
TP2
TP1
TP9
TP10
TP3
TP6
TP5
INTERROGATOR
1007019 REV
SER NO.
.15
.15
.61
.12
.14 10 PLACES

SECTION D-D

SECTION C-C

MARKING VIEW
SCALE 2/1

MASTER

	1010013	SCHEMATIC	
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006787-2	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
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1	1010286	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR .068UF, 200V, 10%	33
2	1006777-3	CAPACITOR, CER 22UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 5%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω, 1/4W, 5%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 5%	29
1	1006750-17	RESISTOR, FIXED FILM, 240Ω, 1/4W, 5%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 5%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 5%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 5%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 5%	24
2	1006750-72	RESISTOR, FIXED FILM, 47K, 1/4W, 5%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 5%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 5%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 5%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 5%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 5%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 5%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 5%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 5%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 5%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 5%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 5%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 5%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, 5%	10
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1	1010377-	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 5%	7
2	1010377-	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 5%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

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1007101	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN W. Morgan DATE 2-8-63
CHECKED W. J. Gifford 15FEB63
APPROVAL 25 FEB 63
APPROVAL 26 FEB 63
NASA APPROVAL 2-27-63
MIT APPROVAL 27FEB63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

1007019

INCHES
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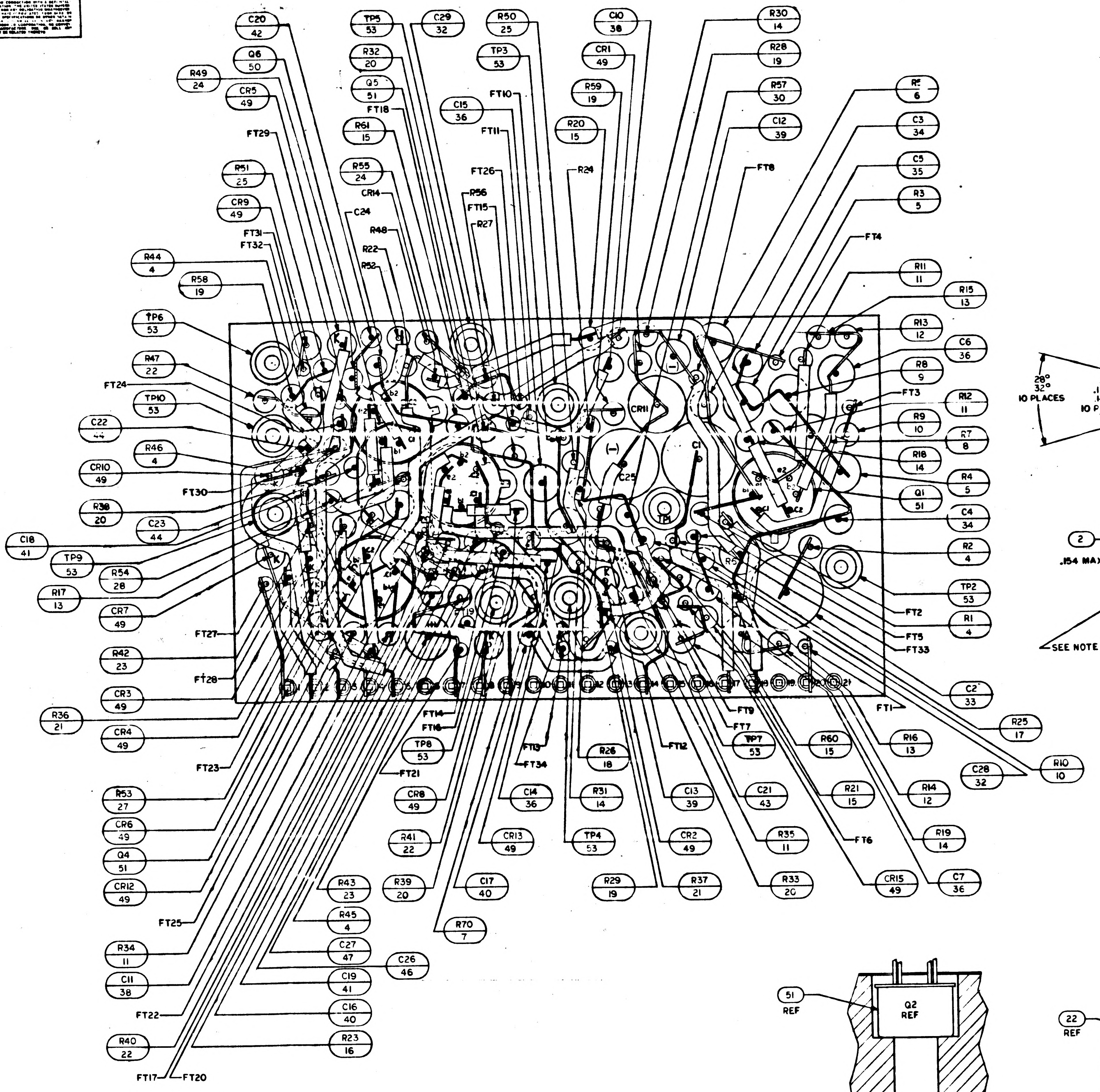
PHOTOGRAPHIC SCALE ONLY

NOTICE — [illegible]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C4
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FT1
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R10
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C28
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R16
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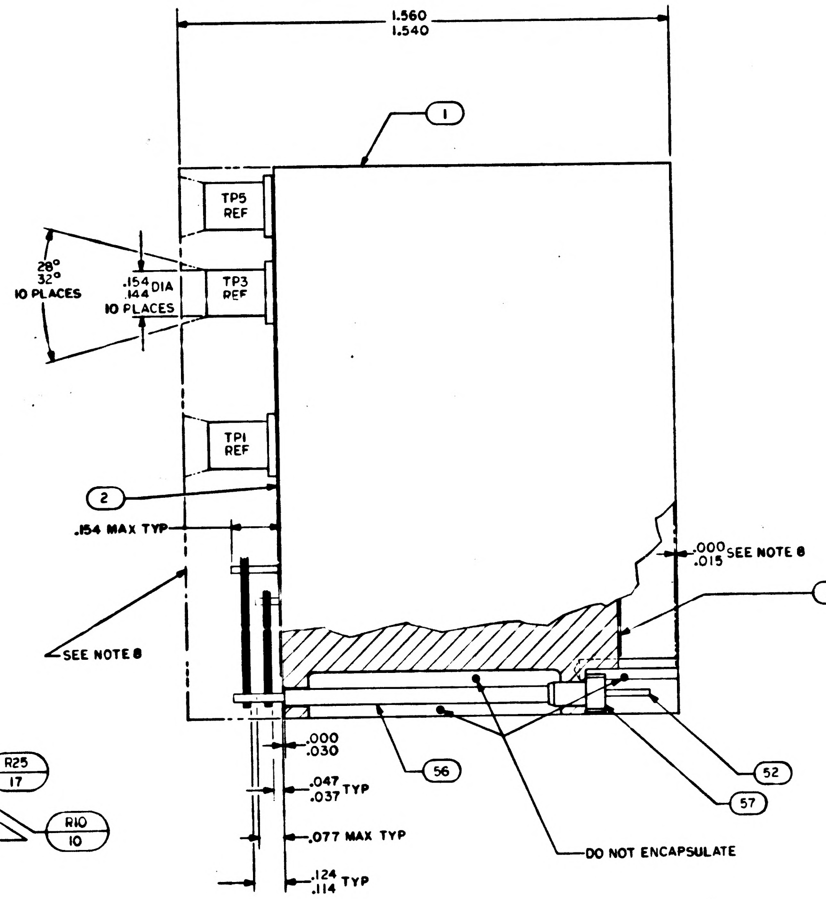
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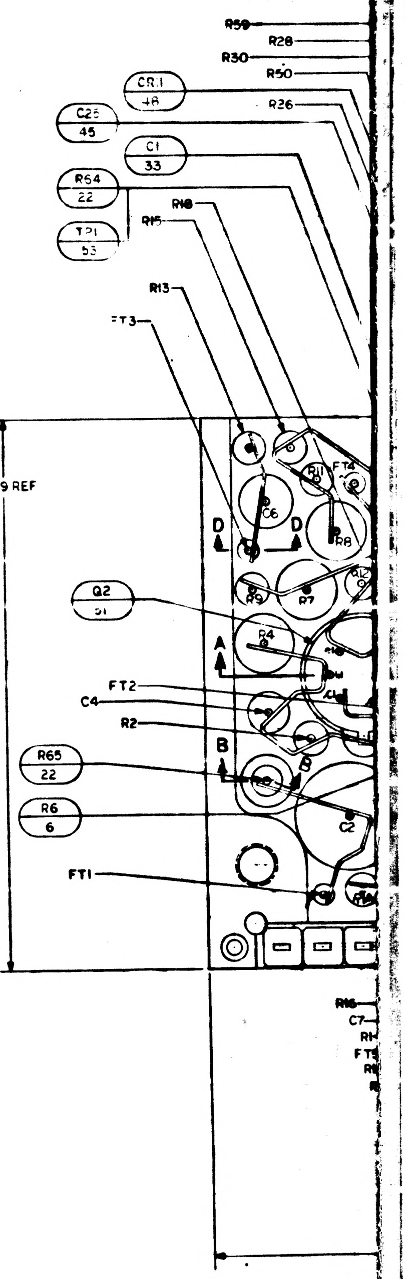
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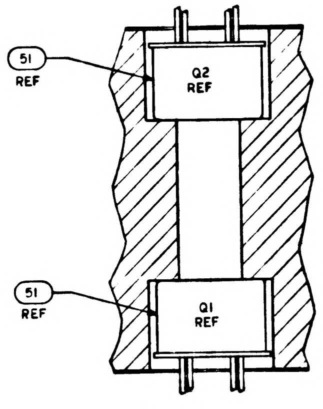
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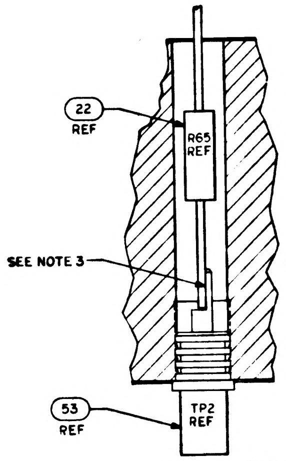
SECTION A-A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TP2
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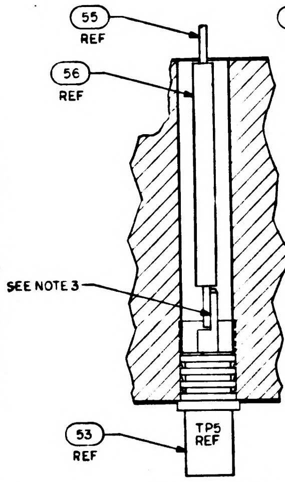
SECTION B-B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TP5
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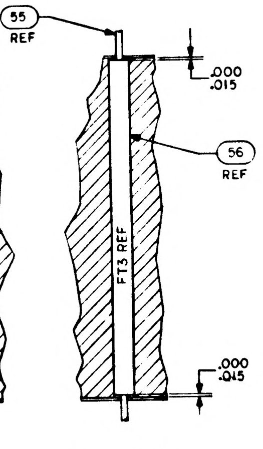
SECTION C-C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FT3 REF
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.015

SECTION D-D

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
9. MARK .100/.060 HIGH WHITE PER ND1002019

INCHES
PHOTOGRAPHIC SCALE ONLY

PROCUREMENT SPECIFICATION
FOR
INTERROGATOR

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
5/19/64	A	08062	4	[illegible]	[illegible]

This specification consists of page i to iii and 1 to 6 inclusive.

TDR 06053

PROCUREMENT SPECIFICATION
FOR
INTERROGATOR

The purpose of this document is to establish the requirements for the procurement of the Interrogator for use in the APOLLO Guidance and Navigation Equipment.

W. A. Kaffer 31 Jan 64
MIT/IL DATE

1/31/64
NASA/MSC APPROVAL DATE

PREPARED BY TITLE DATE
R. T. Billon Eng Spec Writer 11-25-63
AC Spark Plug

EXAMINED BY TITLE DATE
Sr. Proj Engr. 12-11-63
AC Spark Plug

APPROVED BY TITLE DATE
Asst Dir 1/30/64
MIT/IL

APPROVED BY TITLE DATE

MIT/IL

APPROVED BY TITLE DATE

MIT/IL

PROCUREMENT SPECIFICATION
FOR
INTERROGATOR

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Interrogator, Drawing 1007019, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007019	Interrogator

DRAWINGS

APOLLO G&N

1007019	Interrogator

APOLLO G&N Specification
PS-1007019 A
31 January 1964
Class A Release
TDRR 06053

PROCUREMENT SPECIFICATION

FOR

INTERROGATOR

Record of Revisions

Ⓜ

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
5/19/64	A	08062	4		

This specification consists of page i
to iii and 1 to 6 inclusive.

APOLLO G&N Specification
PS-1007019
31 January 1964

PROCUREMENT SPECIFICATION
FOR
INTERROGATOR

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APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007019	Interrogator

DRAWINGS

APOLLO G&N

1007019	Interrogator

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly provides the phase detection and pulse logic functions required to operate the pulse-torque accelerometer loop.

3.3 Functional Requirements

3.3.1 Electrical Inputs. The assembly shall perform as specified herein with the following electrical inputs applied to the assembly:

a. Interrogate Pulse. The Interrogate Pulse shall lead the Switch Pulse by 2.0±0.2 µsec and have the following characteristics:

	Nominal	Enhanced	Degraded
PRF	3.2 kc	3.2 kc	3.2 kc
Amplitude	5.5±0.25V	+7.00±0.25V	+4.00±0.25V
Rise Time	0.2±0.05 µsec	0.1±0.05 µsec	0.4±0.1 µsec
Fall Time	0.6±0.2 µsec	0.6±0.2 µsec	1.0±0.2 µsec
Pulse Width	3.0±0.3 µsec	3.0±0.3 µsec	3.0±0.3 µsec

b. Switch Pulse.

	Nominal	Enhanced	Degraded
PRF	3.2 kc	3.2 kc	3.2 kc
Amplitude	5.5±0.25V	+7.00±0.25V	+4.00±0.25V
Rise Time	0.2±0.05 µsec	0.1±0.05 µsec	0.4±0.1 µsec
Fall Time	0.6±0.2 µsec	0.6±0.2 µsec	1.0±0.2 µsec
Pulse Width	3.0±0.3 µsec	3.0±0.3 µsec	3.0±0.3 µsec

c. Balanced Input

(1) Zero Phase: Sinusoidal signal, phase locked with the Interrogate Pulse such that the Interrogate Pulse and 90 electrical degree point of the sinusoid are coincident. Amplitude 1V pp at 3.2 kc, harmonic distortion <2 percent.

(2) π Phase: Sinusoidal signal, phase locked with the Interrogate Pulse such that the 270 electrical degree point and Interrogate Pulse are coincident. Amplitude, 1V pp at 3.2 kc, harmonic distortion <2 percent.

d. B+: +20.5 vdc ±2% nominal
+18.35 vdc degraded
+22.65 vdc enhanced

3.3.2 Insulation Resistance. The resistance between the electrical interconnections of all module pins and the assembly mounting screws shall be equal to or greater than 100 megohms.

3.3.3 Output Pulse Logic and Variation

3.3.3.1 Zero Phase Input. With a zero phase signal input of 1V pp amplitude, nominal, enchanced, and degraded Interrogate and Switch Pulses, and +20.5 vdc ±10 percent signals, the output pulses shall be as follows:

a. TM + SET	Nominal	Enhanced	Degraded
(1) Amplitude:	<3V	<3V	<3V

b. TM - SET	Nominal	Enhanced	Degraded
(1) Amplitude	+17V min	-18V min	-15V min
(2) Rise Time:	≤ 100 nsec	≤ 100 nsec	≤ 800 nsec
(3) Fall Time:	≤ 600 nsec	≤ 600 nsec	≤ 1 μs
(4) Pulse Width:	3.1±0.5 μsec	-	-
(5) Delay:	≤ 60 nsec	-	-

3.3.3.2 π Phase Input. With a π phase signal input of 1V pp amplitude, nominal, enchanced, and degraded Interrogate and Switch Pulses, and +20.5 vdc ±10 percent signals, the output pulses shall be as follows:

a. TM + SET	Nominal	Enhanced	Degraded
(1) Amplitude:	-17V min	+18V min	-15V min
(2) Rise Time:	≤ 100 nsec	≤ 100 nsec	≤ 800 nsec
(3) Fall Time:	≤ 600 nsec	≤ 600 nsec	≤ 1 μs
(4) Pulse Width:	3.1±0.5 μsec	-	-
(5) Delay:	≤ 50 nsec	-	-

b. TM - SET			
(1) Amplitude:	≤ 3V	≤3V	≤3V

3.3.3.3 Output Data Pulse. With a 0V pp input, nominal, enchanced, and degraded Interrogate and Switch Pulses, and +20.5 vdc ±10 percent signals, the positive pulse above the baseline shall be as follows:

	Nominal	Enhanced	Degraded
a. Amplitude:	3.2±0.3V	3.5±0.3V	2.9±0.3V, -0.25V
b. Rise Time:	0.5±0.1 μsec	-	-
c. Falltime :	5.5±0.5 μsec	-	-
d. Pulse Width	3.1±0.5 μsec		

3.3.4 Test Point Waveforms. The tolerance for parameters of the following waveforms shall be ±20 percent or ±0.25V, whichever is greater.

3.3.4.1 + Summing (TP5)

a. With a zero phase signal input of 6.0V pp amplitude, nominal Interrogate and Switch Pulses, and nominal +20.5 vdc signals, the waveform at TP5 shall be as shown in Figure 1a.

b. With a π phase signal input of 6.0V pp amplitude, nominal Interrogate and Switch Pulses, and nominal +20.5 vdc signals, the waveform at TP5 shall be as shown in Figure 1b.

3.3.4.2 - Summing (TP7)

a. With the conditions specified in 3.3.3.1.b, the waveform at TP7 shall be as shown in Figure 1a.

b. With the conditions specified in 3.3.3.1.a, the waveform at TP7 shall be as shown in Figure 1b.

3.3.4.3 + Enable (TP3). With the conditions specified in 3.3.3.1.b, the waveform at TP3 shall be as shown in Figure 1c.

3.3.4.4 - Enable (TP4). With the conditions specified in 3.3.3.1.a, the waveform at TP4 shall be as shown in Figure 1c.

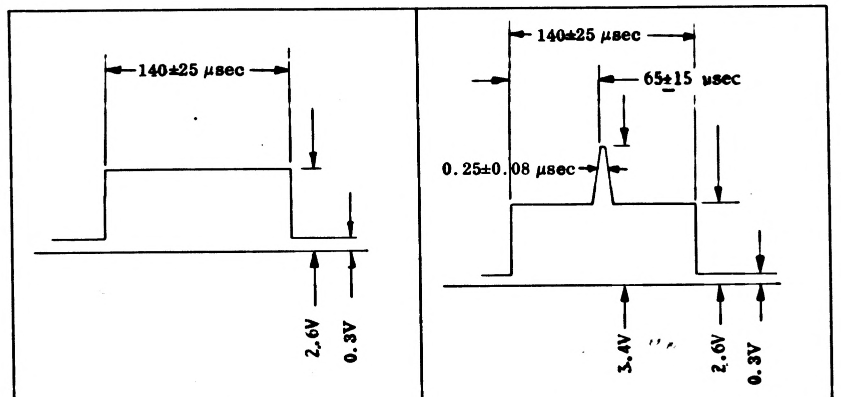
3.5 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.5.1 Service Life

3.5.1.1 Operating Life. The assembly shall meet performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.5.1.2 Shelf Life. The assembly shall have a shelf life of at least 3 years, without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.5.2 Reliability. Design objectives require maximum reliability of the interrogator during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 4.0 failures per million hours.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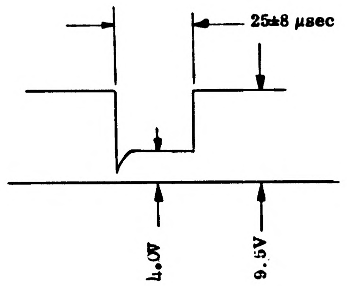
140±25 μsec
65±15 μsec
0.25±0.08 μsec
3.4V
2.6V
0.3V

TP 5, TP 7
SIGNAL ONLY
FIGURE 1a

TP 5, TP 7
COMPOSITE SIGNAL
FIGURE 1b


25±8 μsec
4.0V
9.5V

TP 3, TP 4
FIGURE 1c

TEST POINT WAVEFORMS

FIGURE 1

4. QUALITY ASSURANCE PROVISIONS

4.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all the quality assurance provisions of Specification ND-1002210 shall form a part of this specification.

4.2 NASA Acceptance Inspection. The NASA acceptance inspection shall be in accordance with Specification FTM-1007019.

5. PREPARATION FOR DELIVERY

5.1 GENERAL SPECIFICATION. The assembly shall be prepared for delivery in accordance with Specification ND-1002210.

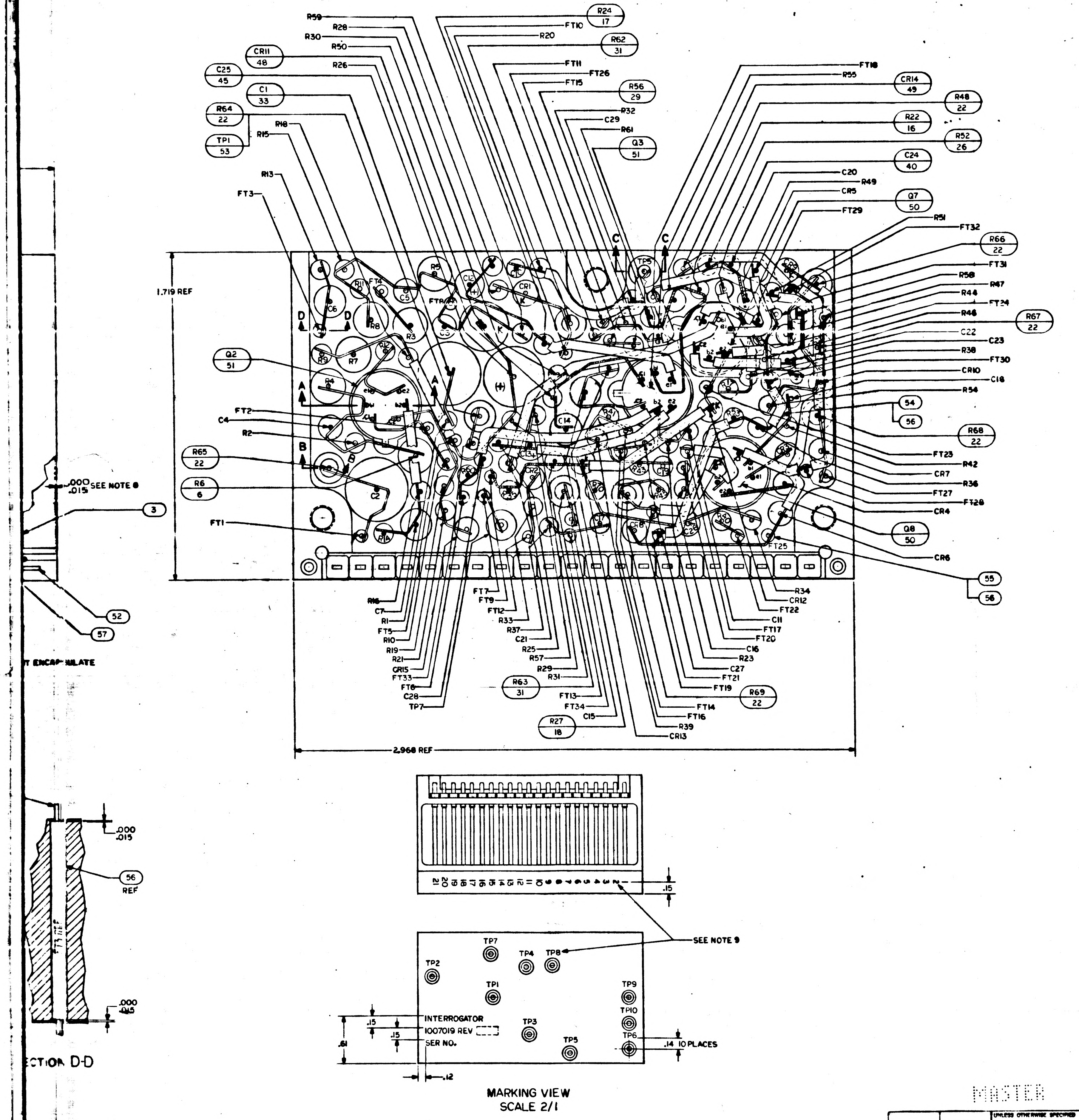
6. NOTES. None.

Notice: When APOLLO G&N drawings, specifications, or other data are used for any purpose other than in connection with a definitely related NASA procurement operation, NASA thereby incurs no responsibility nor any obligation whatsoever, and the fact that NASA may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

RTP:jp

1007019

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00466		
A	REVISED PER TDRR 00721	4-3-63	DT WK
B	REVISED PER TDRR 01003	4-25-63	DT WK



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R23
C27
FT21
FT19
R69 22
FT14
FT16
R39
CR13
R16
C7
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FT5
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R21
CR15
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FT8
C28
TP7
FT7
FT9
FT12
R33
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R25
R57
R29
R31
R63 31
FT13
FT34
C15
R27 18
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21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
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SEE NOTE 9
TP7
TP4
TP8
TP2
TP1
TP9
TP10
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TP5
TP6
INTERROGATOR
1007019 REV
SER NO.
.15
.15
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.14 10 PLACES
.000 .015
56 REF
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ECTION D-D

MARKING VIEW
SCALE 2/1

MASTER

	1010013	SCHEMATIC	
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQD	1006776-22	INSULATION SLEEVING	56
AS REQD	1006787-2	WIRE ELEC .020 DIA	55
AS REQD	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010286-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR .068UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-17	RESISTOR, FIXED FILM, 240Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-72	RESISTOR, FIXED FILM, 47K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, %	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007019 B

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN W. Horgan DATE 2-8-63
CHECKED W. J. Gifford 15 FEB 63
APPROVAL 25 FEB 63
APPROVAL 26 FEB 63
NASA APPROVAL 2-27-63
MIT APPROVAL 27 FEB 63

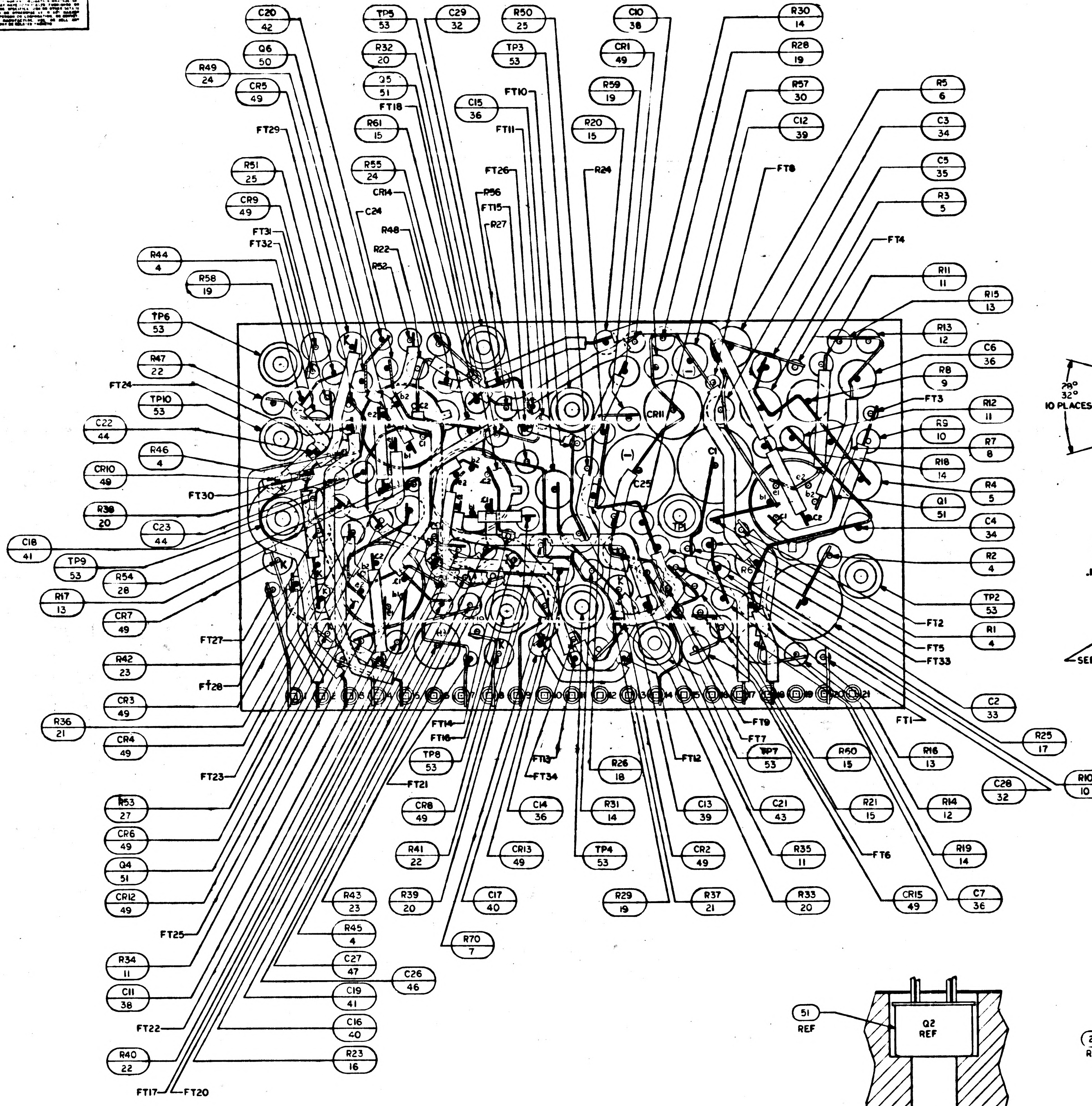
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

[illegible]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C2 33
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C24
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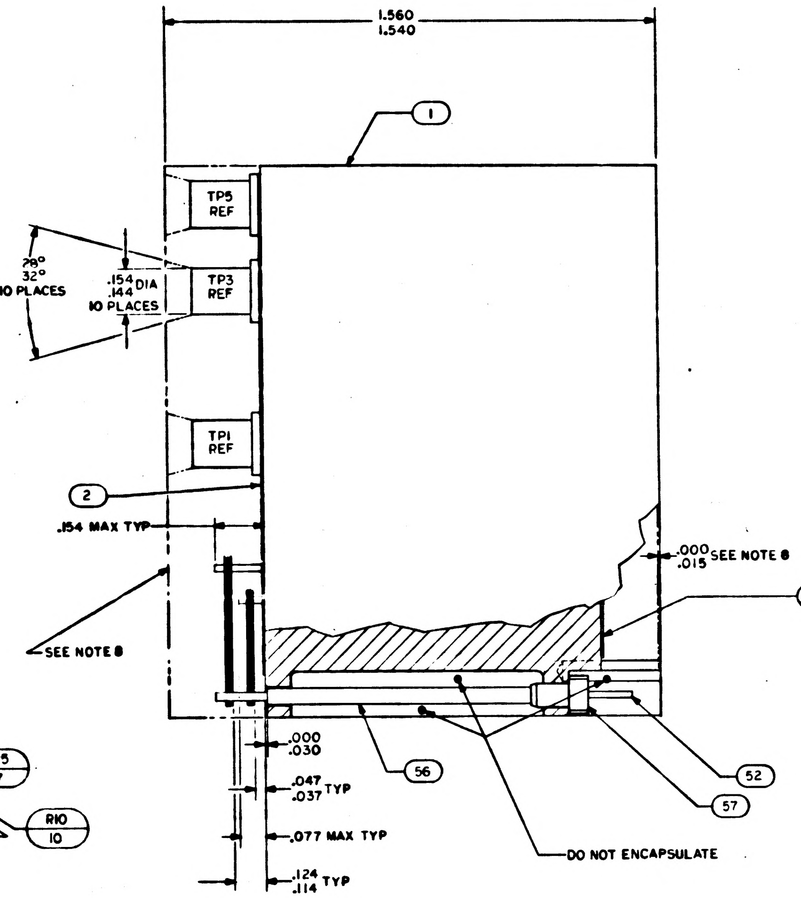
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SEE NOTE 8
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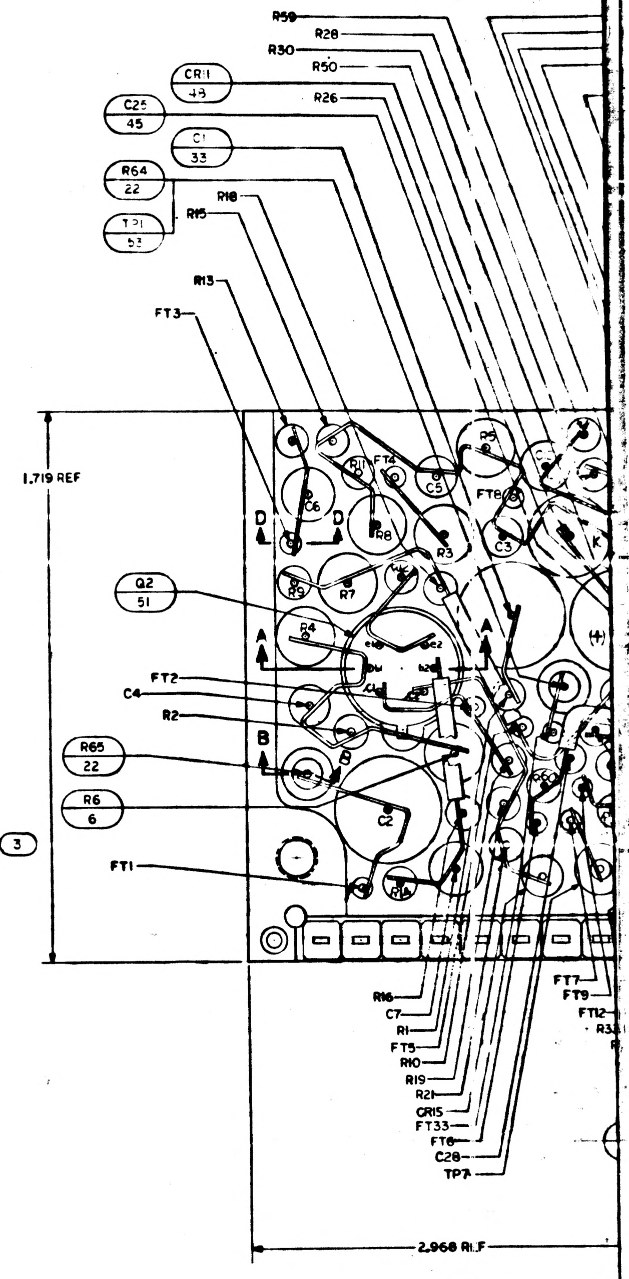
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C5
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FT8
C6
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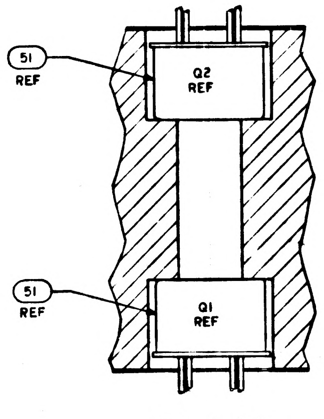
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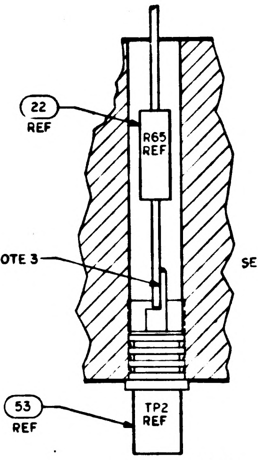
SECTION A-A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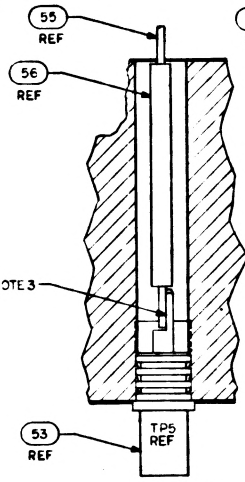
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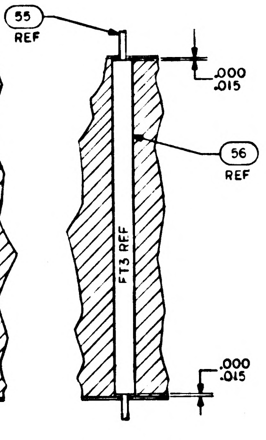
SECTION C-C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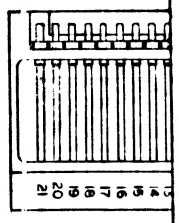
SECTION D-D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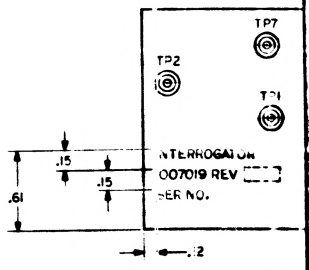
TP7
TP2
TP1
INTERROGATOR
007019 REV
SER NO.
.15
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.61
.12

NOTES

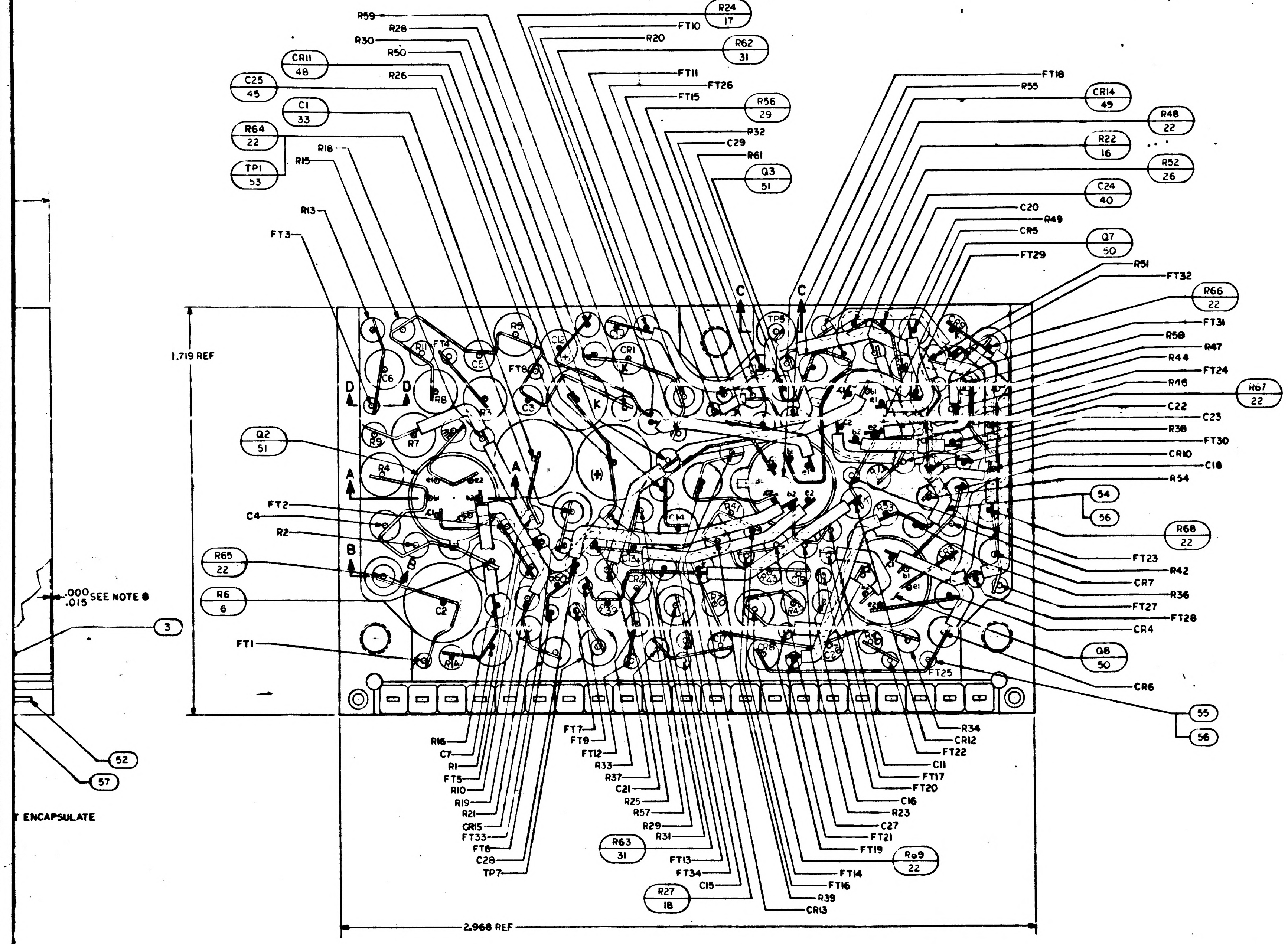
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
9. MARK .100/.060 HIGH WHITE PER ND1002019

INCHES
PHOTOGRAPHIC SCALE ONLY

C 1007019

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-3-63	DT WK
B	REVISED PER TDRR 01003	4-25-63	DT WK
C	REVISED PER TDRR 01178	5-8-63	DT. WK

REVISIONS TDRR 00466



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R18
R15
R13
FT3
FT11
FT26
FT15
R56 29
R32
C29
R61
Q3 51
FT18
R55
CR14 49
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R52 26
C24 40
C20
R49
CR5
Q7 50
FT29
R51
FT32
R66 22
FT31
R58
R47
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FT24
R46
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C23
R38
FT30
CR10
C18
R54
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R68 22
FT23
CR7
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R36
FT27
FT28
CR4
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CR6
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FT25
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CR12
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FT20
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R23
C27
FT21
FT19
R69 22
FT14
FT16
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CR13
R27 18
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R29
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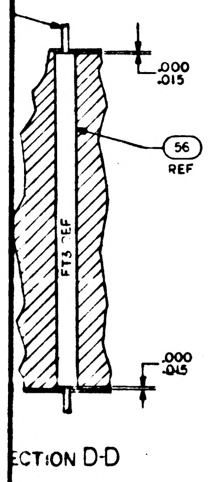

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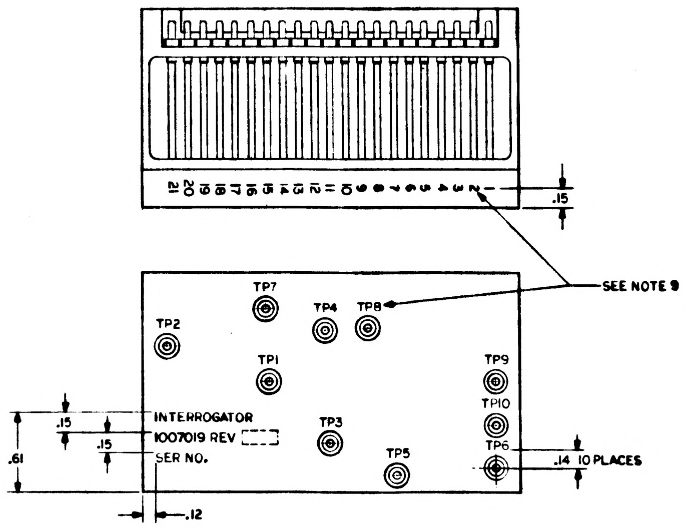
ECTION D-D



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SEE NOTE 9
TP7
TP4
TP8
TP2
TP1
TP9
TP10
TP3
TP5
TP6
INTERROGATOR
1007019 REV
SER NO.
.15
.15
.61
.12
.14 10 PLACES

MARKING VIEW
SCALE 2/1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010013	SCHEMATIC	
21	1006775	INSULATOR, WRAPOST-MALE,MIN	57
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3	1010395	TRANSISTOR	50
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2	1006777-5	CAPACITOR,CER 36UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR,CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR,CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR,CER .0033 UF, 100V, 10%	34
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1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750 60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-72	RESISTOR, FIXED FILM, 47K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 2%	11
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1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG. NO. CONTRACT
DRAWN W. Horgan DATE 2-8-63
CHECKED W. J. Gifford 15FEB63
APPROVAL 25FEB63
APPROVAL 26FEB63
NASA APPROVAL 2-27-63
MIT APPROVAL 27FEB63

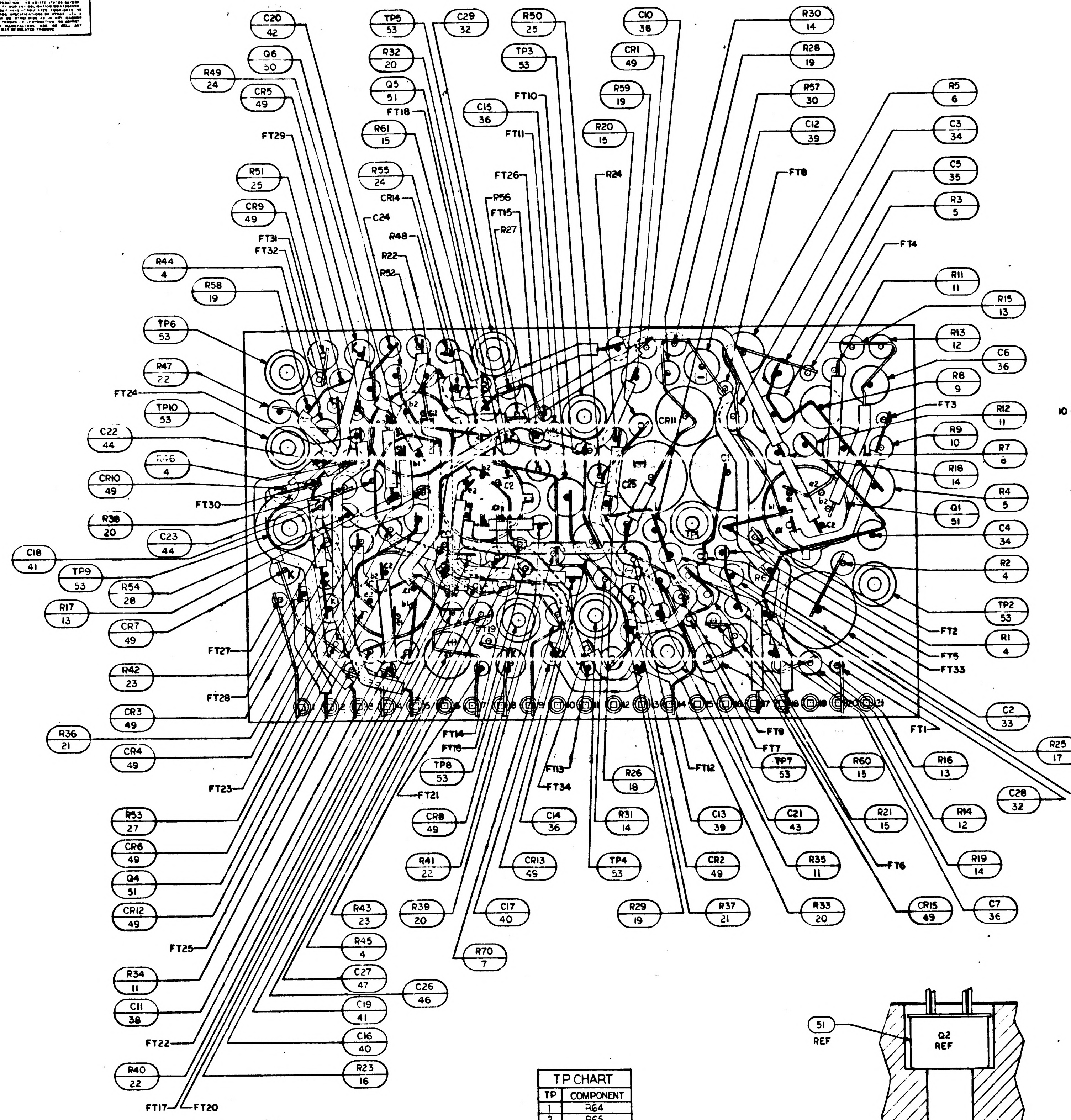
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

1007019 C

INCHES 0 1 2
PHOTOGRAPHIC SCALE ONLY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FT3
R12 11
R9 10
R7 6
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R4 5
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C4 34
R2 4
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R1 4
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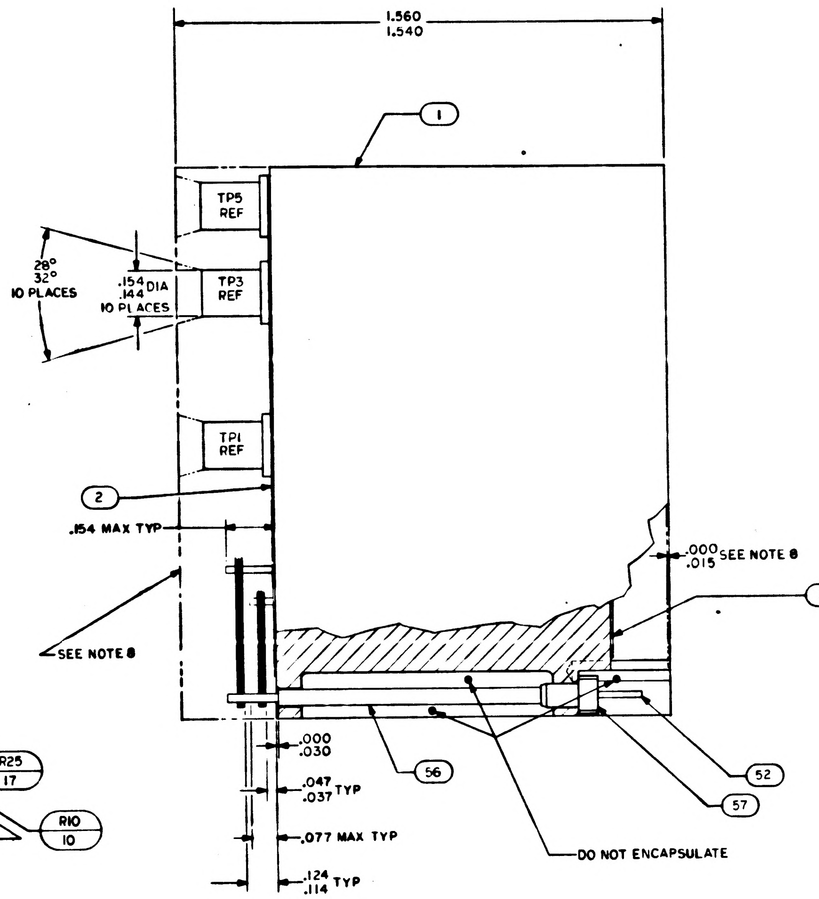
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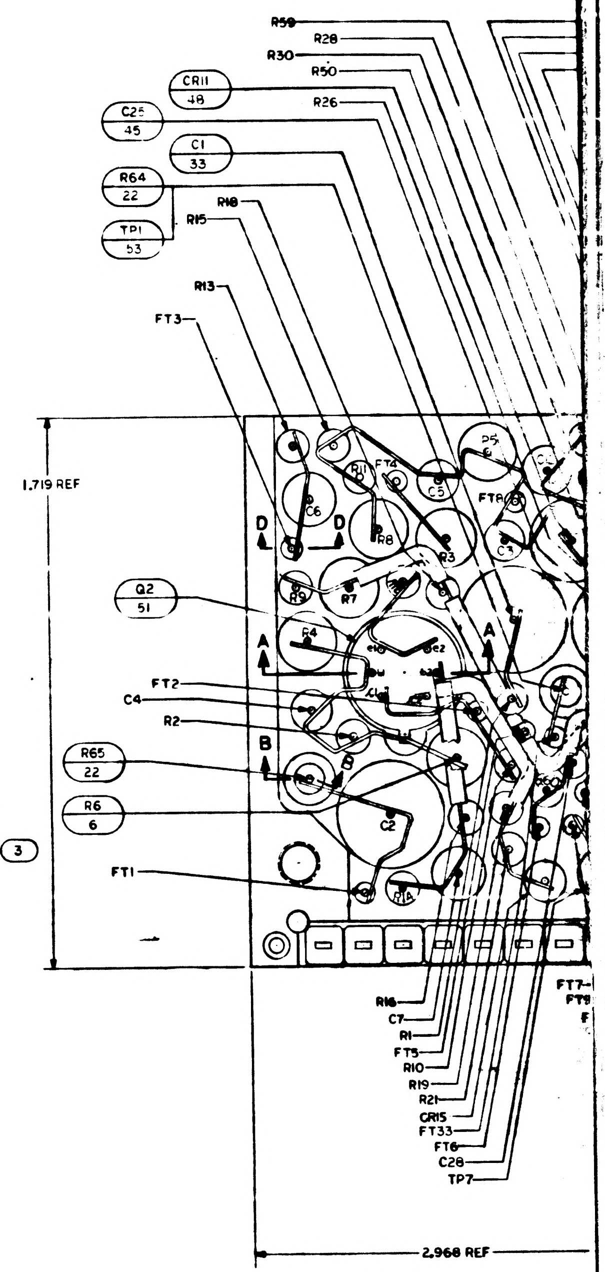
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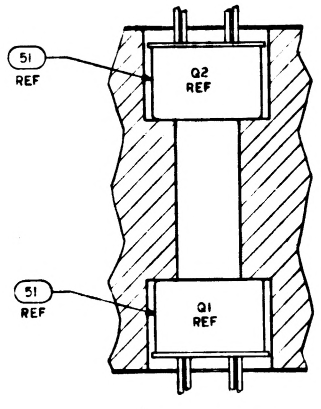
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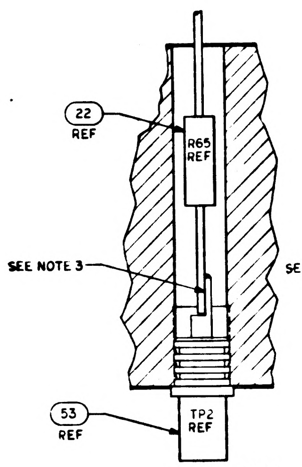
SECTION A-A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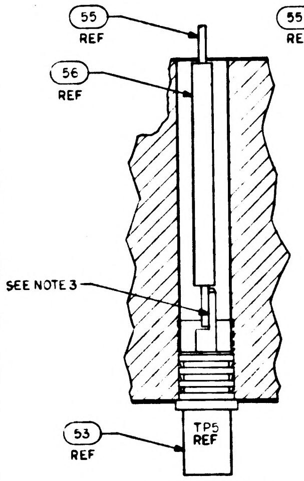
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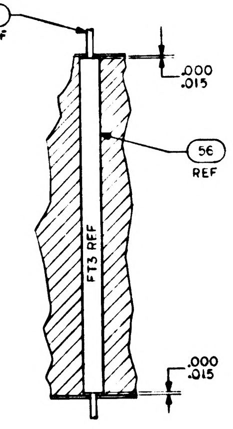
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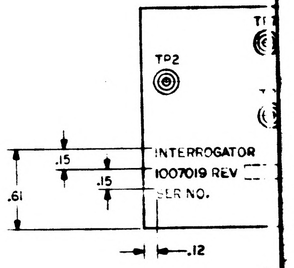
SECTION D-D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INTERROGATOR
1007019 REV
SER NO.

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
9. MARK .100/.060 HIGH WHITE PER ND1002019
10. + DENOTES CAPACITOR POLARITY

TP CHART

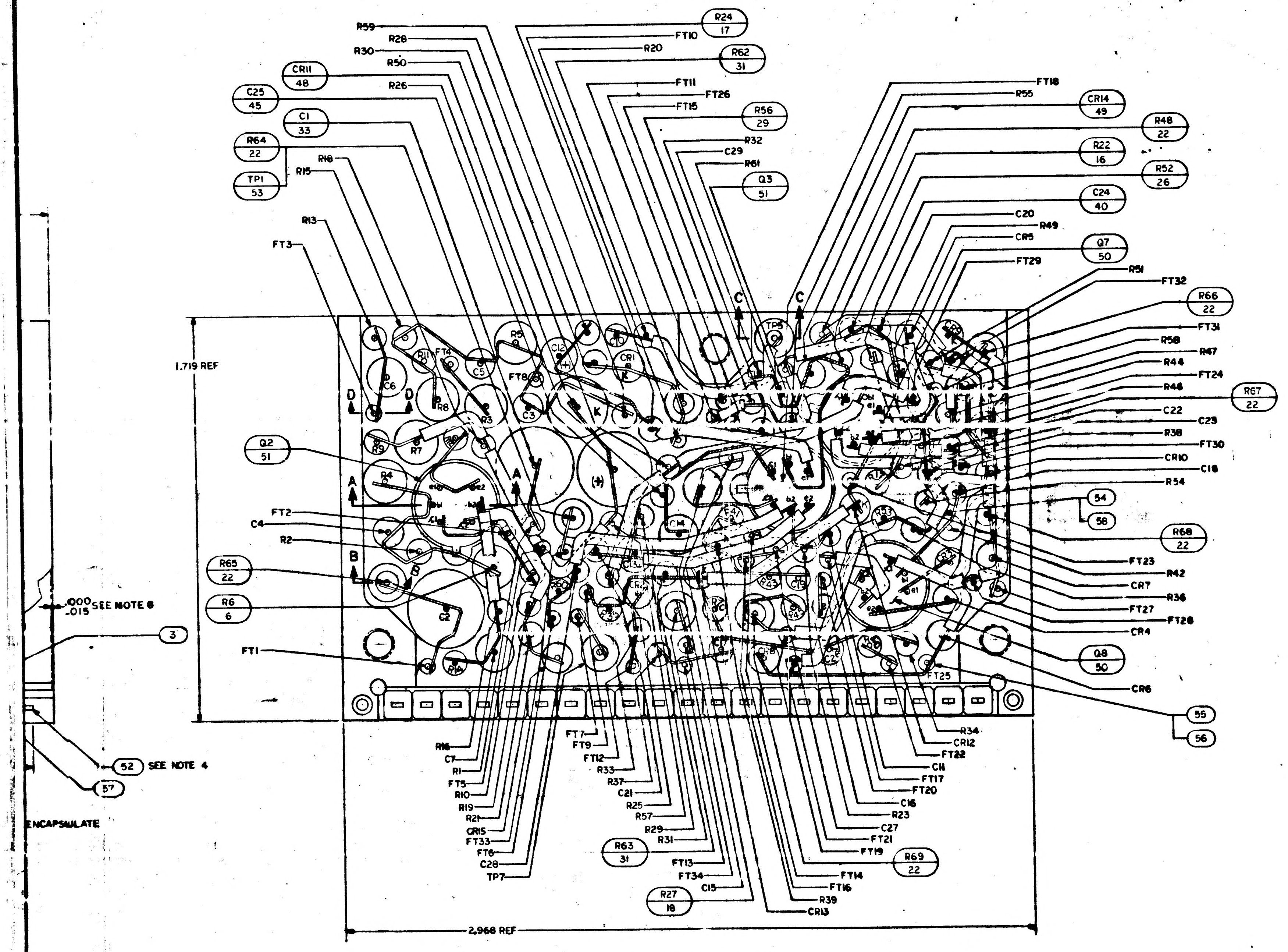
TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

INCHES
PHOTOGRAPHIC SCALE ONLY

1007019 D

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-3-63	DT WK
B	REVISED PER TDRR 01003	4-25-63	D.T. WK
C	REVISED PER TDRR 01178	5-8-63	D.T. WR
D	REVISED PER TDRR 01720	6-26-63	J.J.M. WK

REVISIONS TDRR 00466



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R30
R50
R26
CR11 48
C25 45
C1 33
R64 22
TP1 53
R18
R15
R13
FT3
R24 17
FT10
R20
R62 31
FT11
FT26
FT15
R56 29
R32
C29
R61
Q3 51
FT18
R55
CR14 49
R48 22
R22 16
R52 26
C24 40
C20
R49
CR5
Q7 50
FT29
R51
FT32
R66 22
FT31
R58
R47
R44
FT24
R46
R67 22
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C23
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FT30
CR10
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R68 22
FT23
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R36
FT27
FT28
CR4
Q8 50
CR6
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55
56
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CR12
FT22
C11
FT17
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C16
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C27
FT21
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FT14
FT16
R39
CR13
C15
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FT13
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R63 31
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R57
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C21
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FT12
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FT5
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CR15
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FT6
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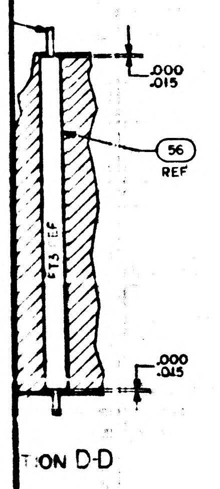

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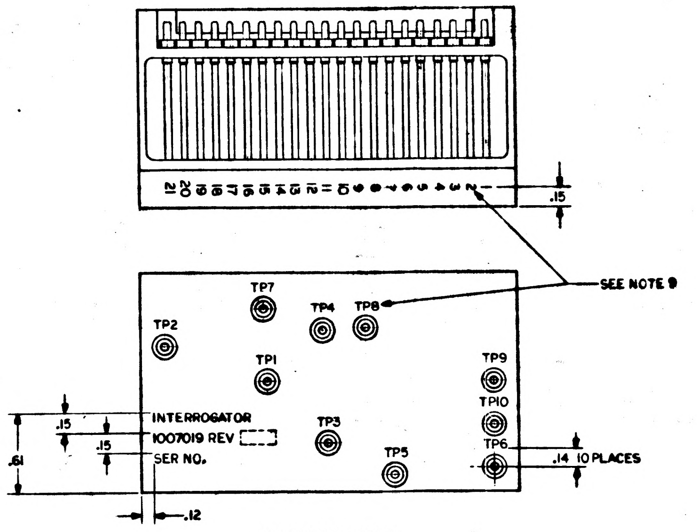
ON D-D



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SEE NOTE 9
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TP8
TP2
TP1
TP9
TP10
INTERROGATOR
1007019 REV
SER NO.
TP3
TP5
TP6
.15
.15
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.12
.14 10 PLACES

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010013	SCHEMATIC	
AR	1006776-20	INSULATION SLEEVING	59
AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-2	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010286-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36 UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR, .068 UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22 UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-17	RESISTOR, FIXED FILM, 240Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-72	RESISTOR, FIXED FILM, 47K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, %	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1

LIST OF MATERIALS

1007019 D

MASTER

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN W. Horgan DATE 2-8-63
CHECKED W. J. Gifford 15FEB63
APPROVAL 25 Feb 63
APPROVAL W. R. Test 25 Feb 63
NASA APPROVAL 2-27-63
MIT APPROVAL 27 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

F2

1007019

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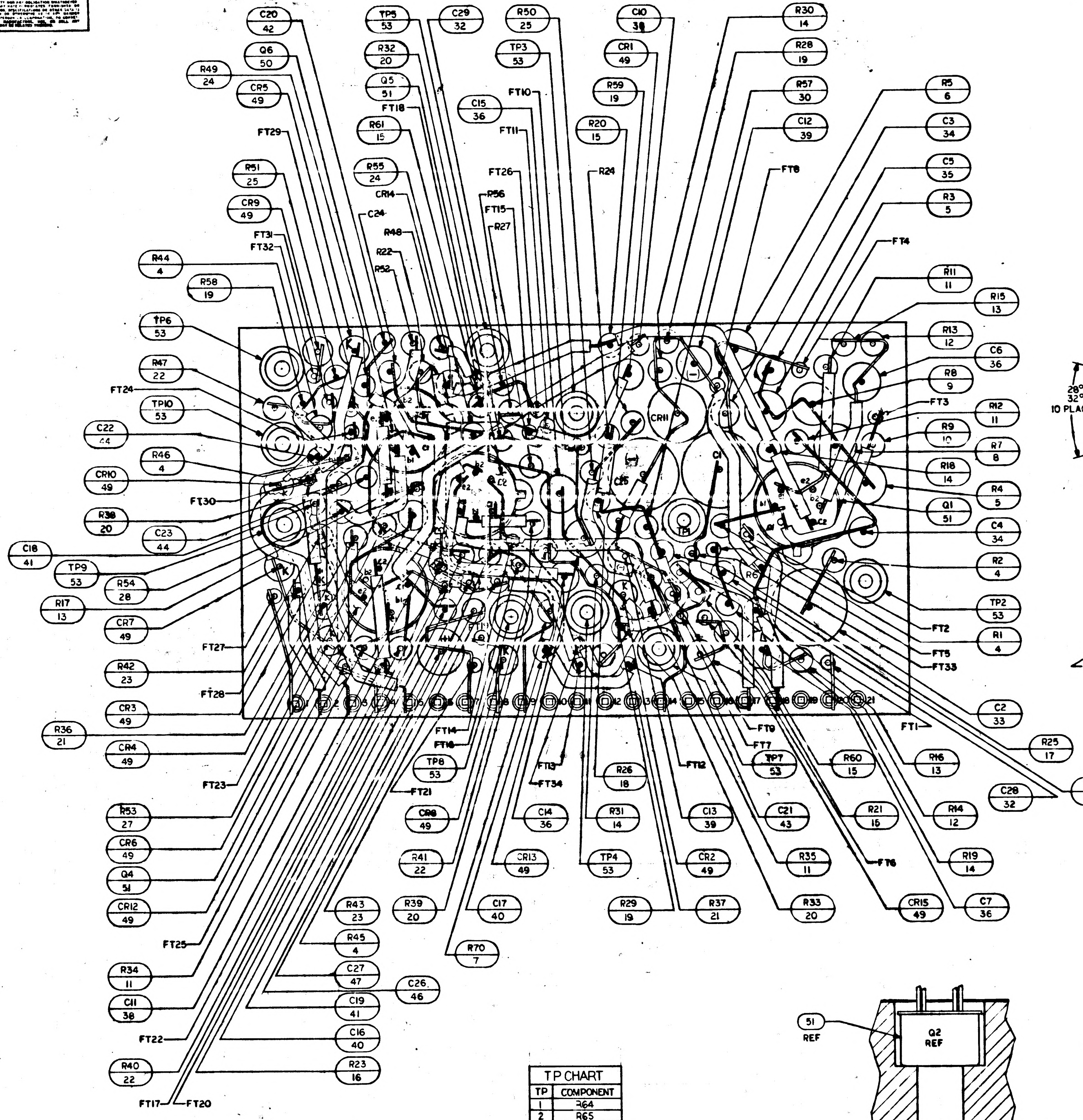
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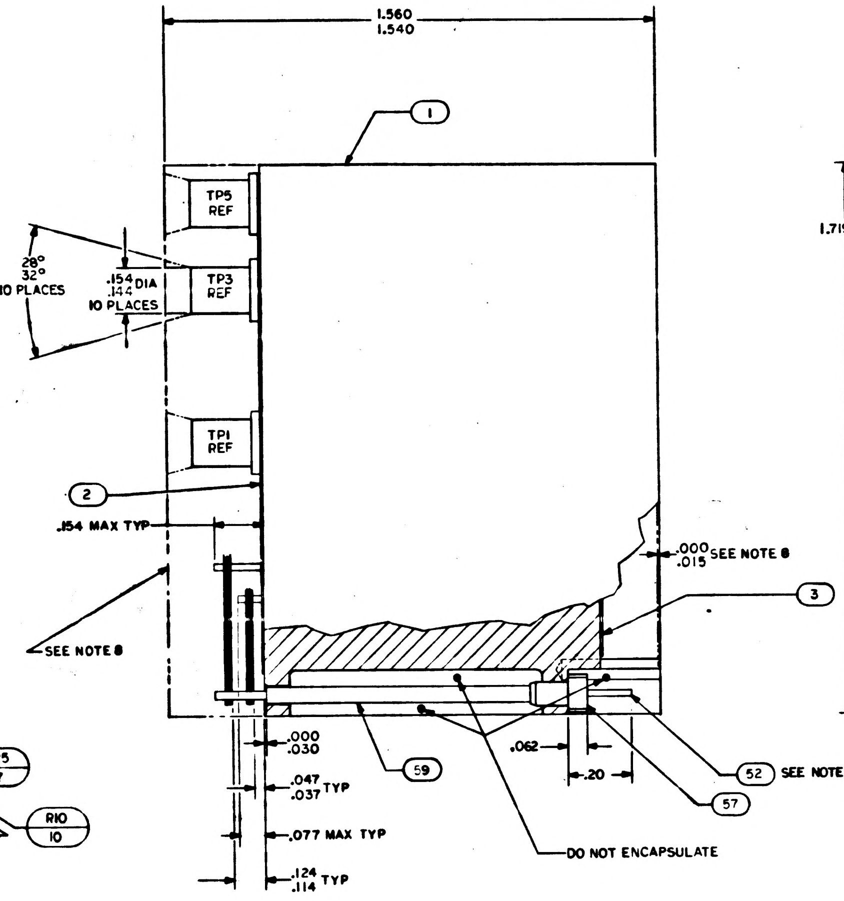
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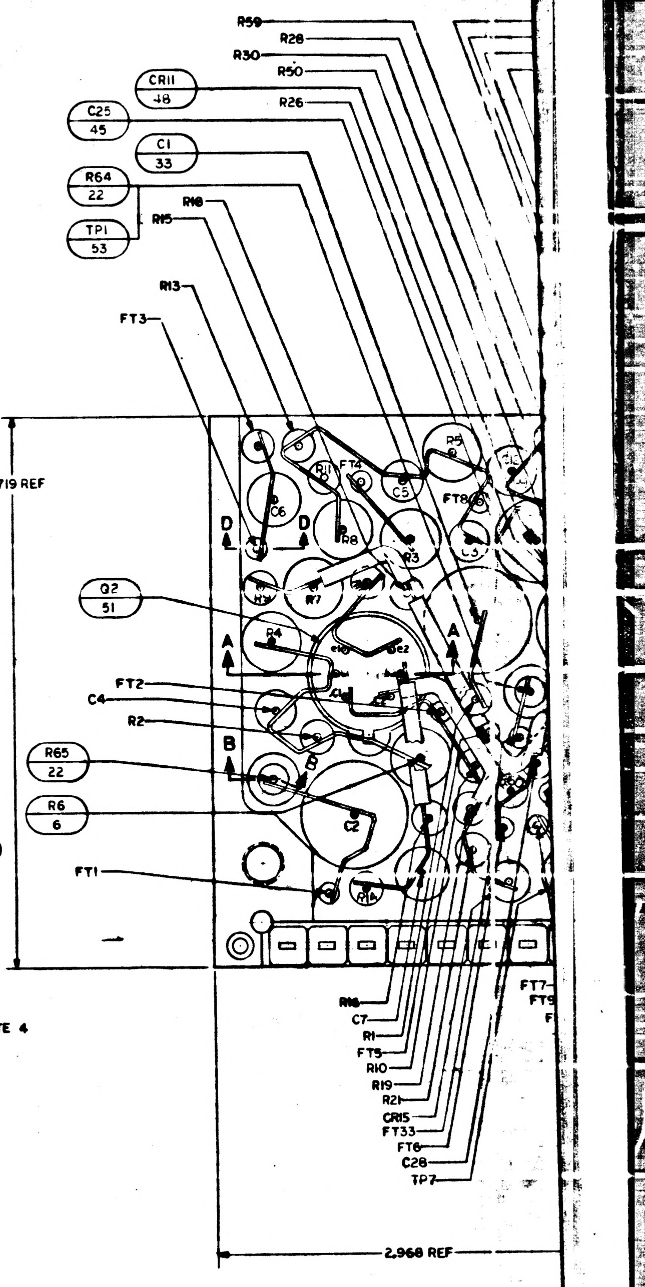
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R65 22
R6 6
FT1
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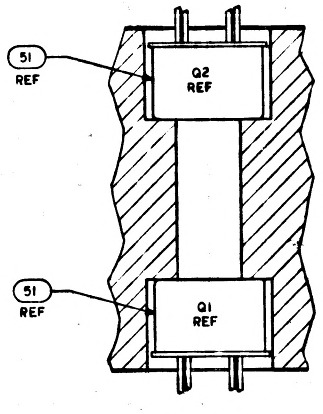
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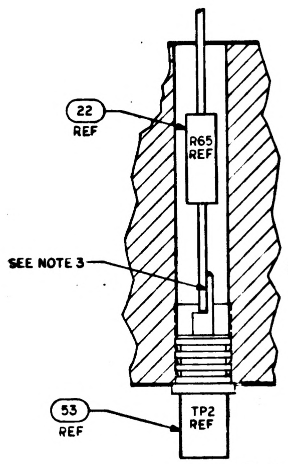
Q1 REF

SECTION A-A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SEE NOTE 3
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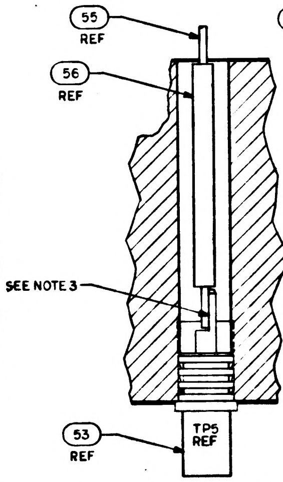
SECTION B-B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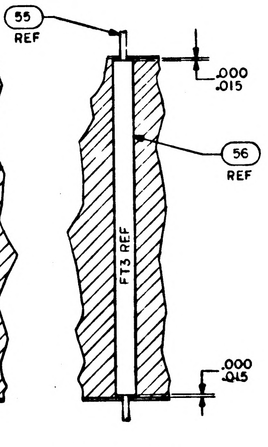
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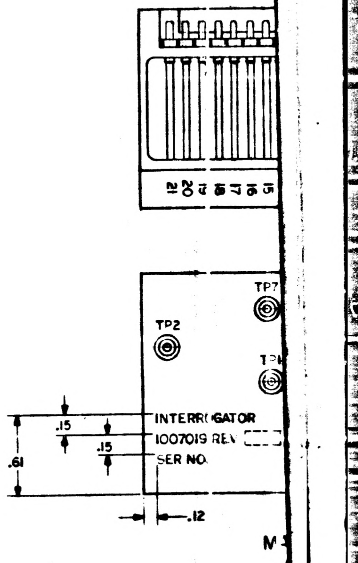
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INTERROGATOR
1007019 REV
SER NO.
.15
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TP CHART	
TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

NOTES

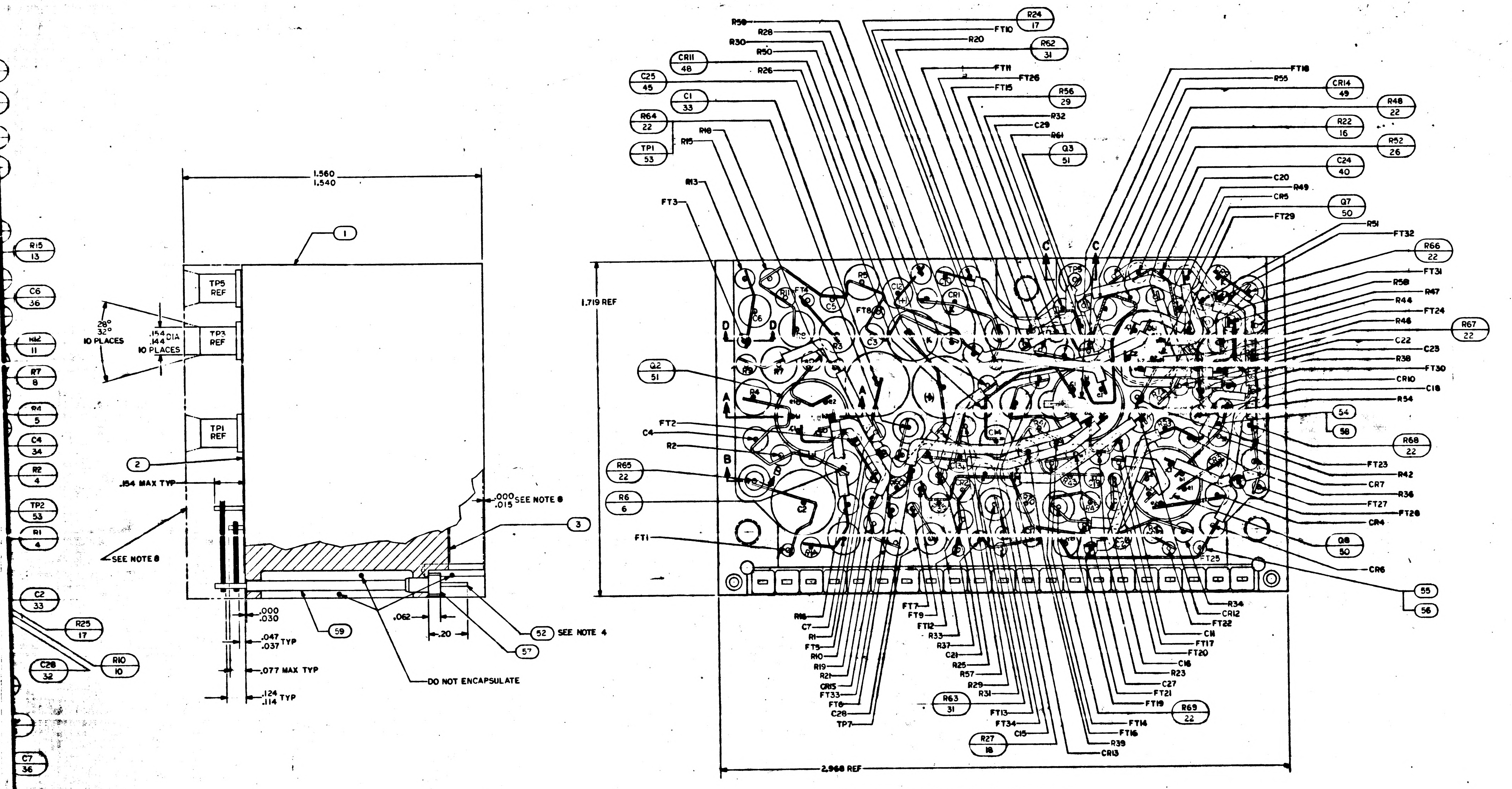
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. MUST MEET REQUIREMENTS OF ND 1003136
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
9. MARK .100/.060 HIGH WHITE PER ND1002019
10. + DENOTES CAPACITOR POLARITY

INCHES
PHOTOGRAPHIC SCALE ONLY

1007019 D

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-3-63	D.T. WR
B	REVISED PER TDRR 01003	4-26-63	D.T. WR
C	REVISED PER TDRR 01178	5-8-63	D.T. WR
D	REVISED PER TDRR 01720	6-26-63	J.J.A. WR
E	REVISED PER TDRR 03279	9-19-63	JJA WR

REVISIONS TDRR 00466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SEE NOTE 8
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SEE NOTE 4
DO NOT ENCAPSULATE
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R2 4
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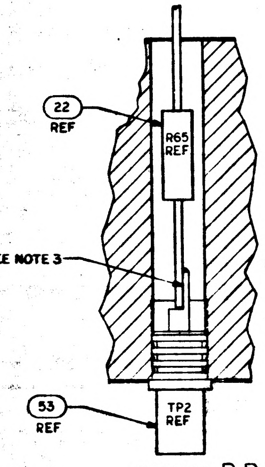
A
B
C
D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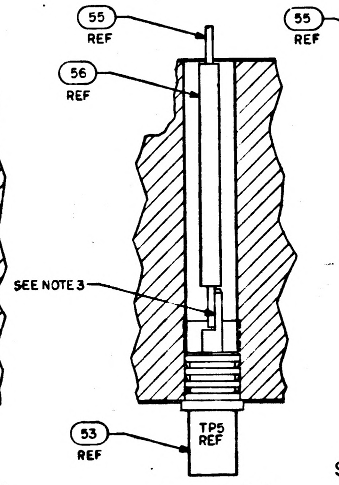
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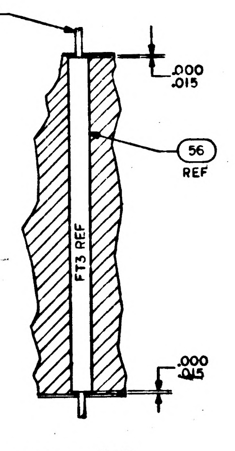
REF

SECTION C-C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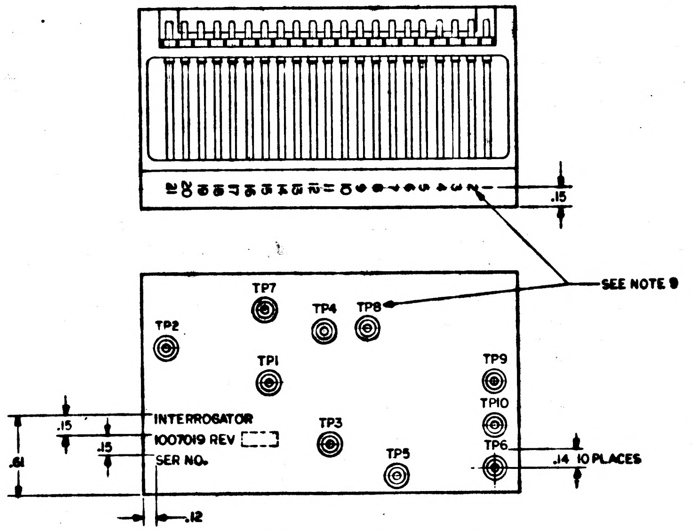
SECTION D-D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SEE NOTE 9
TP2
TP7
TP4
TP8
TP1
TP9
TP10
TP3
TP5
TP6
INTERROGATOR
1007019 REV
SER NO.
.15
.15
.61
.12
.14 10 PLACES

MARKING VIEW
SCALE 2/1

CTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010013	SCHEMATIC	
AR	1006776-20	INSULATION SLEEVING	59
AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-2	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010286-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15 UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36 UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR, .068 UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22 UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-17	RESISTOR, FIXED FILM, 240Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-72	RESISTOR, FIXED FILM, 47K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, %	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-44	RESISTOR, FIXED FILM, 3.3K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1

LIST OF MATERIALS

1007019 D

MASTER

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN W. Horgan DATE 2-8-63
CHECKED W. J. Gifford 15 FEB 63
APPROVAL 25 FEB 63
APPROVAL 25 FEB 63
NASA APPROVAL W. J. Rollins 2-27-63
MIT APPROVAL 27 FEB 63

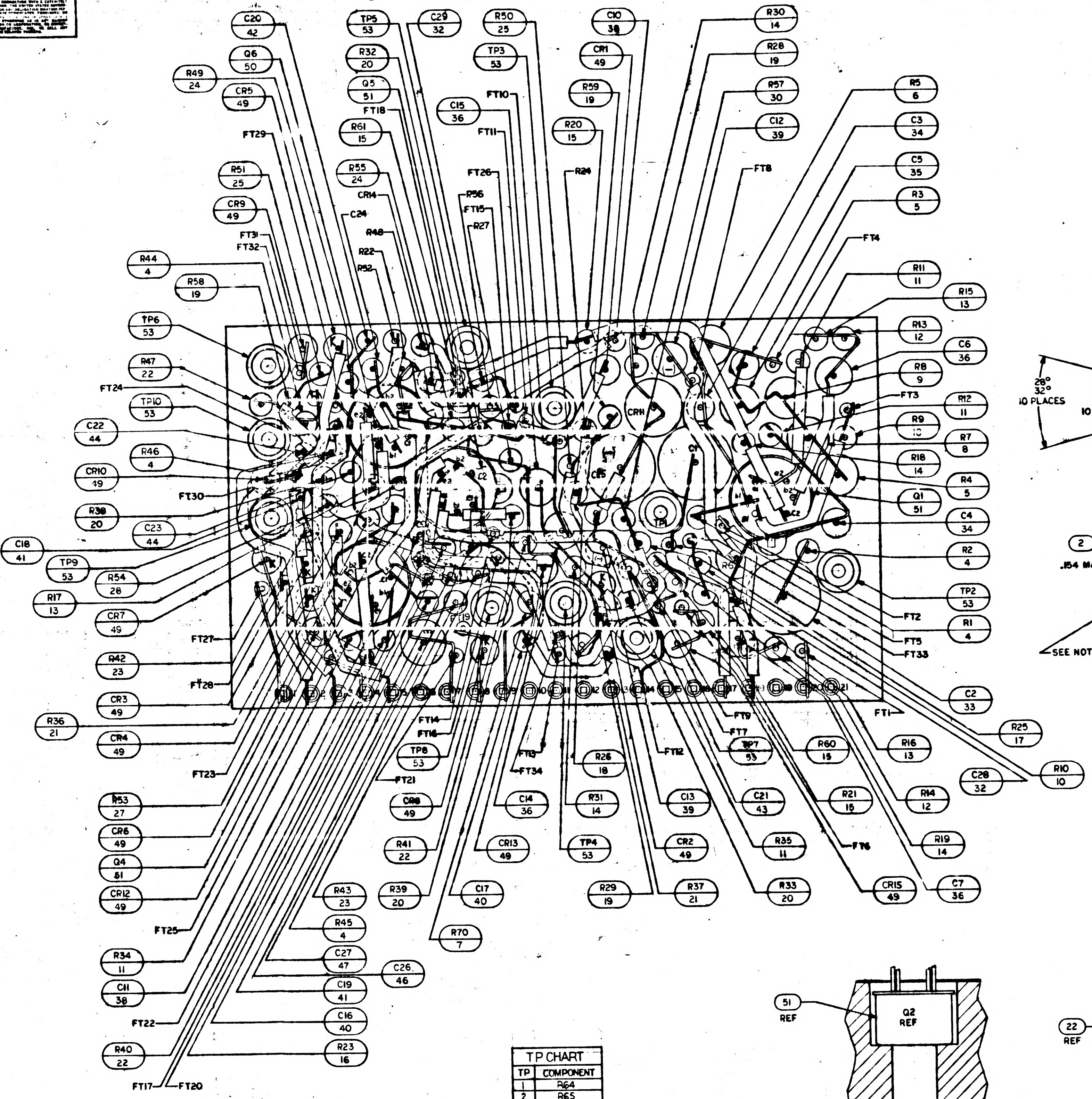
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR
ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007019
SCALE 5/1 | WT | SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

E2 1007019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CR1 49
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CR5 49
Q5 51
FT10
R59 19
R57 30
R5 6
FT29
FT18
C15 36
R20 15
C12 39
C3 34
R61 15
FT11
R51 25
R55 24
FT26
R24
FT8
C5 35
CR9 49
CR14
R56
FT15
R3 5
C24
R27
FT31
FT32
R48
FT4
R44 4
R22
R52
R11 11
R58 19
R15 13
TP6 53
R13 12
C6 36
R47 22
R8 9
FT24
TP10 53
FT3
R12 11
C22 44
R9 10
R46 4
R7 8
CR10 49
R18 14
FT30
R4 5
Q1 51
R38 20
C4 34
C23 44
C18 41
R2 4
TP9 53
R54 28
TP2 53
R17 13
CR7 49
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FT27
FT2
FT5
FT33
R42 23
FT28
C2 33
CR3 49
FT1
R36 21
FT14
FT16
FT9
FT7
R25 17
CR4 49
TP8 53
FT13
R26 18
FT12
TP7 53
R60 15
R16 13
R10 10
FT34
C28 32
FT23
FT21
R53 27
CR8 49
C14 36
R31 14
C13 39
C21 43
R21 15
R14 12
CR6 49
R41 22
CR13 49
TP4 53
CR2 49
R35 11
FT6
R19 14
Q4 51
CR12 49
R43 23
R39 20
C17 40
R29 19
R37 21
R33 20
CR15 49
C7 36
FT25
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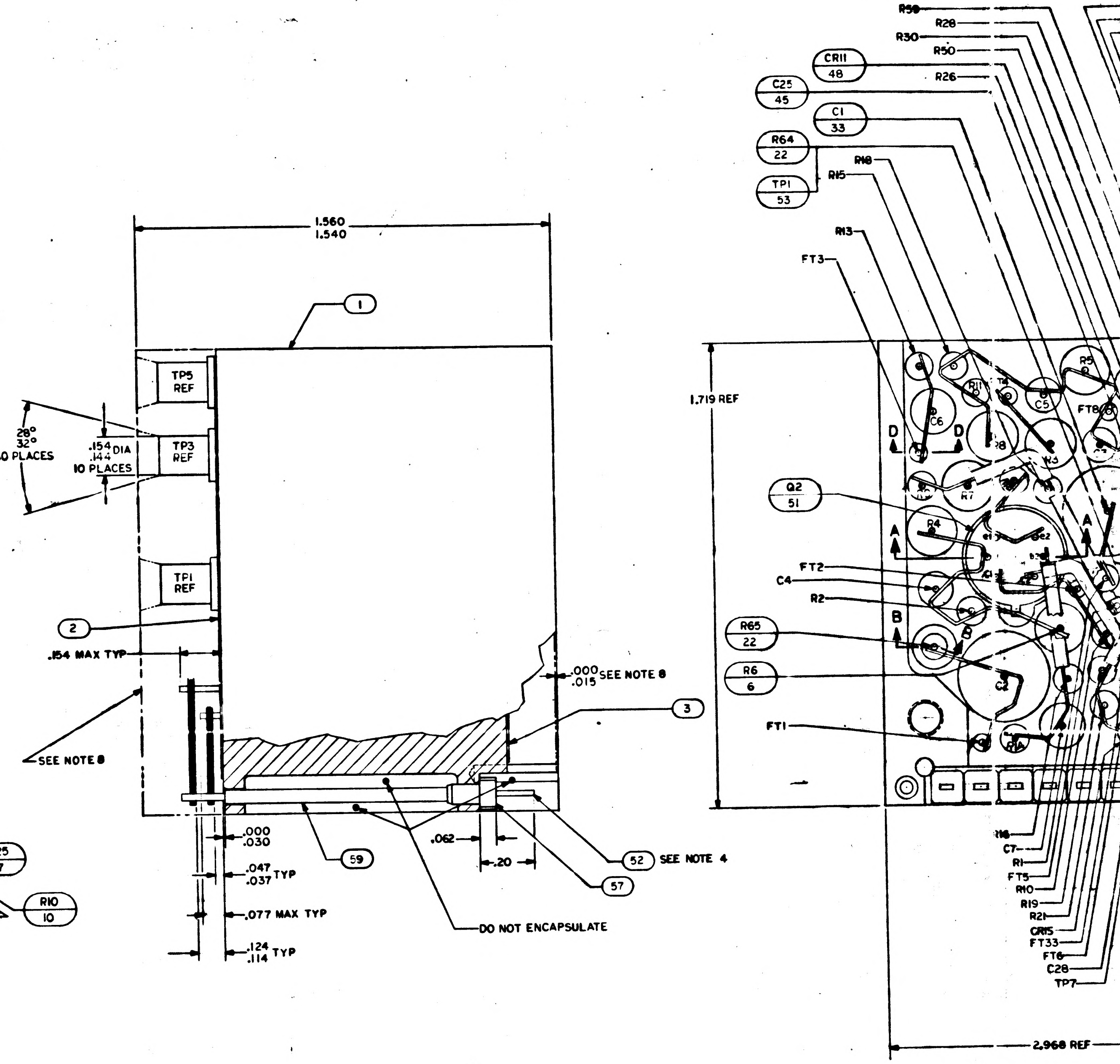
FT22
C16 40
R40 22
R23 16
FT17
FT20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28°
32°
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.144 DIA
10 PLACES
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.154 MAX TYP
.000
.015 SEE NOTE 8
3
SEE NOTE 8
.000
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.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
59
.062
.20
52 SEE NOTE 4
57
DO NOT ENCAPSULATE
1.719 REF
R50
R28
R30
R50
R26
CR11 48
C25 45
C1 33
R64 22
R18
TP1 53
R15
R13
FT3
Q2 51
FT2
C4
R2
R65 22
R6 6
FT1
D
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FT6
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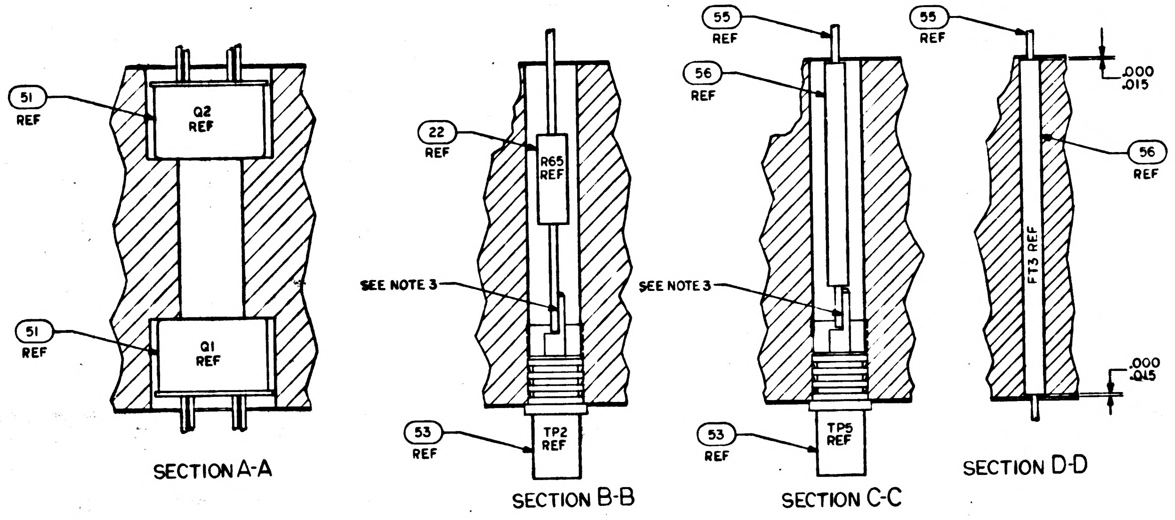
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SEE NOTE 3
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55 REF
56 REF
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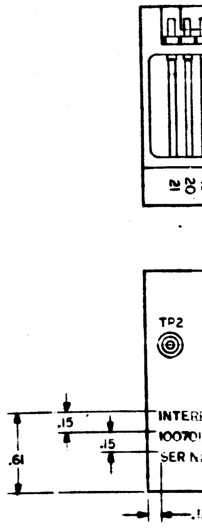
SECTION D-D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INTER
10070
SER N
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TP CHART	
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2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. MUST MEET REQUIREMENTS OF ND 1003136
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
9. MARK .100/.060 HIGH WHITE PER ND1002019
10. + DENOTES CAPACITOR POLARITY

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

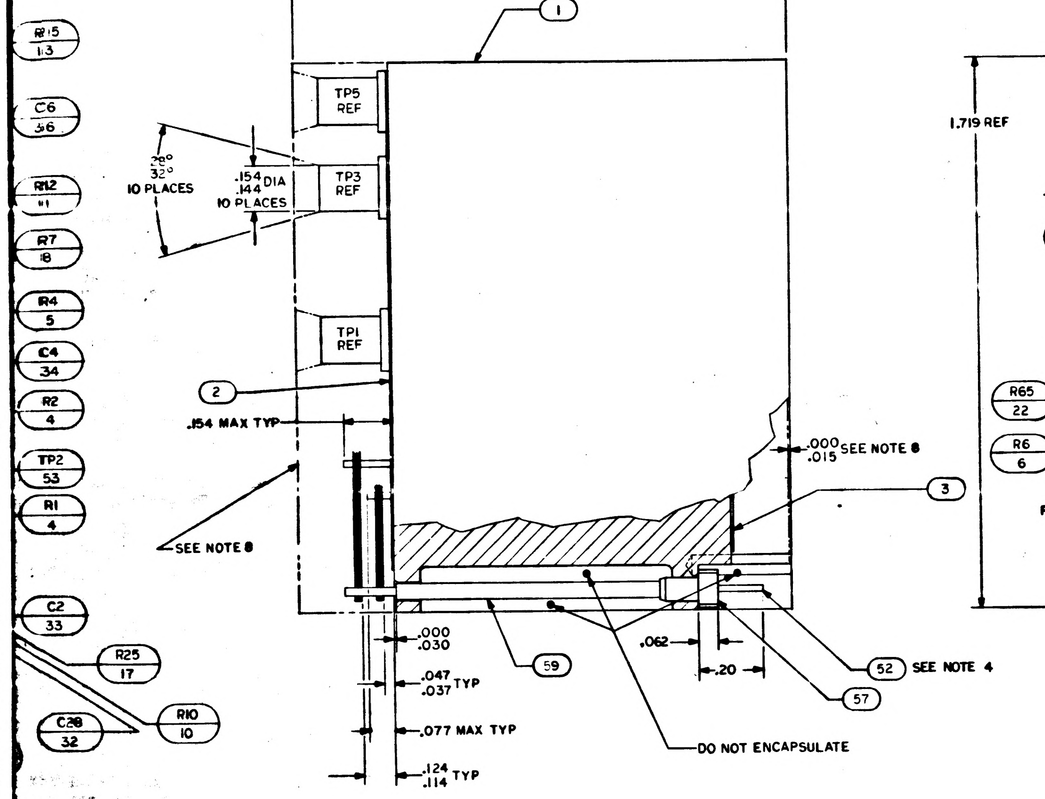
E1

1007019

1007019 F

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-8-63	DT WK
B	REVISED PER TDRR 01003	4-25-63	DT WK
C	REVISED PER TDRR 01178	5-8-63	D.T. WR
D	REVISED PER TDRR 01720	6-26-63	JJM. WK
E	REVISED PER TDRR 03279	9-19-63	JJM WK
E	REVISED PER TDRR 03752	10-8-63	WK.
G	REVISED PER TDRR 03753	5 Oct 63	WK

REVISIONS TDRR 00466



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TP3 REF
TP1 REF
29°
32°
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.154 DIA
.144
10 PLACES
2
.154 MAX TYP
SEE NOTE 8
.000
.015 SEE NOTE 8
3
.000
.030
.047 TYP
.037
.077 MAX TYP
.124 TYP
.114
.062
.20
59
52 SEE NOTE 4
57
DO NOT ENCAPSULATE
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C6 36
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R7 8
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R2 4
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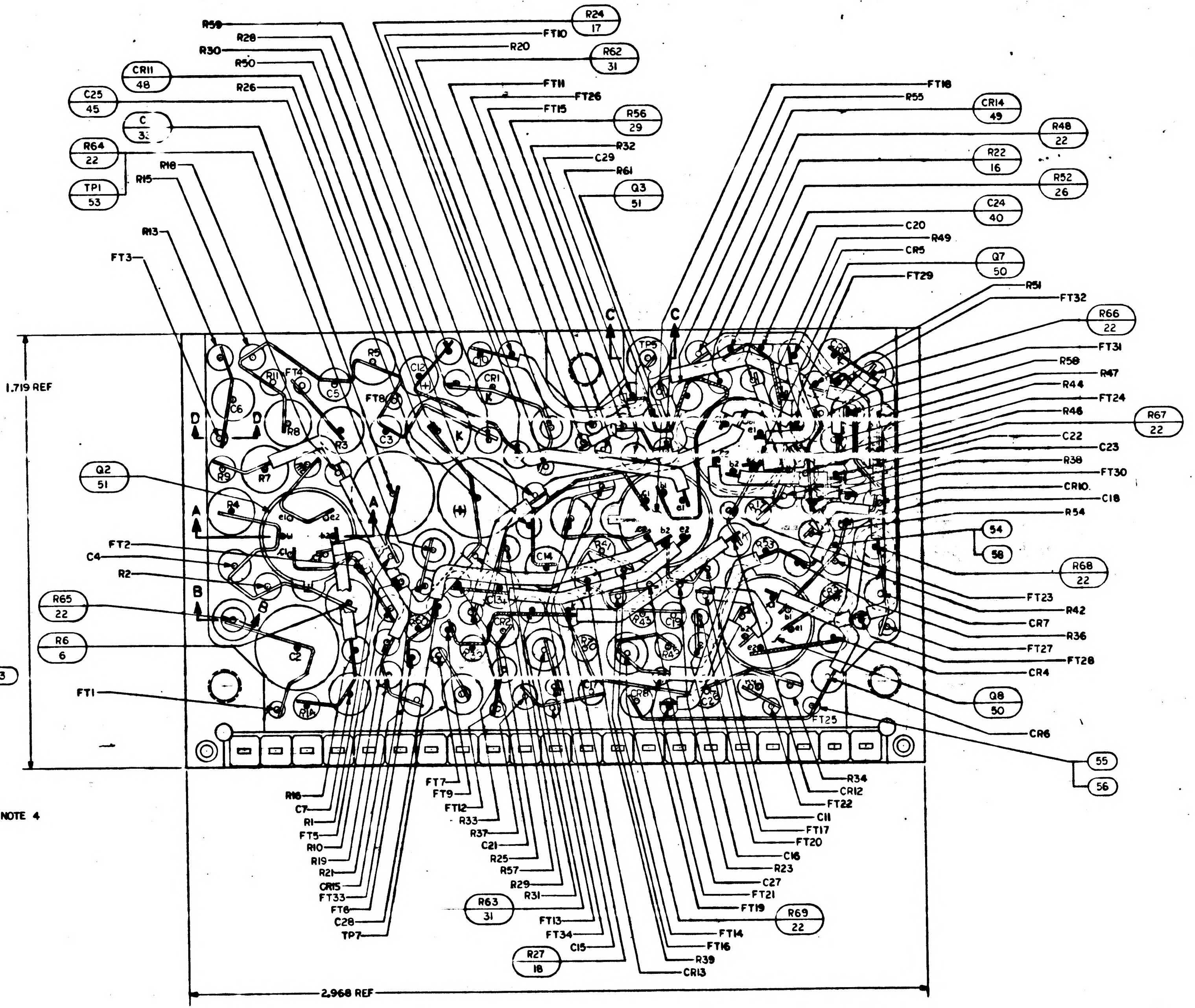
C7 36



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FT26
FT15
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C29
R61
Q3 51
CR11 48
C25 45
C 33
R64 22
TP1 53
R18
R15
R13
FT3
FT18
R55
CR14 49
R48 22
R22 16
R52 26
C24 40
C20
R49
CR5
Q7 50
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R47
R44
FT24
R46
R67 22
C22
C23
R38
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CR10
C18
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CR6
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56
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Q2 51
FT2
C4
R2
R65 22
R6 6
FT1
R16
C7
R1
FT5
R10
R19
R21
CR15
FT33
FT6
C28
TP7
FT7
FT9
FT12
R33
R37
C21
R25
R57
R29
R31
R63 31
FT13
FT34
C15
R27 18
R34
CR12
FT22
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FT21
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R69 22
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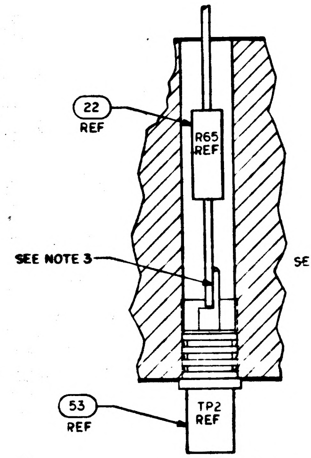
R39
CR13
2.968 REF



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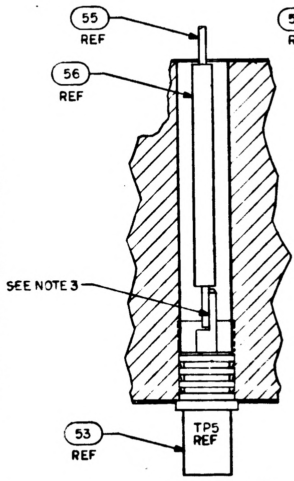
R65 REF
SEE NOTE 3
53 REF
TP2 REF

SECTION B-B



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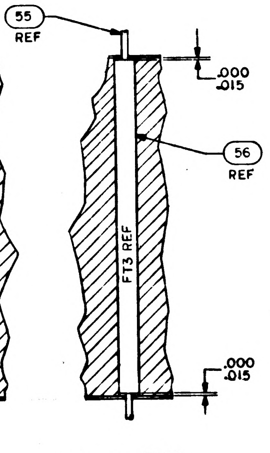
56 REF
SEE NOTE 3
53 REF
TP5 REF

SECTION C-C



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56 REF
FT3 REF
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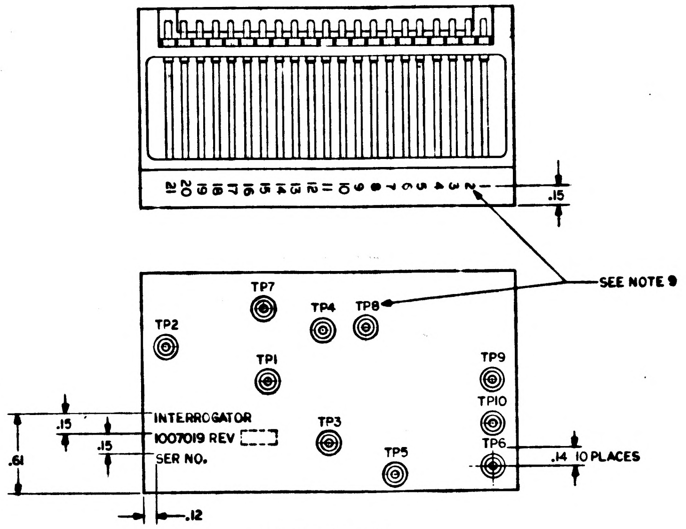
SECTION D-D



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SEE NOTE 9
TP7
TP2
TP4
TP8
TP1
TP9
TP10
TP3
TP5
TP6
INTERROGATOR
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.15
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2	1006777-5	CAPACITOR, CER 36UUF, 100V, 10%	38
			37
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1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
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4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
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2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
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2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
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1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-44	RESISTOR, FIXED FILM, 3.3K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
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1007101	

APPLICATION

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FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

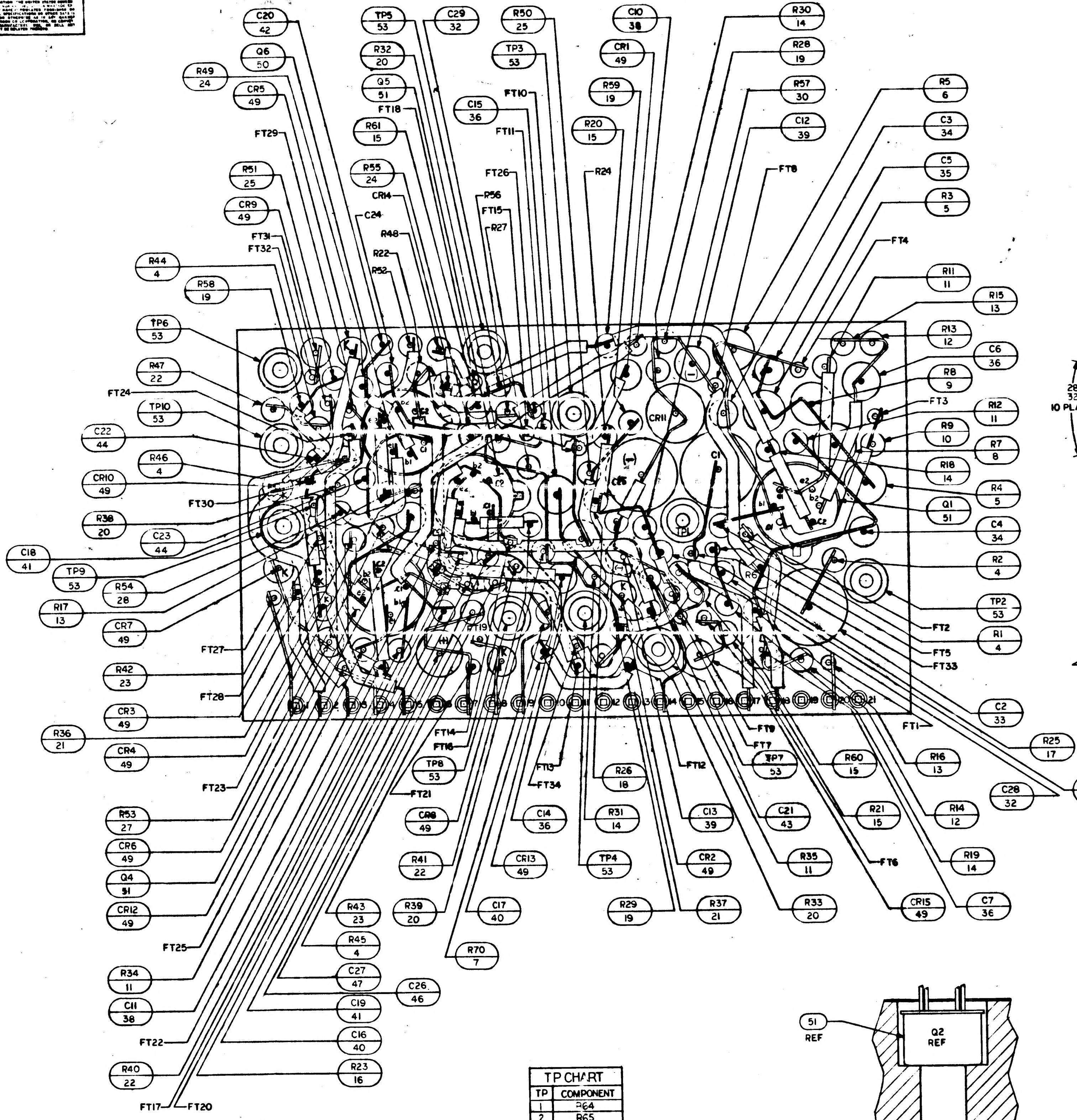
MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN W. Horgan DATE 2-8-63
CHECKED W. J. Gifford 15FEB63
APPROVAL 25FEB63
APPROVAL 26FEB63
NASA APPROVAL W. J. Rhine 2-27-63
MIT APPROVAL 27FEB63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1 WT SHEET 1 OF 1

F2 1007019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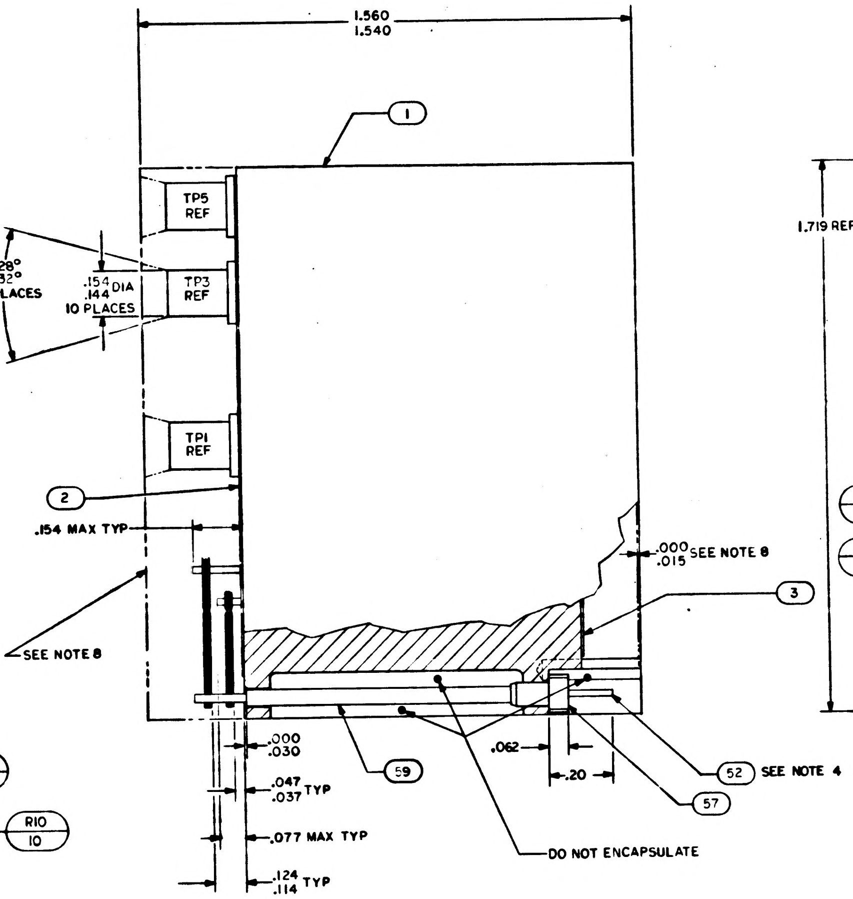
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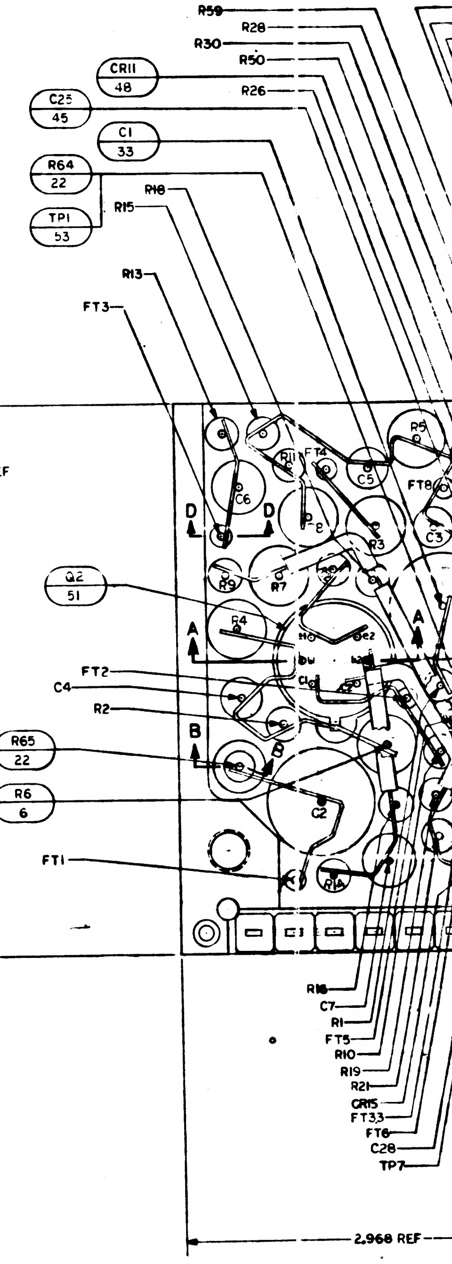
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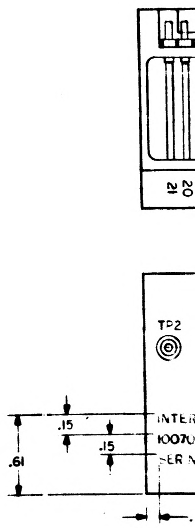

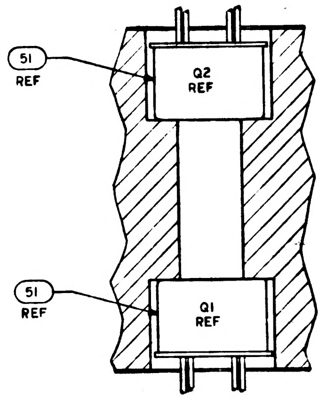
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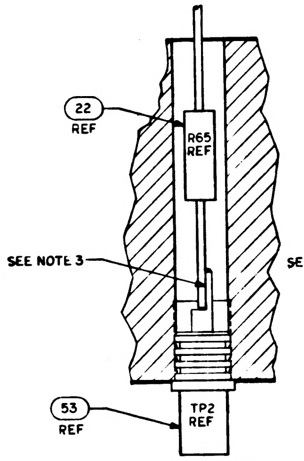
SECTION A-A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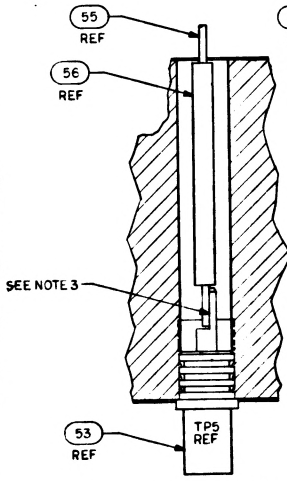
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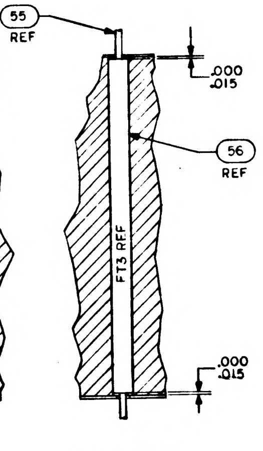
SECTION C-C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SECTION D-D

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. MUST MEET REQUIREMENTS OF ND 1002136
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
9. MARK .100/.060 HIGH WHITE PER ND1002019
10. + DENOTES CAPACITOR POLARITY

TP CHART

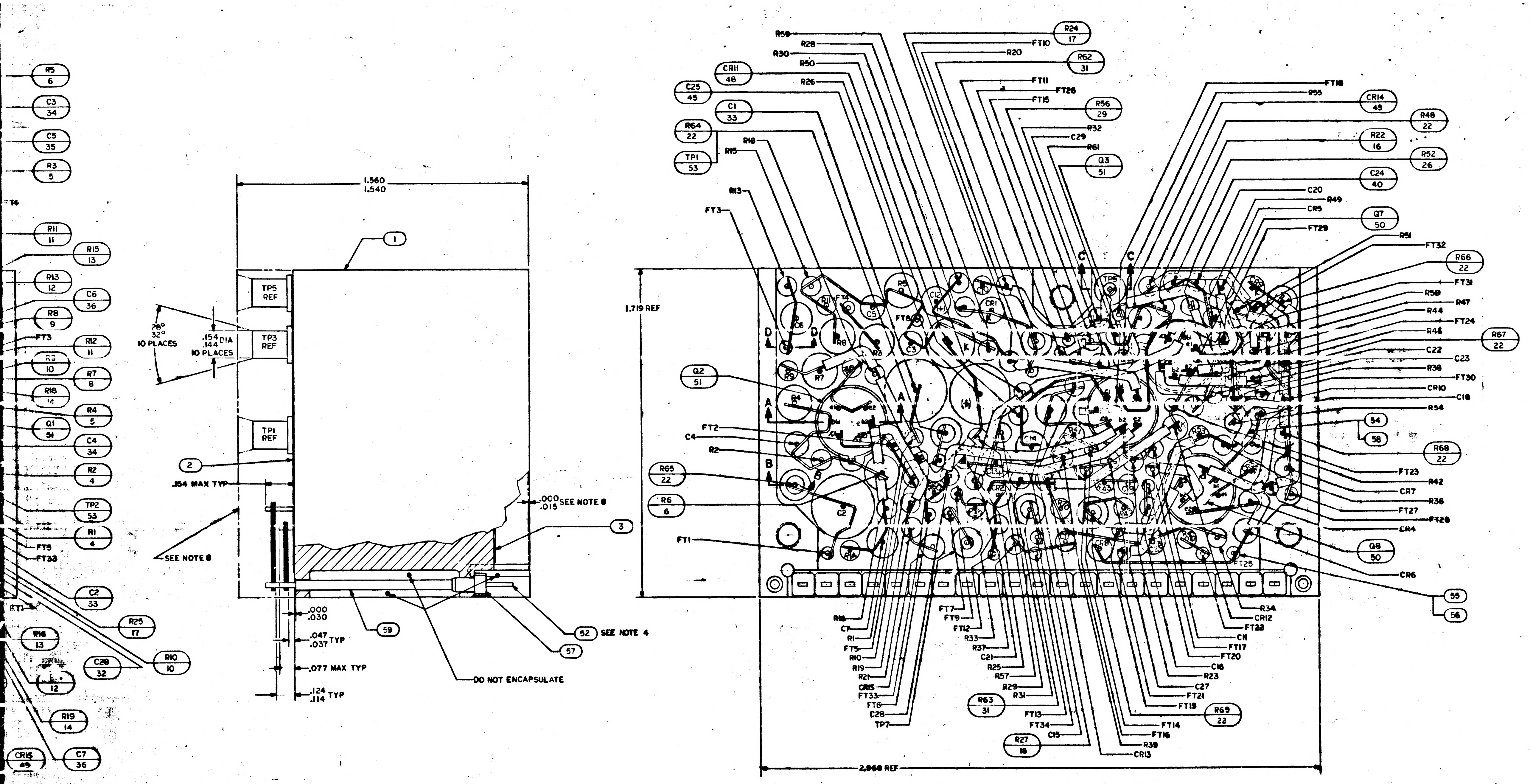
TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

INCHES
PHOTOGRAPHIC SCALE ONLY

F1 1007019

1007019 J

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 03466		
A	REVISED PER TDRR 00721	4-3-6	DT WK
B	REVISED PER TDRR 01003	[illegible]	D.T. WK
C	REVISED PER TDRR 01178	5-8-6	D.T. WK
D	REVISED PER TDRR 01720	6-26-6	J.J.M. WK
E	REVISED PER TDRR 03279	9-19-6	JJM WK
F	REVISED PER TDRR 03752	[illegible]	WK
G	REVISED PER TDRR 03753	[illegible]	WK
H	REVISED PER TDRR 05337	8-4-63	WK
J	REVISED PER TDRR 05406	12-27-63	WK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52 SEE NOTE 4
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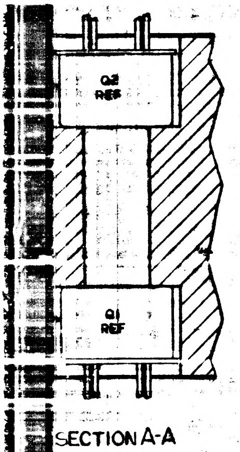
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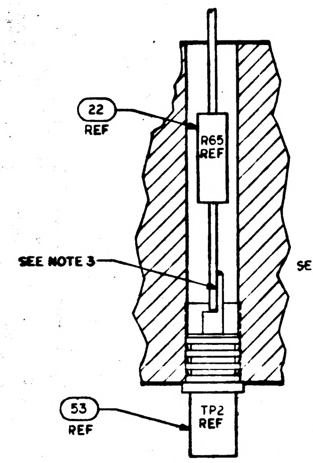
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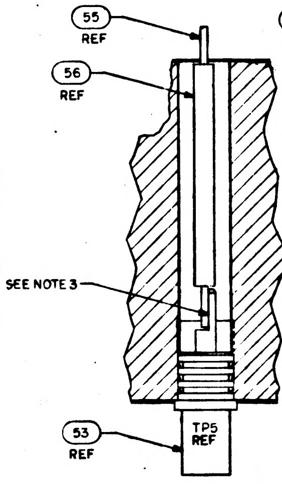
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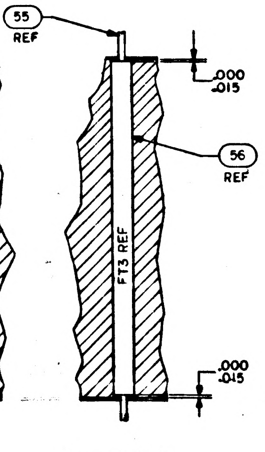
SECTION C-C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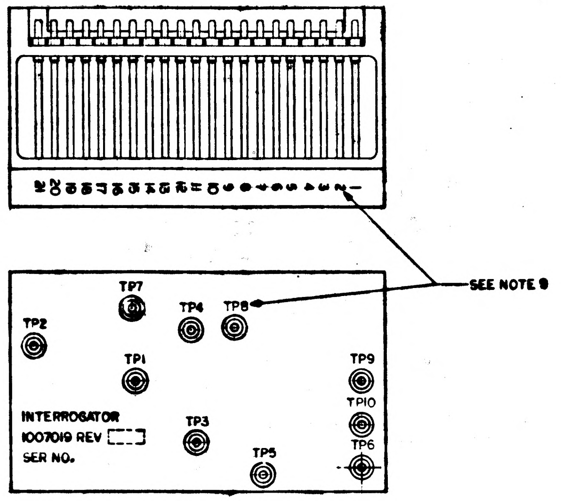
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INTERROGATOR
1007019 REV ☐
SER NO.

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
⊠	1010013	SCHEMATIC	
AR	1006776-20	INSULATION SLEEVING	59
AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-8	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010286-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15 UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36 UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR, .068 UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22 UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-17	RESISTOR, FIXED FILM, 240Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, 2%	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-44	RESISTOR, FIXED FILM, 3.3K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1

LIST OF MATERIALS

1007019 J

MASTER

NEXT ASSY	USED ON
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~~1007108~~	
~~1007101~~	

APPLICATION

UNLESS OTHERWISE SPECIFIED
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TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

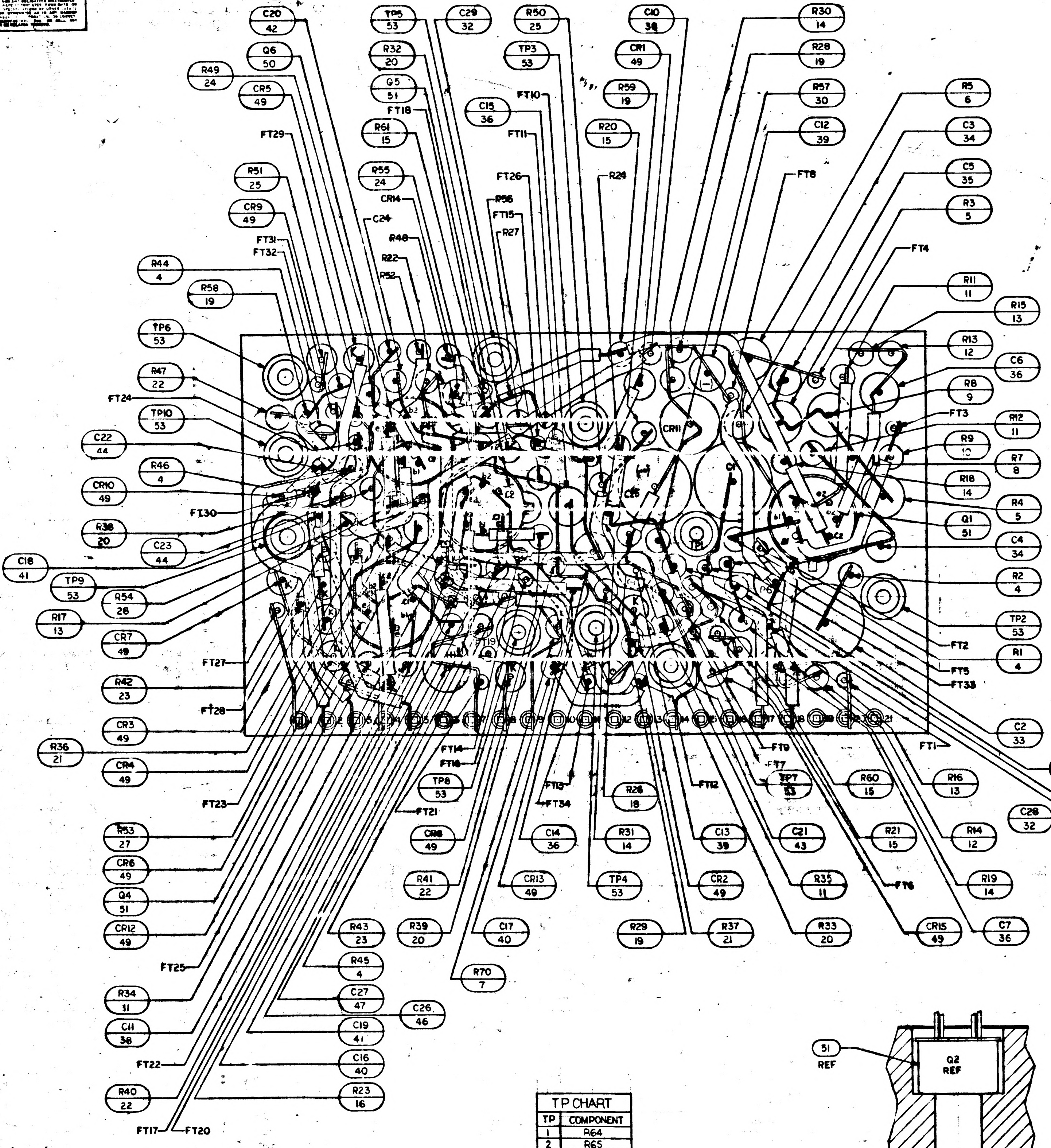
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN W. Horgan DATE 2-8-63
CHECKED W. J. Gifford 15 FEB 63
APPROVAL 25 FEB 63
APPROVAL 26 FEB 63
NASA APPROVAL W. J. Robinson 2-27-63
MIT APPROVAL 27 FEB 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY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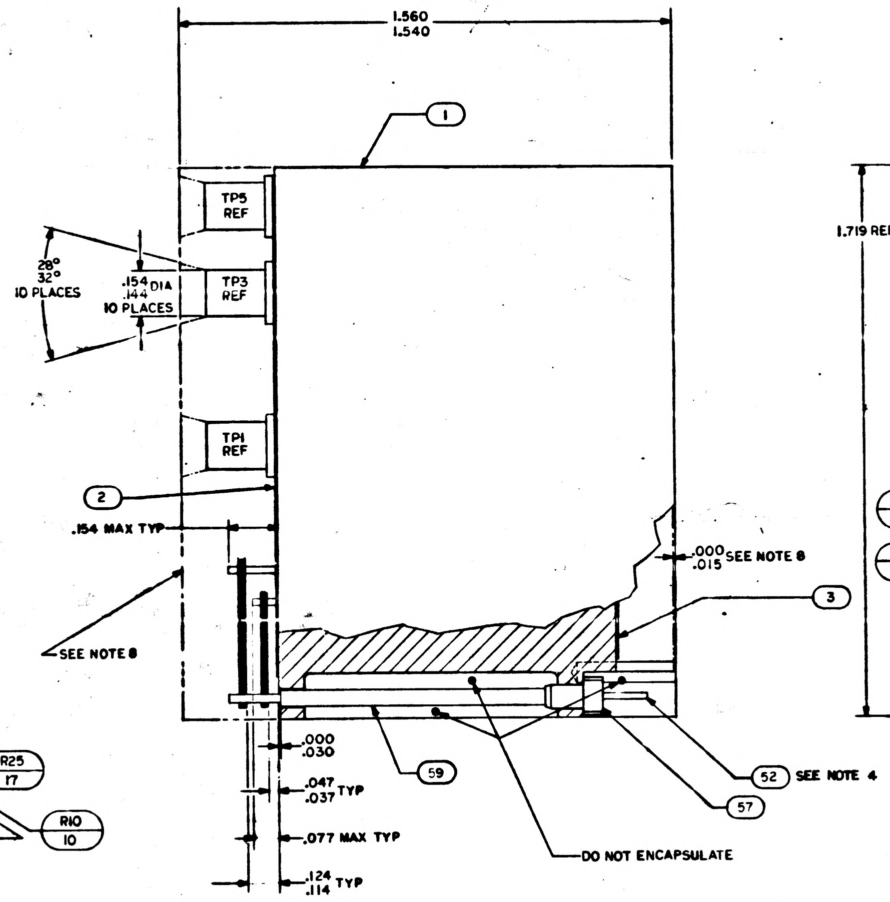
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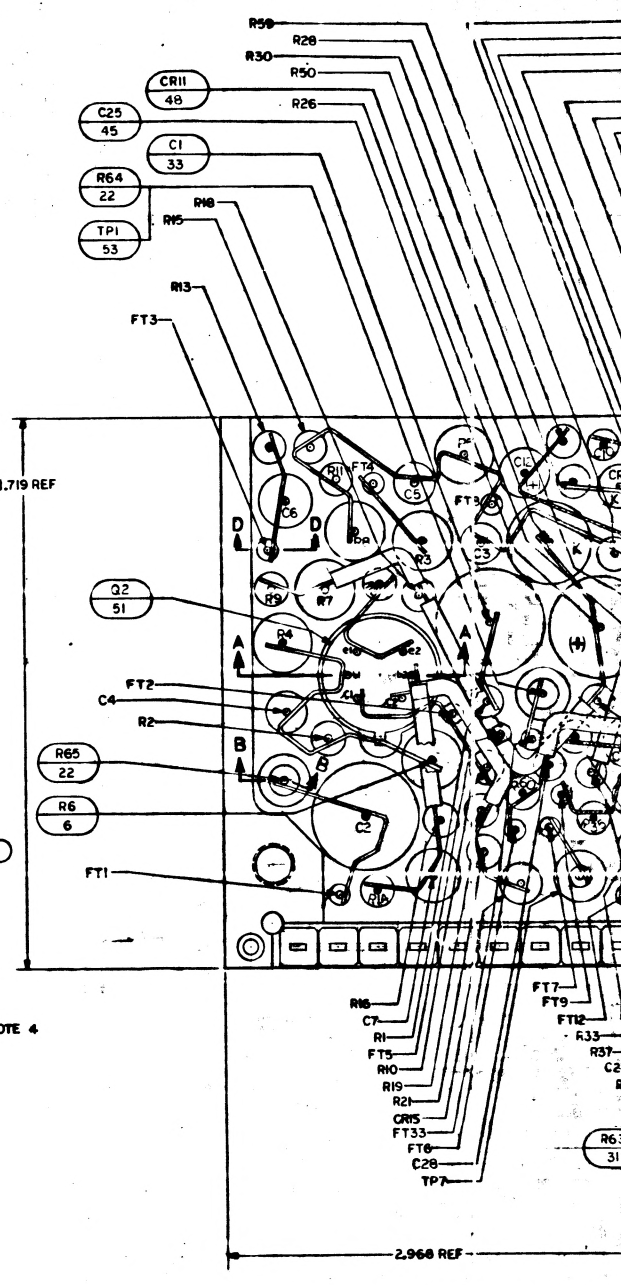
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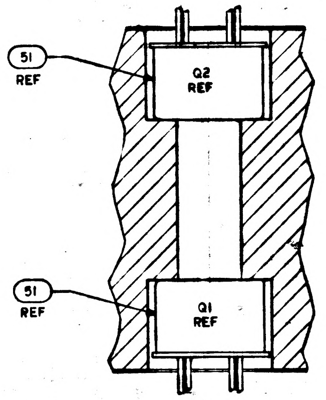
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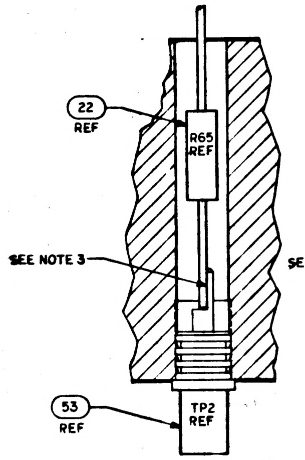
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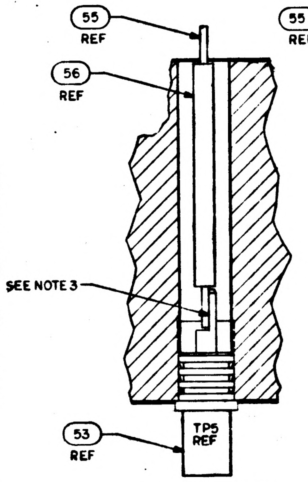
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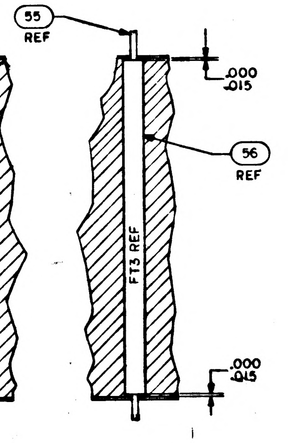
SECTION C-C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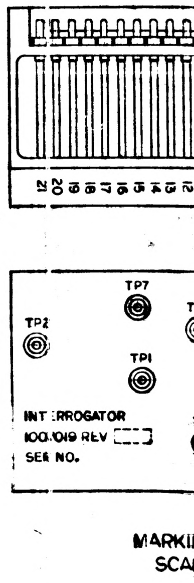
56 REF
FT3 REF
.000
.015

SECTION D-D


TP7
TP2
TP1
INTERROGATOR
1007019 REV
SER NO.
MARKI
SCA

TP CHART	
TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

NOTES

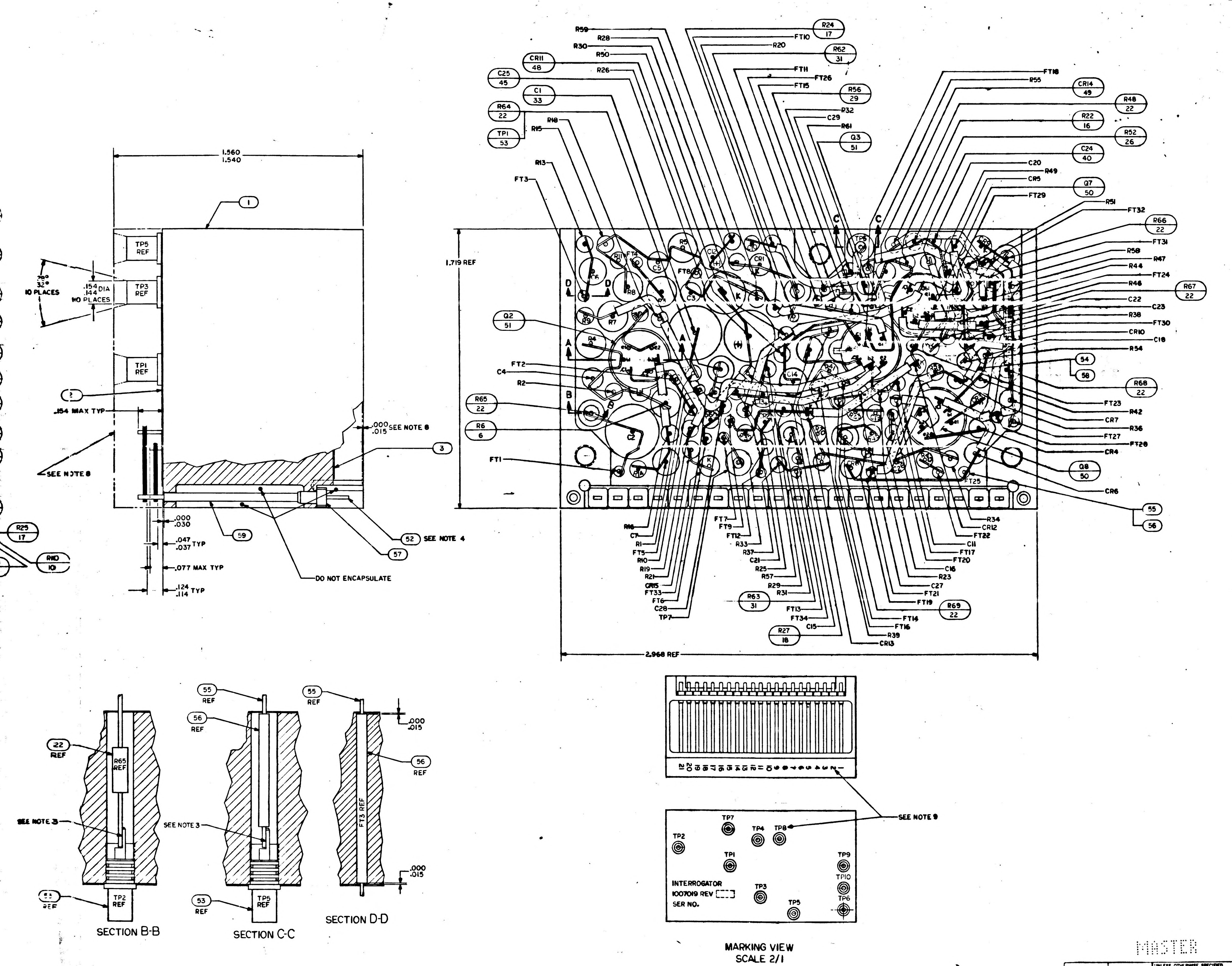
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. MUST MEET REQUIREMENTS OF ND 1002136
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE
10. + DENOTES CAPACITOR POLARITY

INCHES
PHOTOGRAPHIC SCALE ONLY

1007019 K

REVISIONS TDRR 60466

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-3-63	DT WK
B	REVISED PER TDRR 01003	4-25-63	D.T. WK
C	REVISED PER TDRR 01178	5-F-63	D.T. WR
D	REVISED PER TDRR 01720	6-26-63	J.J.M. WK.
E	REVISED PER TDRR 03279	9-19-63	JJM WK
F	REVISED PER TDRR 03752	10-8-63	WR.
G	REVISED PER TDRR 03753	[illegible]	WK
H	REVISED PER TDRR 05337	11-4-63	JJW WK
J	REVISED PER TDRR 05406	12-27-63	JAC WK
K	REVISED PER TDRR 06799	3/10/64	WK



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1.540
1.719 REF
TP5 REF
TP3 REF
TP1 REF
28°
32°
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.154 DIA
.144
10 PLACES
.154 MAX TYP
.000
.015 SEE NOTE 8
SEE NOTE 8
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
DO NOT ENCAPSULATE
SEE NOTE 4
R25 17
R10 101
C25 45
C1 33
CR11 48
R64 22
TP1 53
R24 17
R62 31
R56 29
Q3 51
CR14 49
R48 22
R22 16
R52 26
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Q7 50
R66 22
R67 22
Q2 51
R65 22
R6 6
R68 22
Q8 50
R63 31
R27 18
R69 22
2.968 REF
SEE NOTE 9
TP7 TP4 TP8 TP2 TP1 TP9 TP10 TP3 TP5 TP6
INTERROGATOR
1007019 REV
SER NO.
22 REF
R65 REF
SEE NOTE 3
TP2 REF
55 REF
56 REF
TP5 REF
53 REF
FT3 REF
.000
.015

SECTION B-B

SECTION C-C

SECTION D-D

MARKING VIEW
SCALE 2/1

MASTER

⊠	1010013	SCHEMATIC	
AR	1006776-20	INSULATION SLEEVING	59
AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-8	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010286-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15 UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36 UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR, .068 UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22 UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-17	RESISTOR, FIXED FILM, 240Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, %	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-44	RESISTOR, FIXED FILM, 3.3K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	
~~1007168~~	
~~1007101~~	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN W. Horgan DATE 2-8-63
CHECKED W. J. Giffen 15FEB63
APPROVAL 25FEB63
APPROVAL 26FEB63
NASA APPROVAL W. J. Robbins 2-27-63
MIT APPROVAL 27FEB63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

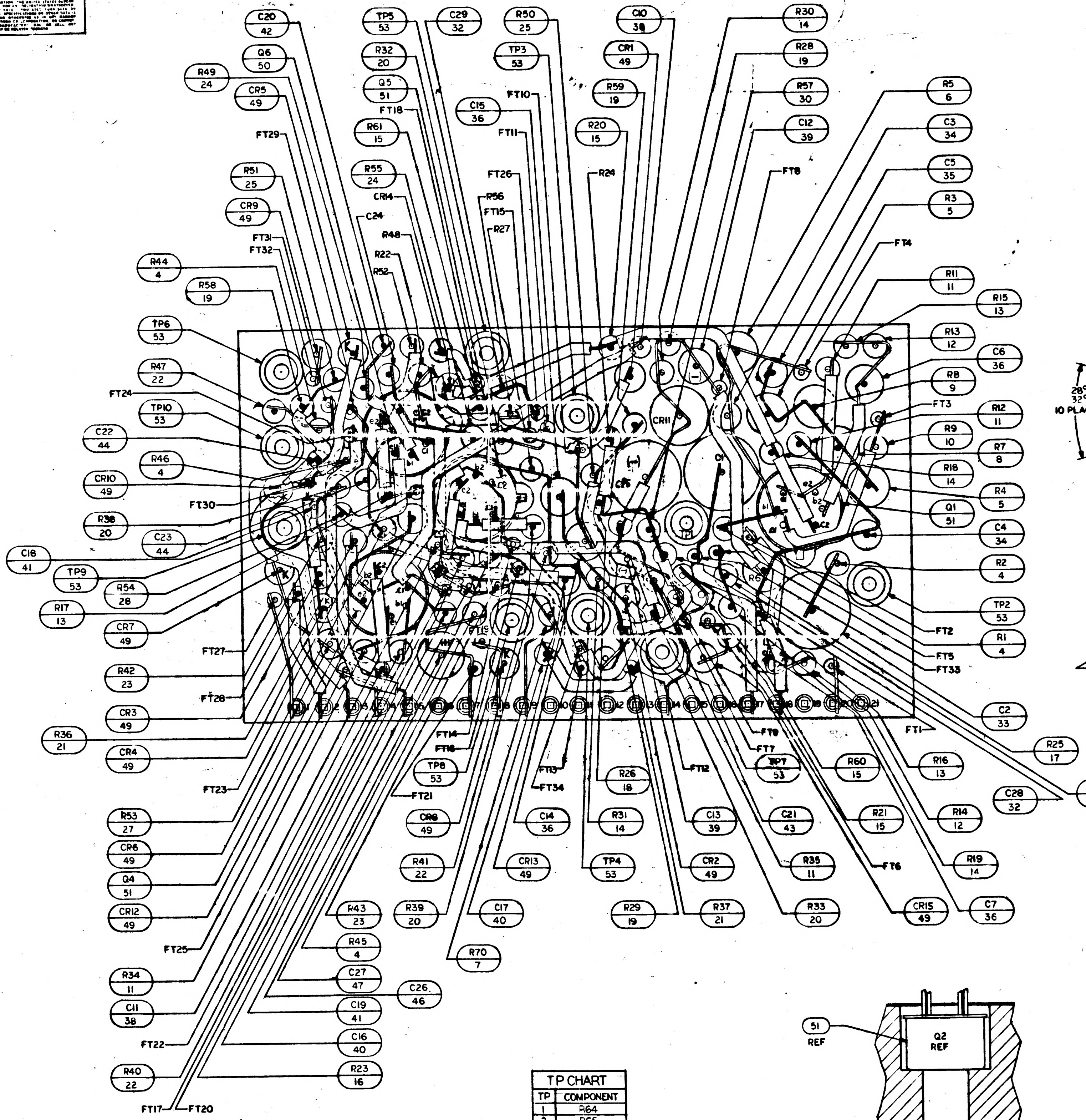
INTERROGATOR
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

1007019 K

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO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FT10
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FT29
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FT11
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C3 34
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FT26
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FT28
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FT12
R10 10
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FT23
FT21
R53 27
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CR2 49
R35 11
FT6
R19 14
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CR12 49
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R37 21
R33 20
CR15 49
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FT25
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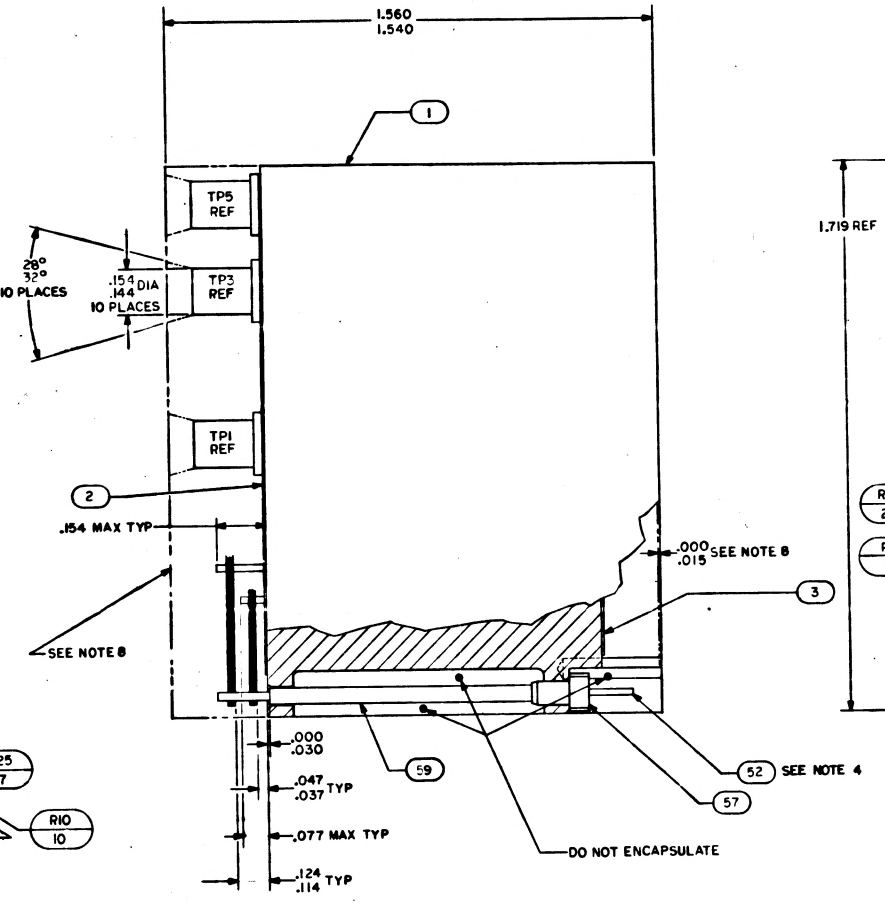
FT20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TP3 REF
TP1 REF
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32°
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10 PLACES
2
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.015 SEE NOTE 8
3
SEE NOTE 8
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57
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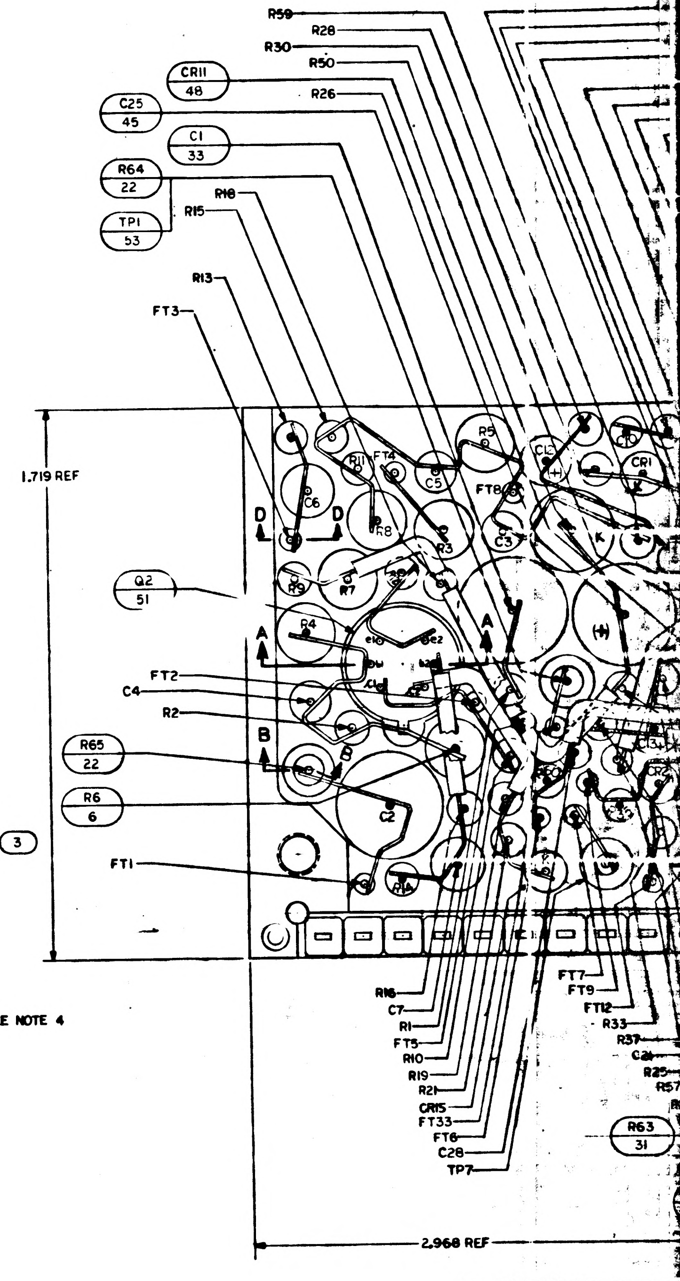
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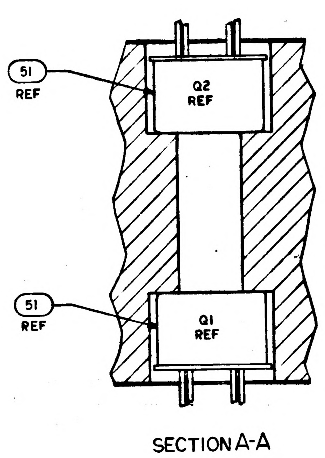
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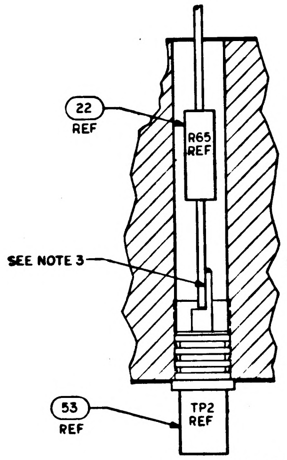
SECTION A-A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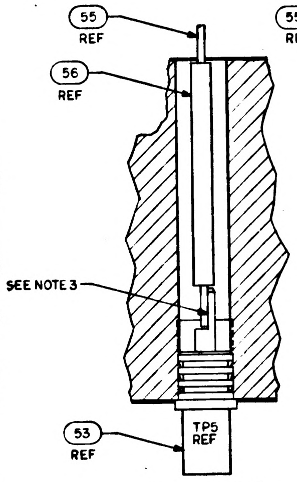
53 REF
TP2 REF

SECTION B-B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SEE NOTE 3
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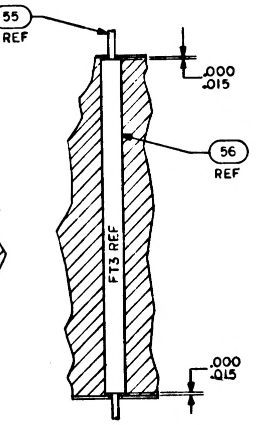
SECTION C-C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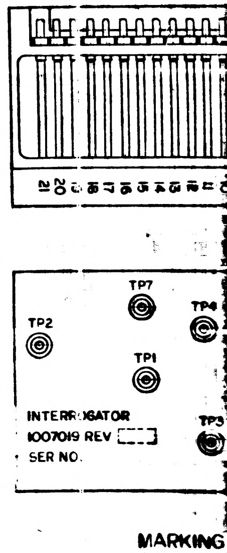
SECTION D-D


TP2
TP7
TP8
TP1
TP3
INTERROGATOR
1007019 REV
SER NO.

MARKING
SCALE

TP CHART	
TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
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10. + DENOTES CAPACITOR POLARITY

INCHES
PHOTOGRAPHIC SCALE ONLY

1007019 L

	REVISIONS TDRR 00466		
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-8-63	DT WK
B	REVISED PER TDRR 01003		DT WK
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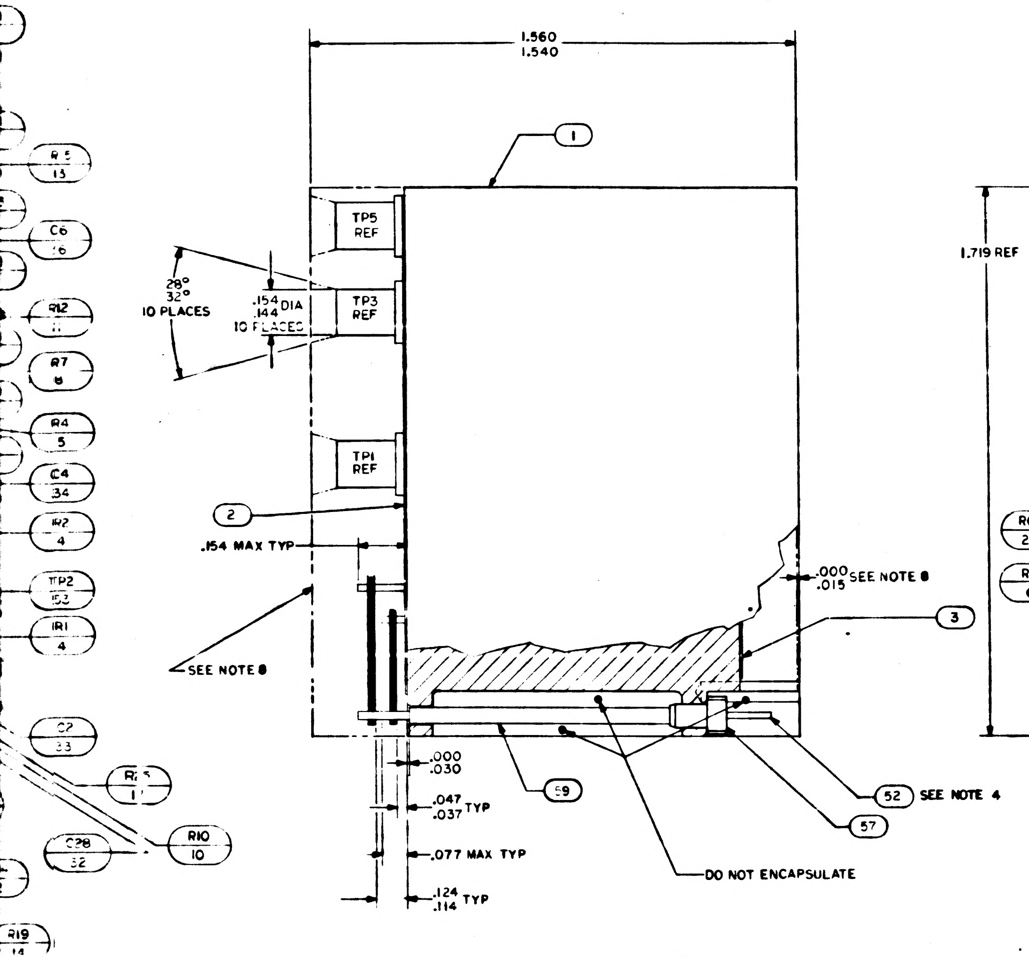
E	REVISED PER TDRR 03279	9-19-63	JJM WK
F	REVISED PER TDRR 03752	10-8-63	WK
G	REVISED PER TDRR 03753		WK
H	REVISED PER TDRR 05337	11-6-63	WK
J	REVISED PER TDRR 05406	12-27-63	WK
K	REVISED PER TDRR 06799	3/10/64	WK
L	REVISED PER TDRR 07285		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TP1 REF
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32°
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.154
.144 DIA
10 PLACES
2
.154 MAX TYP
SEE NOTE 8
.000
.015 SEE NOTE 8
3
59
57
52 SEE NOTE 4
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
DO NOT ENCAPSULATE
R5 13
C6 16
R12
R7 8
R4 5
C4 34
R2 4
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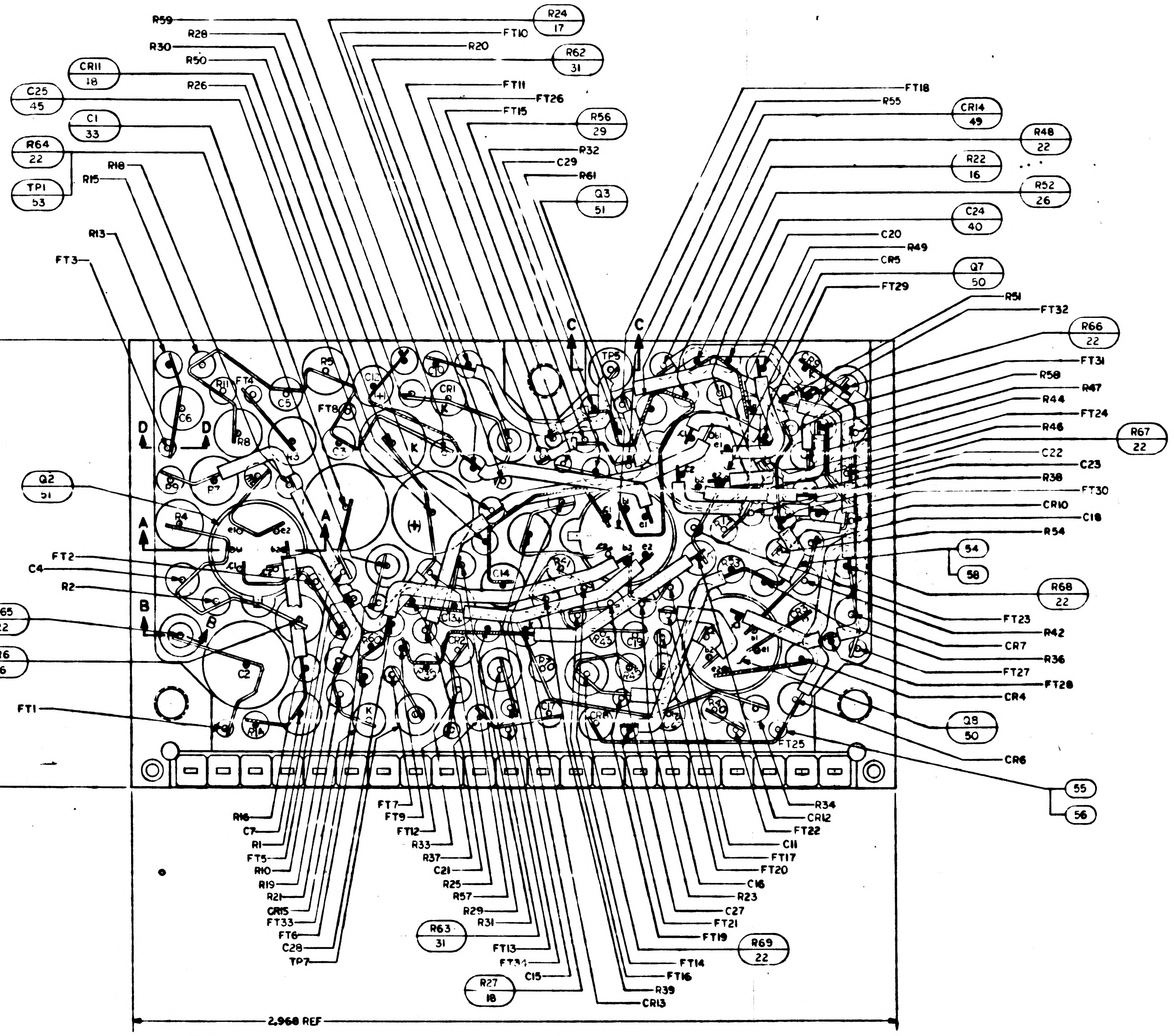
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R68 22
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R63 31
R69 22
R27 18
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2.968 REF
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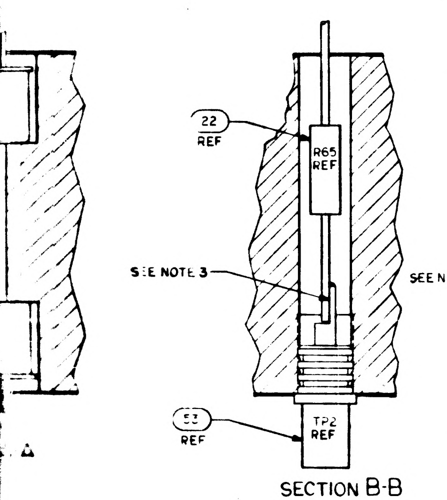
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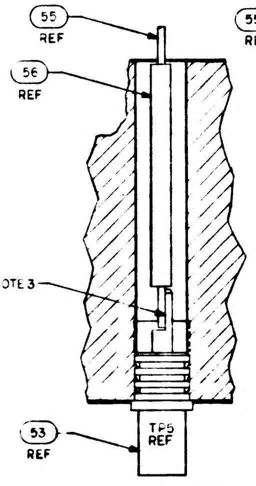
SEE NOTE 3
53 REF
TP2 REF

SECTION B-B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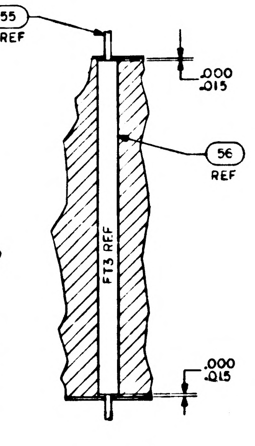
53 REF
TP5 REF

SECTION C-C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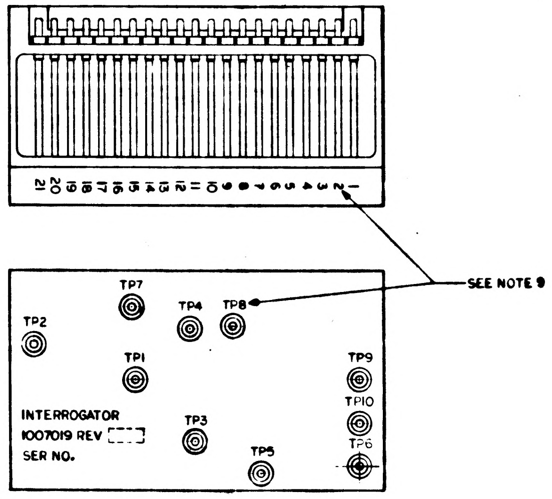
SECTION D-D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TP4
TP8
TP2
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TP5
TP6
INTERROGATOR
1007019 REV
SER NO.

MARKING VIEW
SCALE 2/1

⊠	1010013	SCHEMATIC	
AR	1006776-20	INSULATION SLEEVING	59
AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-8	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010286-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR .068 UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-17	RESISTOR, FIXED FILM, 240Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, %	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-44	RESISTOR, FIXED FILM, 3.3K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 1K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 3.9K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	
~~1007102~~	
~~1007101~~	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO.
CONTRACT NAS 9-497
DRAWN W. Horgan DATE 2-8-63
CHECKED 15 FEB 63
APPROVAL 25 FEB 63
APPROVAL 26 FEB 63
NASA APPROVAL 2-27-63
MIT APPROVAL 27 FEB 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

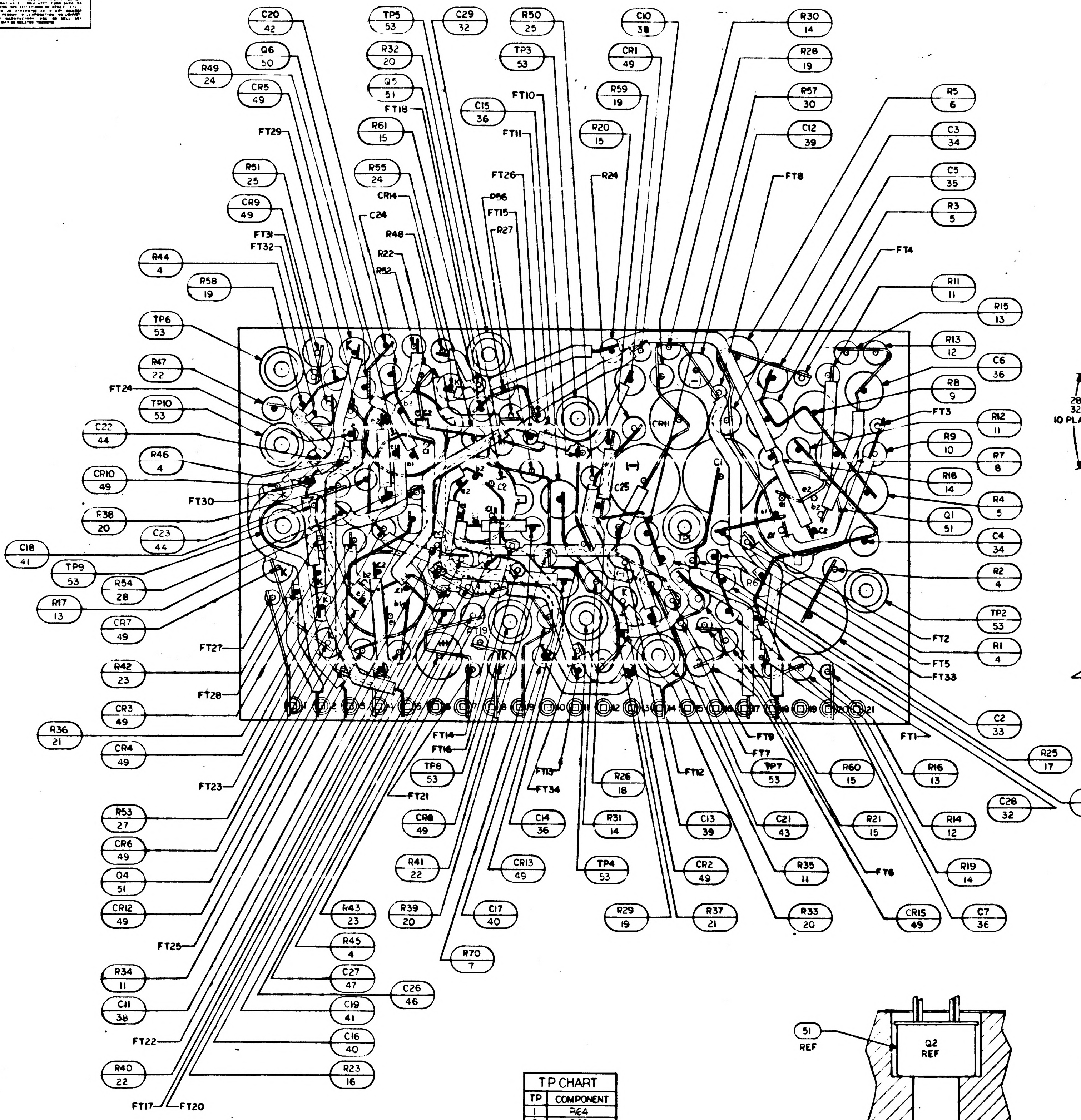
INTERROGATOR
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

1007019 L

2

[illegible]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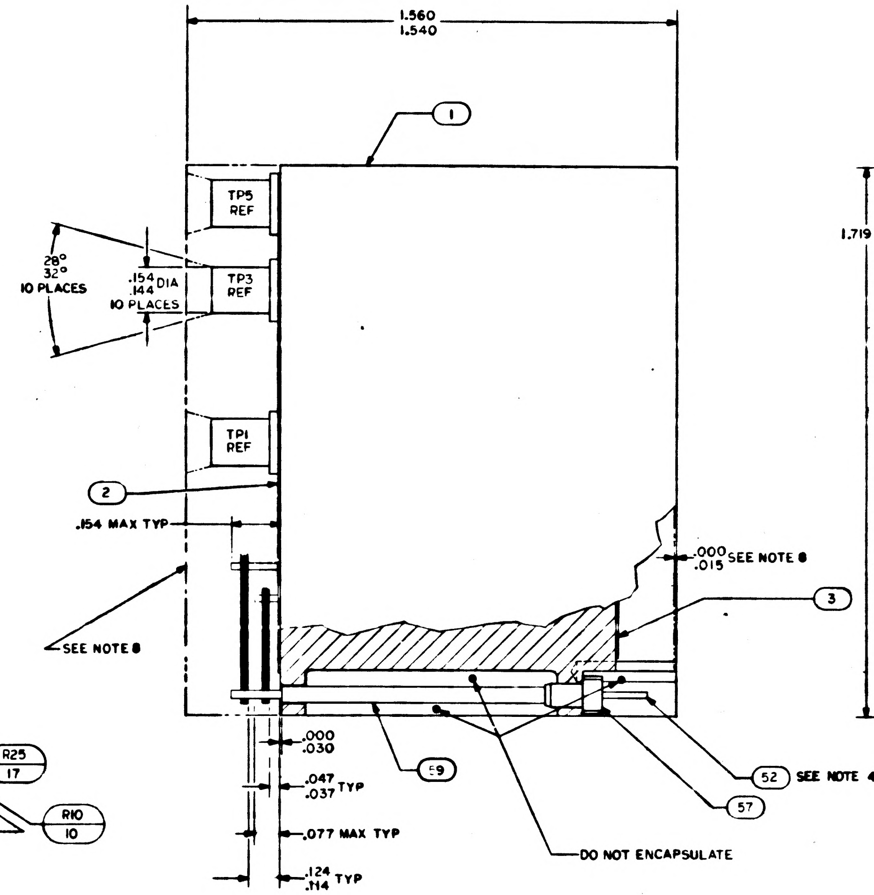
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.015 SEE NOTE 8
3
SEE NOTE 8
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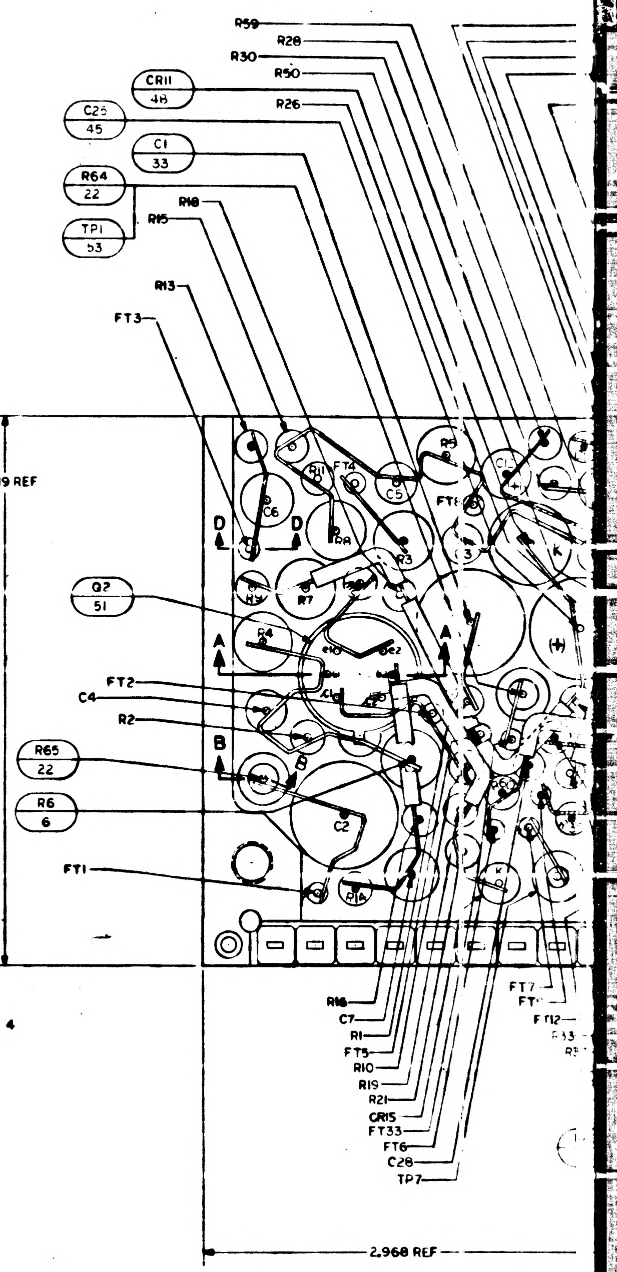
57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C7
R1
FT5
R10
R19
R21
CR15
FT33
FT6
C28
TP7
FT7
FT12
2.968 REF

TP CHART	
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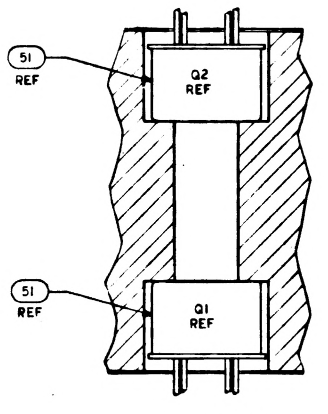
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67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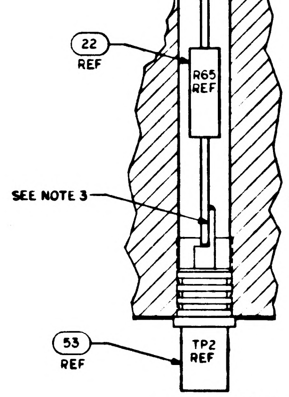
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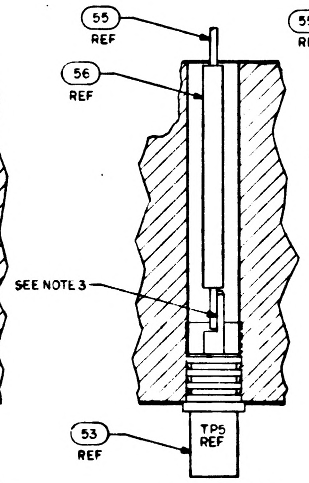
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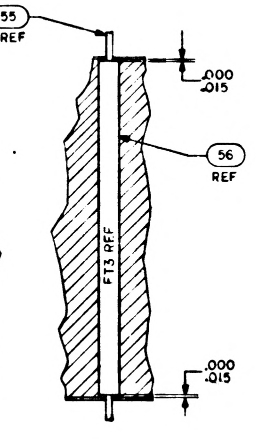
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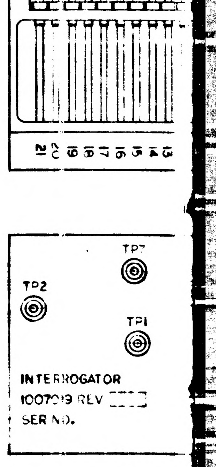

TP7
TP2
TP1
INTERROGATOR
1007019 REV
SER NO.

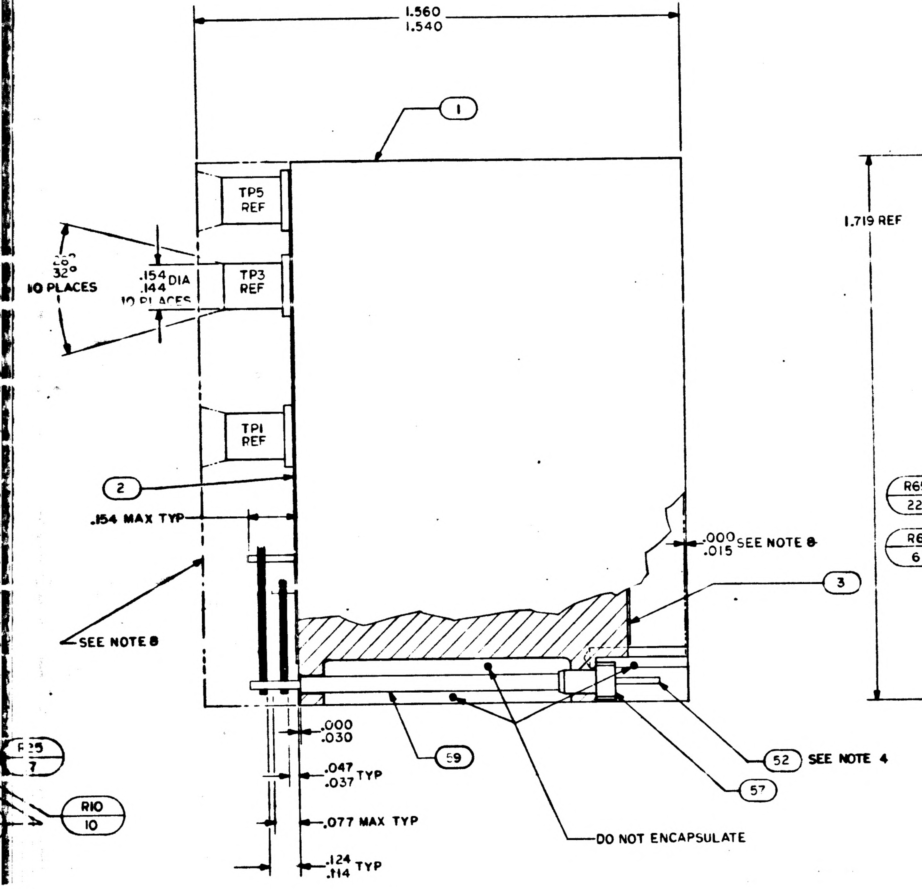
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. MUST MEET REQUIREMENTS OF ND 1002136
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE
10. + DENOTES CAPACITOR POLARITY
11. PROCURE PER PS 1007019.

MARK
SC

1007019 M

SYM	REVISIONS TPRR 00466 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-3-63	DT WK
B	REVISED PER TDRR 01003	4-25-63	DT WK
C	REVISED PER TDRR 01178	5-8-63	D.T. WK
D	REVISED PER TDRR 01720	6-26-63	JJM WK
E	REVISED PER TDRR 03279	9-19-63	JJM WK
F	REVISED PER TDRR 03752	10-8-63	WK
G	REVISED PER TDRR 03753	5 Oct 63	WK
H	REVISED PER TDRR 05337	11-4-63	WK
J	REVISED PER TDRR 05406	12-27-63	WK
K	REVISED PER TDRR 06799	3/10/64	WK
L	REVISED PER TDRR 07285	24	
M	REVISED PER TDRR 14093	18 NOV. 64	



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TP5 REF
TP3 REF
TP1 REF
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32°
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.154
.144 DIA
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2
.154 MAX TYP
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.015 SEE NOTE 8
3
SEE NOTE 8
R25
7
R10
10
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52 SEE NOTE 4
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.047
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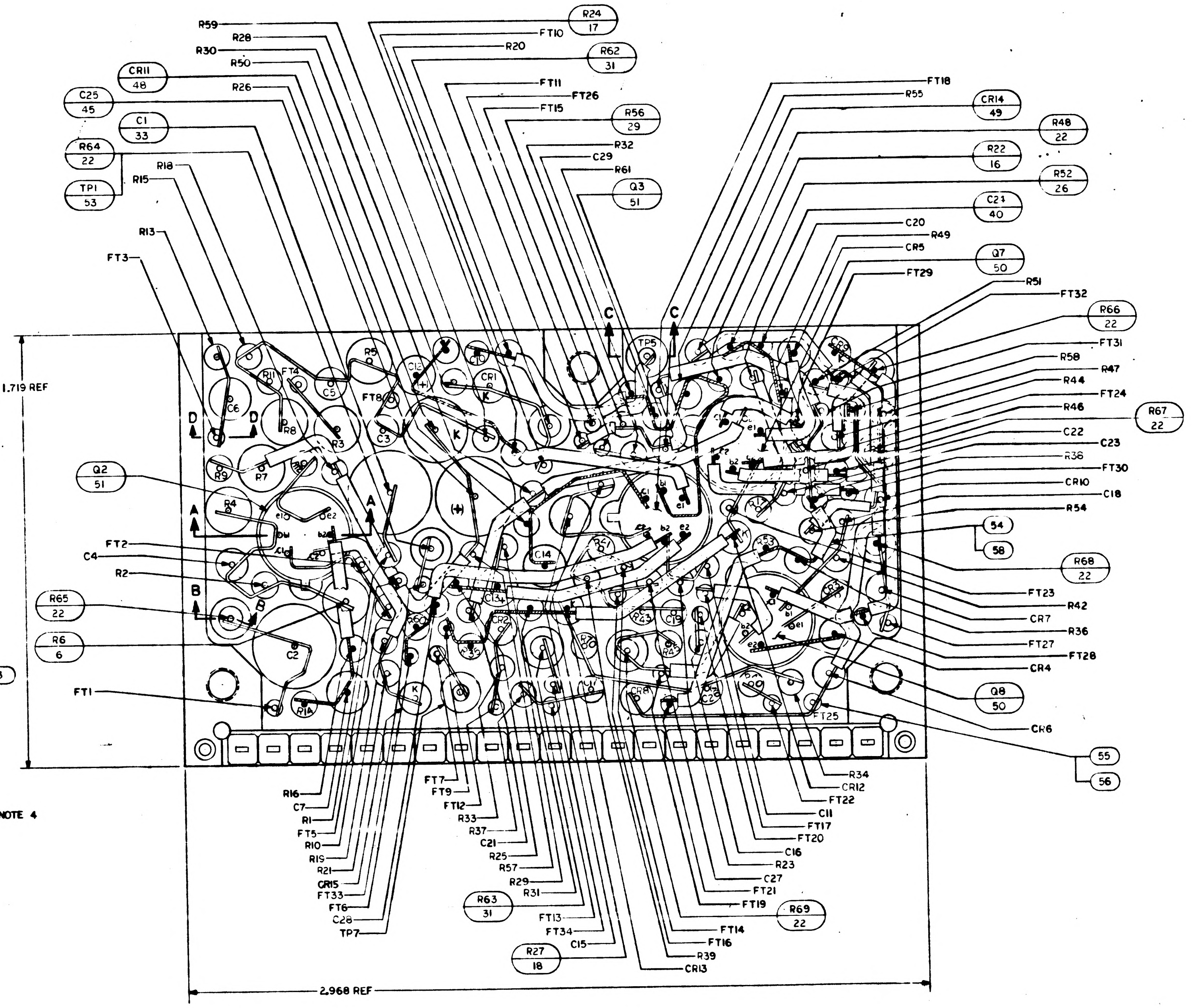

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R6 6
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R20
FT11
FT26
FT15
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C29
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CR5
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FT32
R58
R47
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C23
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FT30
CR10
C18
R54
FT2
C4
R2
FT23
R42
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R36
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CR4
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CR6
R16
C7
R1
FT5
R10
R19
R21
CR15
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R33
R37
C21
R25
R57
R29
R31
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R34
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C11
FT17
FT20
C16
R23
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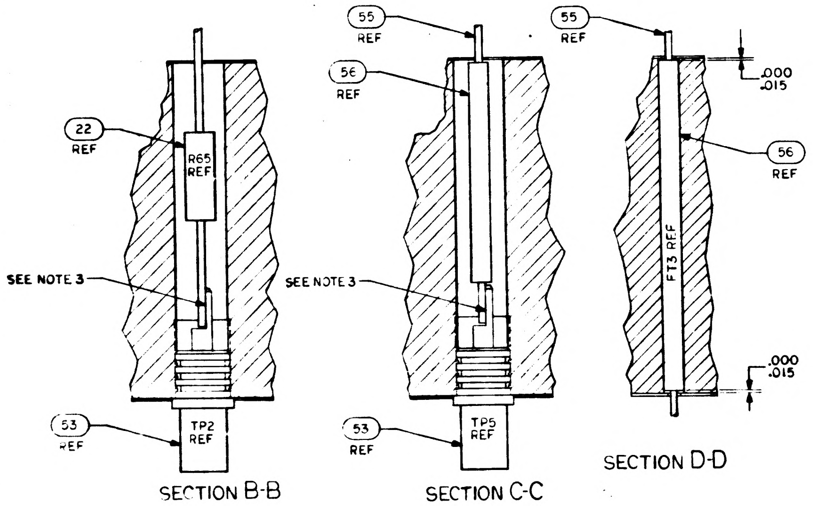

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SEE NOTE 3
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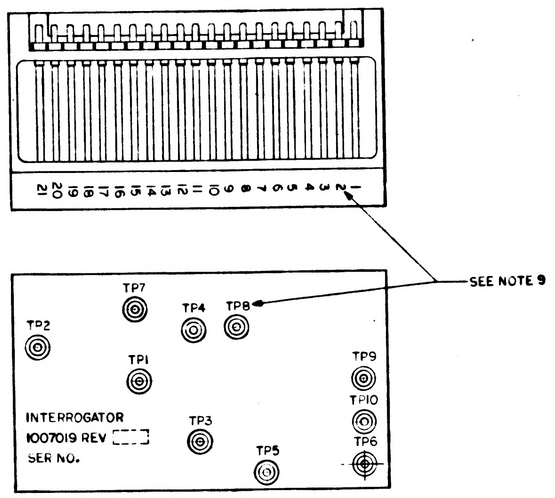
SECTION B-B

SECTION C-C

SECTION D-D



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TP4
TP8
TP2
TP1
TP9
TP10
TP3
TP6
TP5
INTERROGATOR
1007019 REV
SER NO.

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
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AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-8	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010286-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15 UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36 UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR .068 UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22 UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-12	RESISTOR, FIXED FILM, 150Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, %	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-42	RESISTOR, FIXED FILM, 2.7K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	
~~1007102~~	
~~1007101~~	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS 9-497
DRAWN W. Horgan DATE 2-8-63
CHECKED 15 FEB 63
APPROVAL 25 FEB 63
APPROVAL 25 FEB 63
NASA APPROVAL 2-27-63
MIT APPROVAL 27 FEB 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

1007019 M

27/1007019

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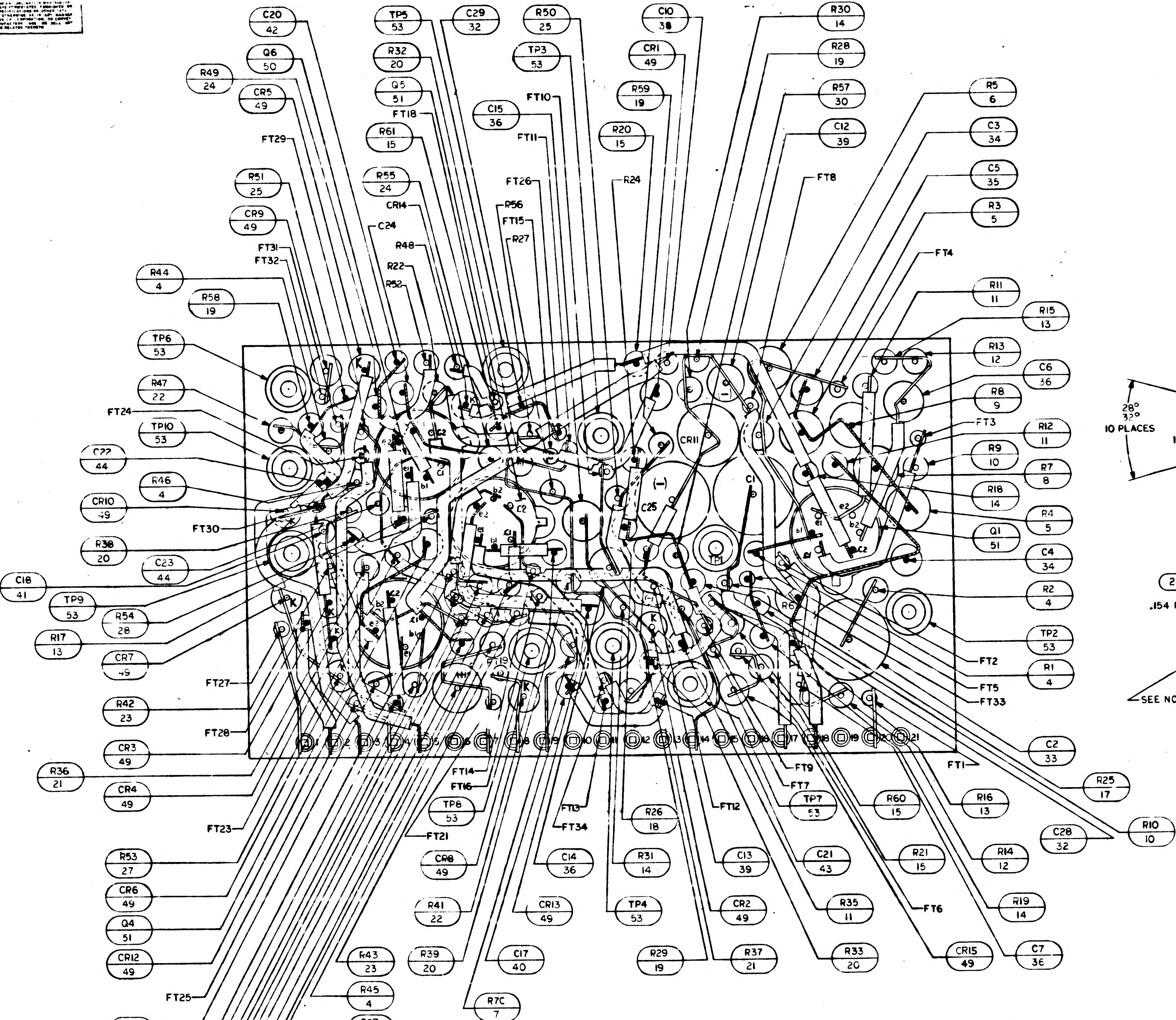
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FT15
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FT3
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FT7
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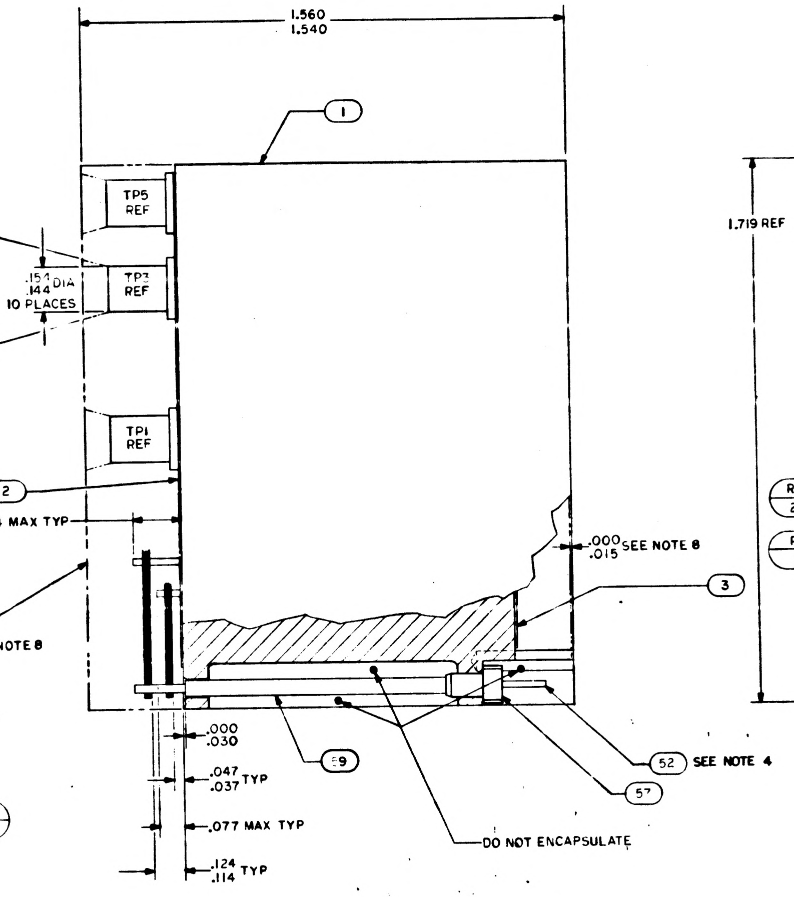
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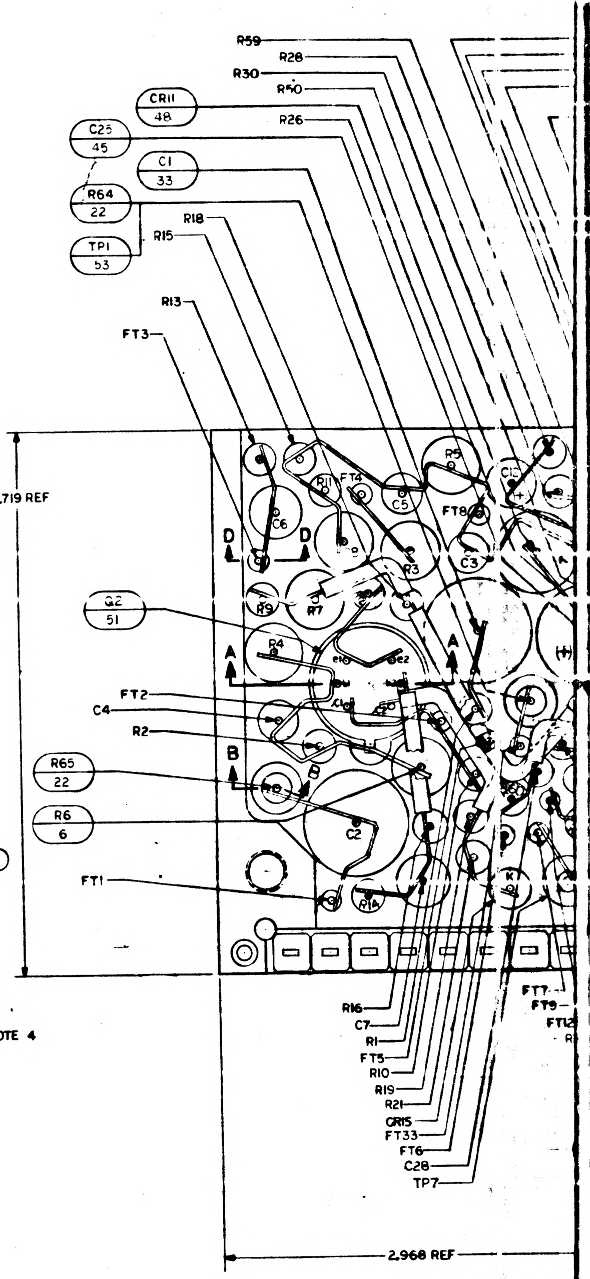
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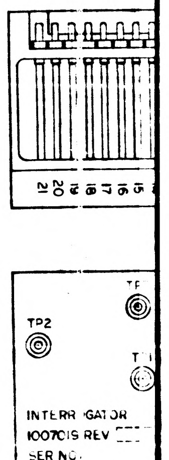
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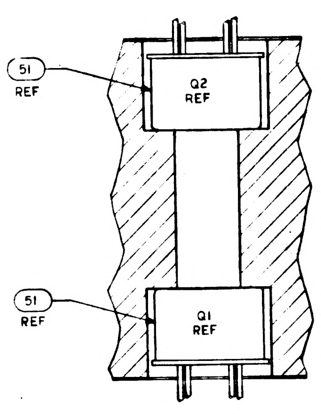
SER NO.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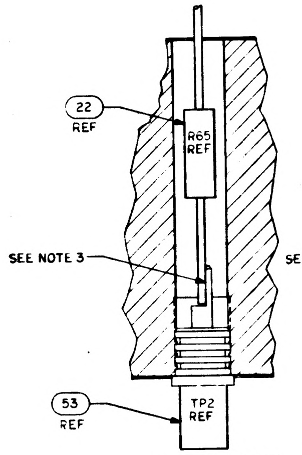
SECTION A-A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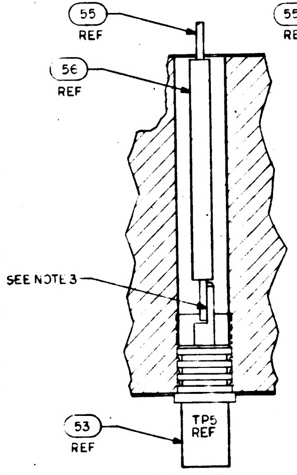
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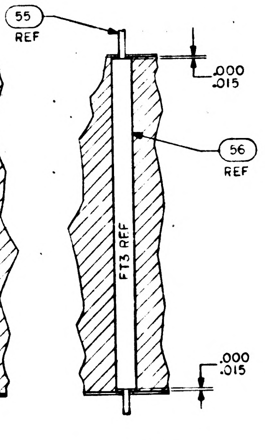
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SECTION D-D

TP CHART	
TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

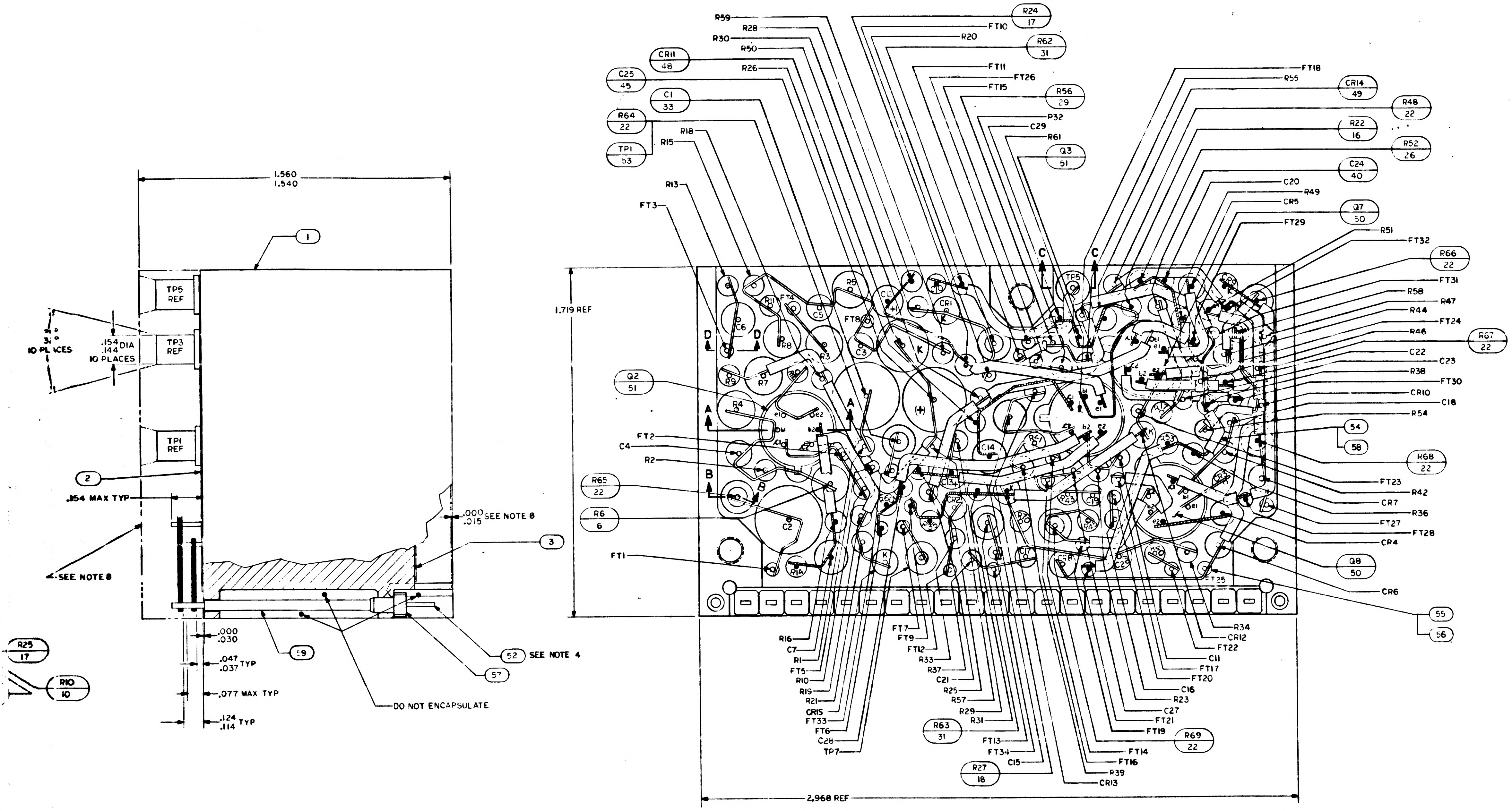
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002C05
4. MUST MEET REQUIREMENTS OF ND 1002136
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
9. MARK P/N NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE
10. + DENOTES CAPACITOR POLARITY
11. PROCURE PER PS 1007019.

1/1007019

N 1007019

SYM	REVISIONS TDRR 00466 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-3-63	DT WK
B	REVISED PER TDRR 01003	4-25-63	DT WK
C	REVISED PER TDRR 01178	5-8-63	D.T. WK
D	REVISED PER TDRR 01720	6-26-63	JJM WK
E	REVISED PER TDRR 03279	9-19-63	JJM WK
F	REVISED PER TDRR 03752	10-8-63	WK
G	REVISED PER TDRR 03753	[illegible]	WK
H	REVISED PER TDRR 05337	11-4-63	WK
J	REVISED PER TDRR 05406	12-27-63	WK
K	REVISED PER TDRR 07[illegible]	3/10/64	WK
L	REVISED PER TDRR 07285	8 APR 64	[illegible]
M	REVISED PER TDRR 14093	18 NOV 64	EF
N	REVISED PER TDRR 17301	12 MAR 69	EF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SEE NOTE 8
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SEE NOTE 8
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.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
59
52 SEE NOTE 4
57
DO NOT ENCAPSULATE
R25 17
R10 10
1.719 REF
2.968 REF
R59
R28
R30
R50
R26
CR11 48
C25 45
C1 33
R64 22
TP1 53
R18
R15
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FT3
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R62 31
FT11
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C23
R38
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FT28
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R34
CR12
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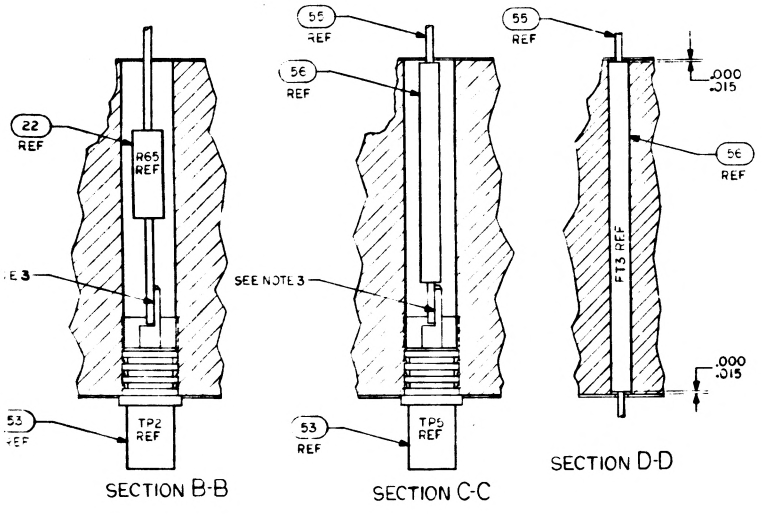
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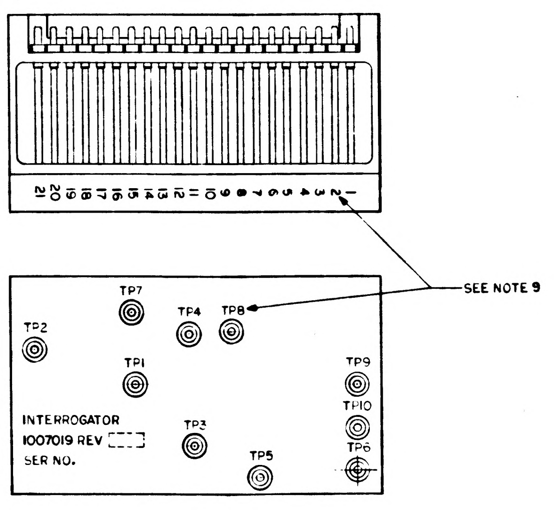
SECTION B-B
SECTION C-C
SECTION D-D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SEE NOTE 9
TP7
TP2
TP4
TP8
TP1
TP9
TP10
TP3
TP5
TP6
INTERROGATOR
1007019 REV
SER NO.

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010013	SCHEMATIC	
AR	1006776-20	INSULATION SLEEVING	59
AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE,MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-8	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE,MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010286-9	DIODE	48
1	1006777-19	CAPACITOR,CER 360UUF,100V, 10%	47
1	1006755-79	CAPACITOR,TANT 6.8UF, 35V, 10%	46
1	1006755-83	CAPACITOR,TANT 15UF, 35V, 10%	45
2	1006777-8	CAPACITOR,CER 50UUF, 100V, 10%	44
1	1006777-11	CAPACITOR,CER 75UUF, 100V, 10%	43
1	1006777-15	CAPACITOR,CER 150UUF, 100V, 10%	42
2	1006777-17	CAPACITOR,CER 270UUF,100V,10%	41
3	1006777-24	CAPACITOR,CER .001UF, 100V, 10%	40
2	1006755-69	CAPACITOR,TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR,CER 36UUF,100V, 10%	38
			37
4	1006777-31	CAPACITOR,CER .01UF, 100V, 10%	36
1	1006777-28	CAPACITOR,CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR,CER.0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR,MYLAR .068UF, 200V, 5%	33
2	1006777-3	CAPACITOR,CER 22UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K,1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-12	RESISTOR, FIXED FILM, 150Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, %	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-42	RESISTOR, FIXED FILM, 2.7K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	
~~1007102~~	
~~1007101~~	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497

DRAWN W. Morgan DATE 2-8-63
CHECKED W. J. Gifford 15 FEB 63
APPROVAL 25 FEB 63
APPROVAL 26 FEB 63
NASA APPROVAL W. J. Rhine 2-27-63
MIT APPROVAL 27 FEB 63

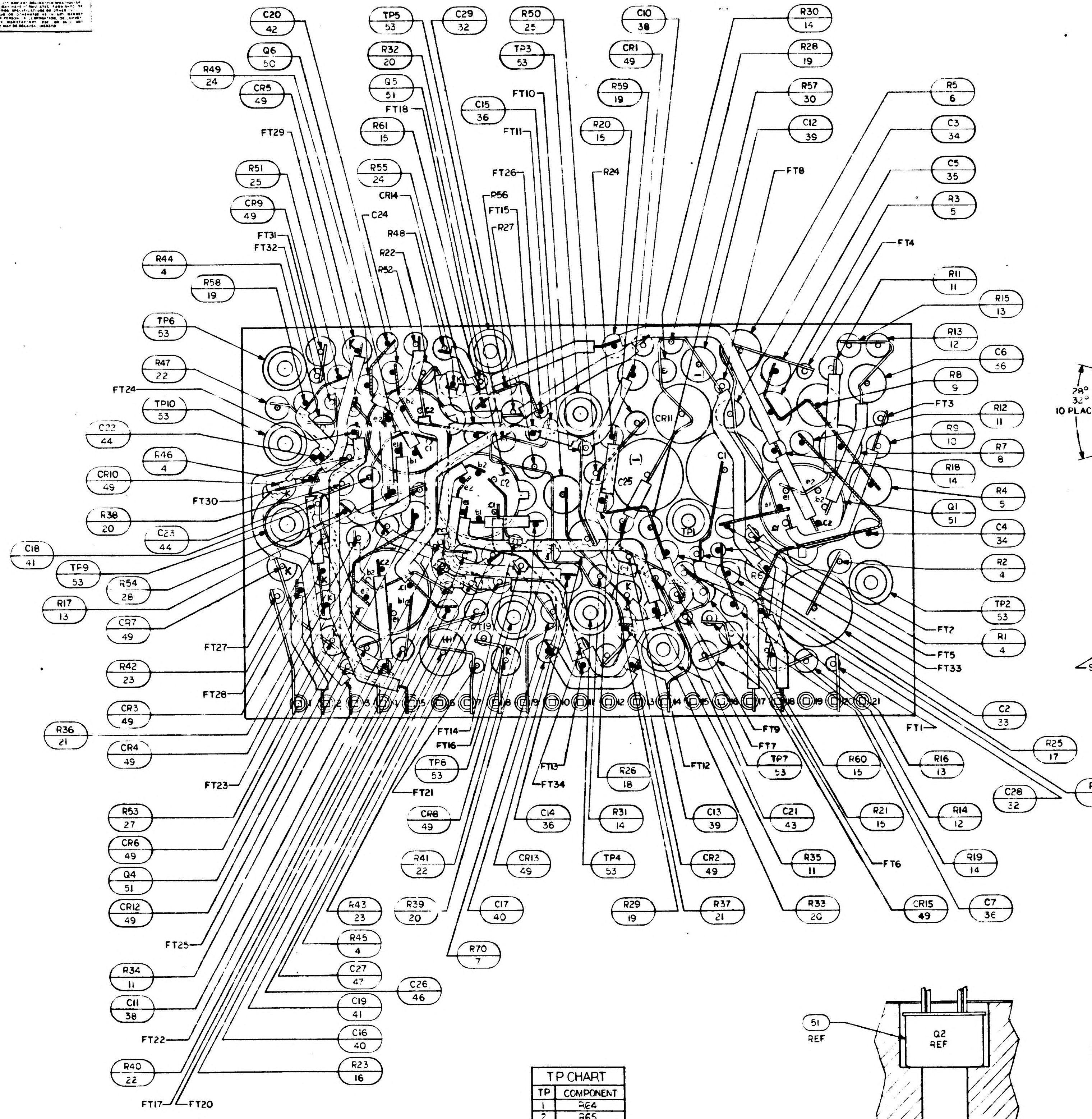
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR
ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

1007019 N

2/1007019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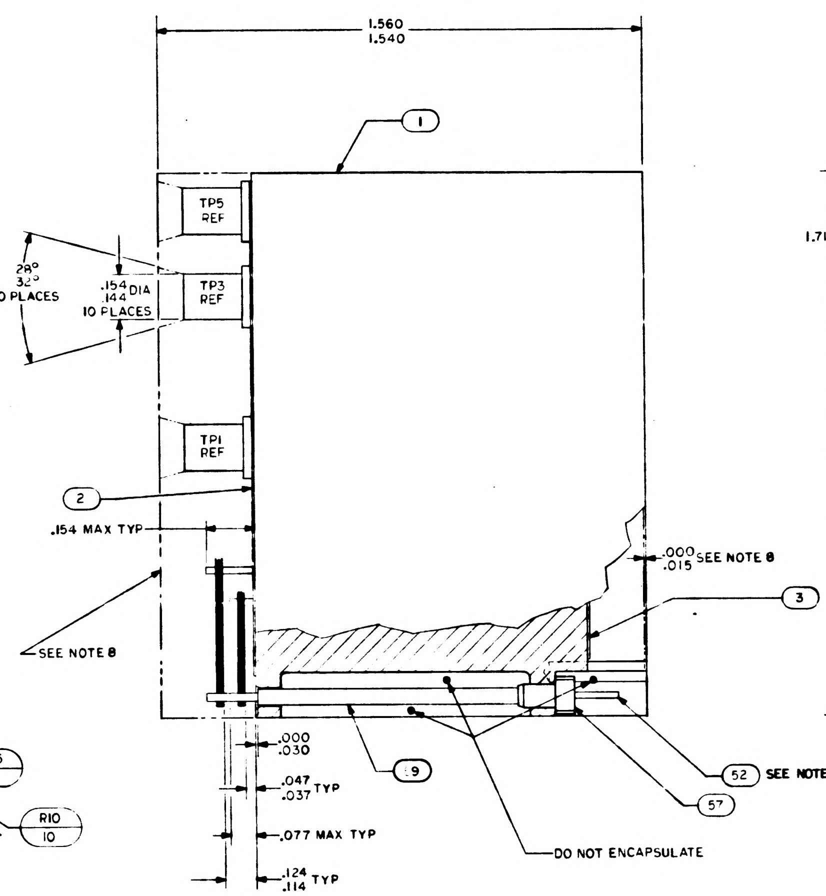
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52 SEE NOTE 4
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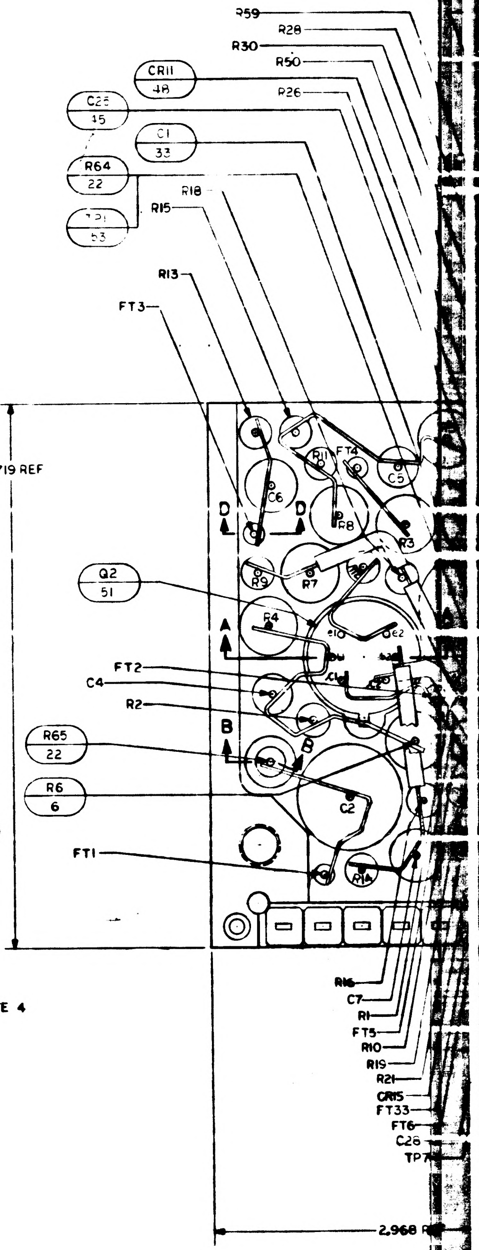
DO NOT ENCAPSULATE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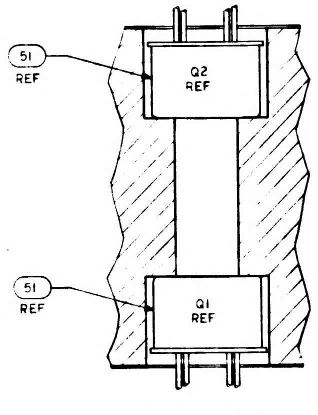
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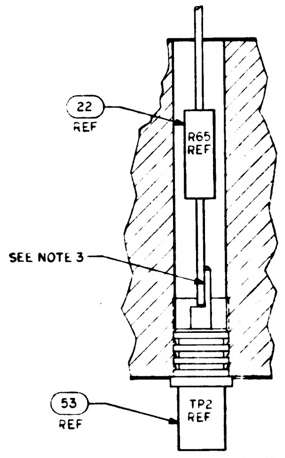
SECTION A-A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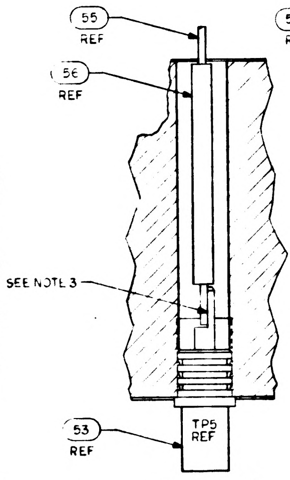
SECTION B-B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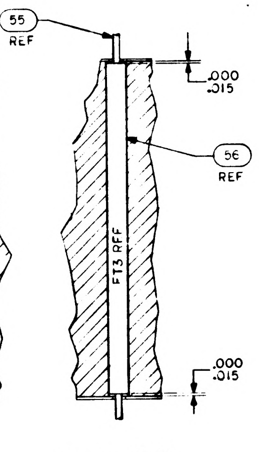
SECTION C-C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SECTION D-D

TP CHART	
TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
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7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE
10. + DENOTES CAPACITOR POLARITY
11. PROCURE PER PS 1007019.
12. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMITER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.

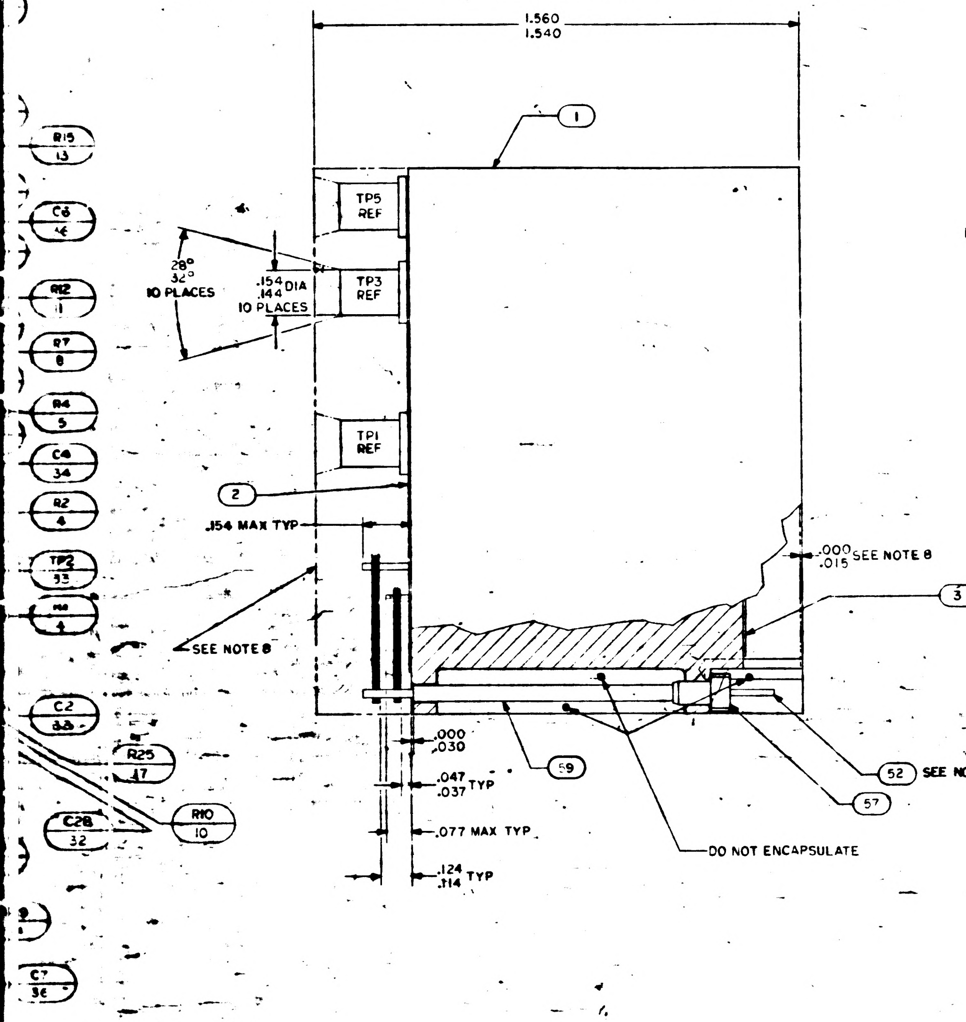
1/1007019

1007019 P

			REVISIONS TDRR 80466
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	[illegible]	D. WK
B	REVISED PER TDRR 01003	[illegible]	DT WK
C	REVISED PER TDRR 01178	5 F 63	DT. WK
D	REVISED PER TDRR 01720	[illegible]	WK
E	REVISED PER TDRR 03279	[illegible]	WK
F	REVISED PER TDRR 03752	[illegible]	WK
G	REVISED PER TDRR 03753	[illegible]	WK
H	REVISED PER TDRR 05337	11-4-63	WK
J	REVISED PER TDRR 05406	12-27-63	WK
K	REVISED PER TDRR 06799	3/10/64	WK
L	REVISED PER TDRR 07285	[illegible]	[illegible]
M	REVISED PER TDRR 14093	18 NOV. 64	JWP
N	REVISED PER TDRR 17301	12 MAR 65	RJJ
P	REVISED PER TDRR 19473	[illegible] 65	[illegible]

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA. .12 FROM EXTERNAL HEATSINK SURFACE 80% OF AREA. .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE	100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PEKIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ±.03 OF EXTERNAL EDGE



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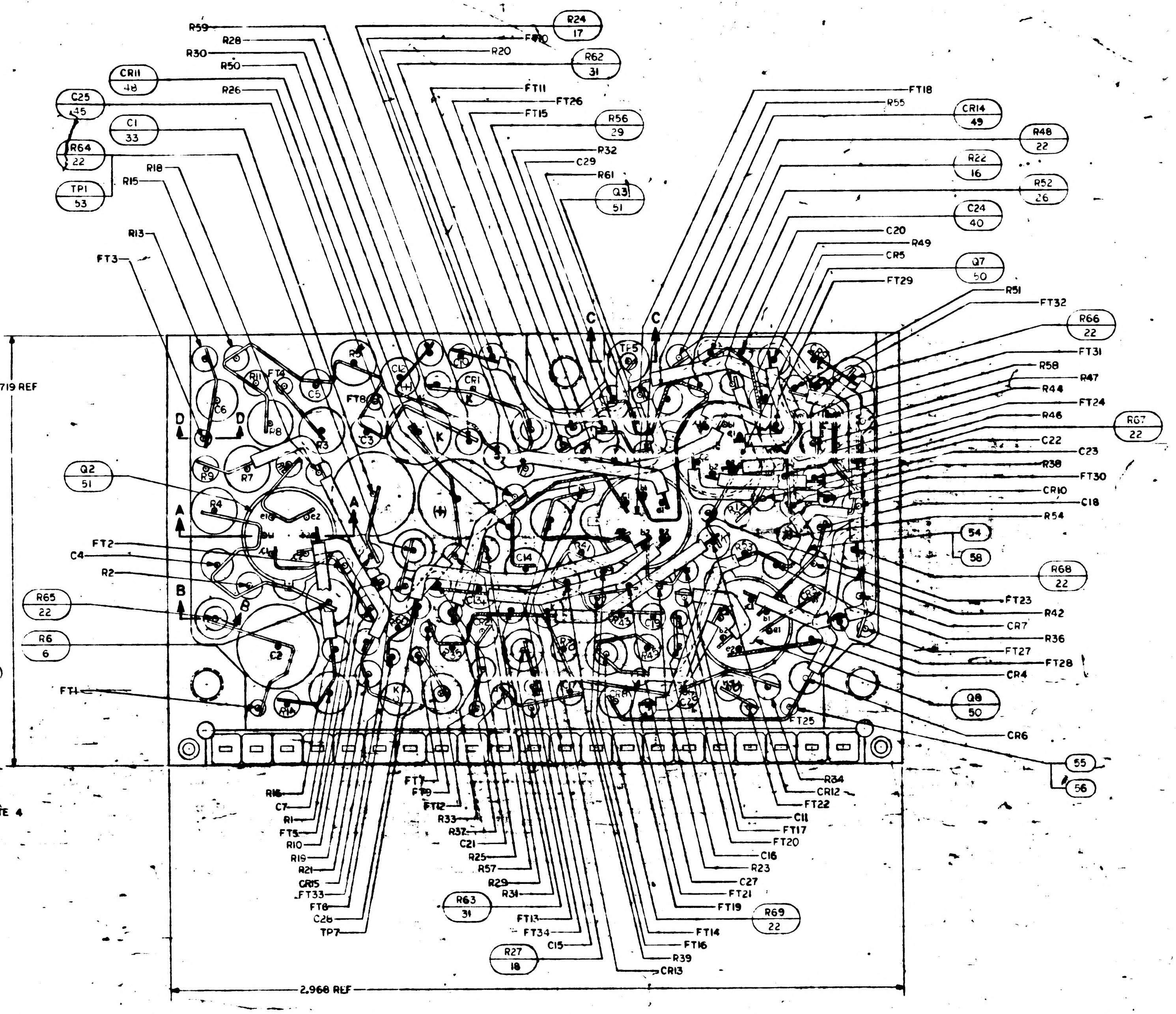
1.540
1
TP5 REF
TP3 REF
TP1 REF
28° 32°
10 PLACES
.154 DIA .144
10 PLACES
2
.154 MAX TYP
SEE NOTE 8
.000 .015 SEE NOTE 8
3
52 SEE NOTE 4
57
59
DO NOT ENCAPSULATE
.000 .030
.047 .037 TYP
.077 MAX TYP
.124 .114 TYP
R15 13
C8 46
R12 11
R7 8
R4 5
C4 34
R2 4
TP2 53
C2 33
R25 17
C28 32
R10 10
C7 36



1.719 REF
2.968 REF
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TP1 53
CR11 48
C1 33
R59
R28
R30
R50
R26
R18
R15
R13
FT3
R20
R24 17
R62 31
FT11
FT26
FT15
R56 29
R32
C29
R61
Q3 51
FT18
R55
CR14 49
R48 22
R22 16
R52 26
C24 40
C20
R49
CR5
Q7 50
FT29
R51
FT32
R66 22
FT31
R58
R47
R44
FT24
R46
R67 22
C22
C23
R38
FT30
CR10
C18
R54
54
58
R68 22
FT23
R42
CR7
R36
FT27
FT28
CR4
Q8 50
CR6
FT25
55
56
Q2 51
C4
FT2
R2
R65 22
R6 6
FT1
A
B
C
D
R16
C7
R1
FT5
R10
R19
R21
CR15
FT33
FT6
C26
TP7
FT7
FT9
FT12
R33
R37
C21
R25
R57
R29
R31
R63 31
FT13
FT34
C15
R27 18
FT16
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FT17
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C16
R23
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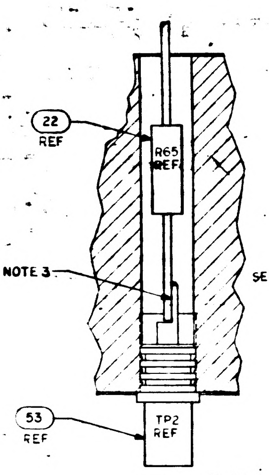
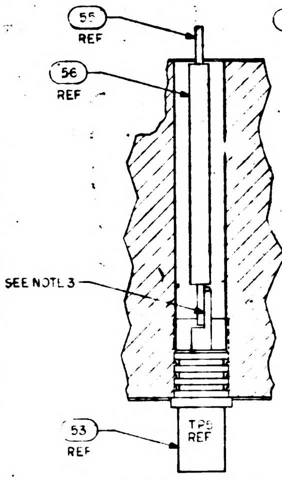
FT21
FT19
R69 22
FT14



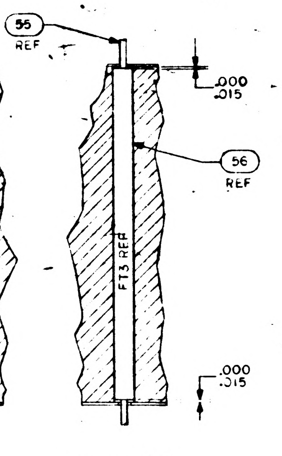
22 REF
R65 REF
SEE NOTE 3
53 REF
TP2 REF

SECTION B-B



55 REF
56 REF
SEE NOTE 3
53 REF
TP2 REF

SECTION C-C



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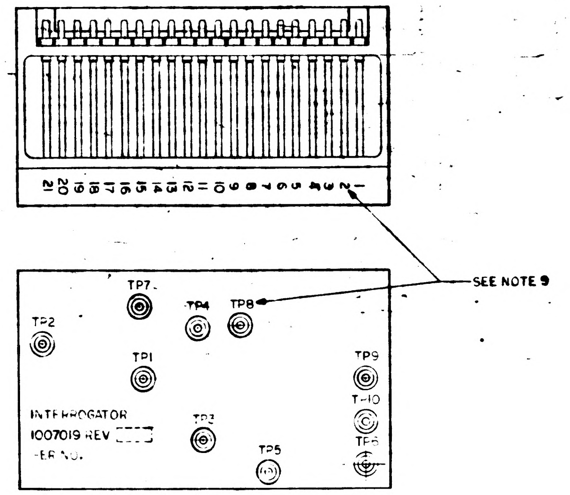
56 REF
FT3 REF
.000 .015

SECTION D-D



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SEE NOTE 9
TP7
TP4
TP8
TP2
TP1
TP9
TP10
TP3
TP5
TP6
INTERROGATOR
1007019 REV
SER NO.

MARKING VIEW
SCALE 2/1

☒	1010013	SCHEMATIC	
AR	1006776-20	INSULATION SLEEVING	59
AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-8	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL, FEEDTHRU-INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010286-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15 UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36 UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR, .068 UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22 UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470 Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-12	RESISTOR, FIXED FILM, 150 Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910 Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510 Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, %	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 62K, 1/10W, 1%	8
1	1006750-42	RESISTOR, FIXED FILM, 2.7K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	
~~1007102~~	
~~1007101~~	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS .XX±.02 .XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible] 25 [illegible]
NASA APPROVAL [illegible] 2-27-63
MIT APPROVAL [illegible] 27 FEB 63

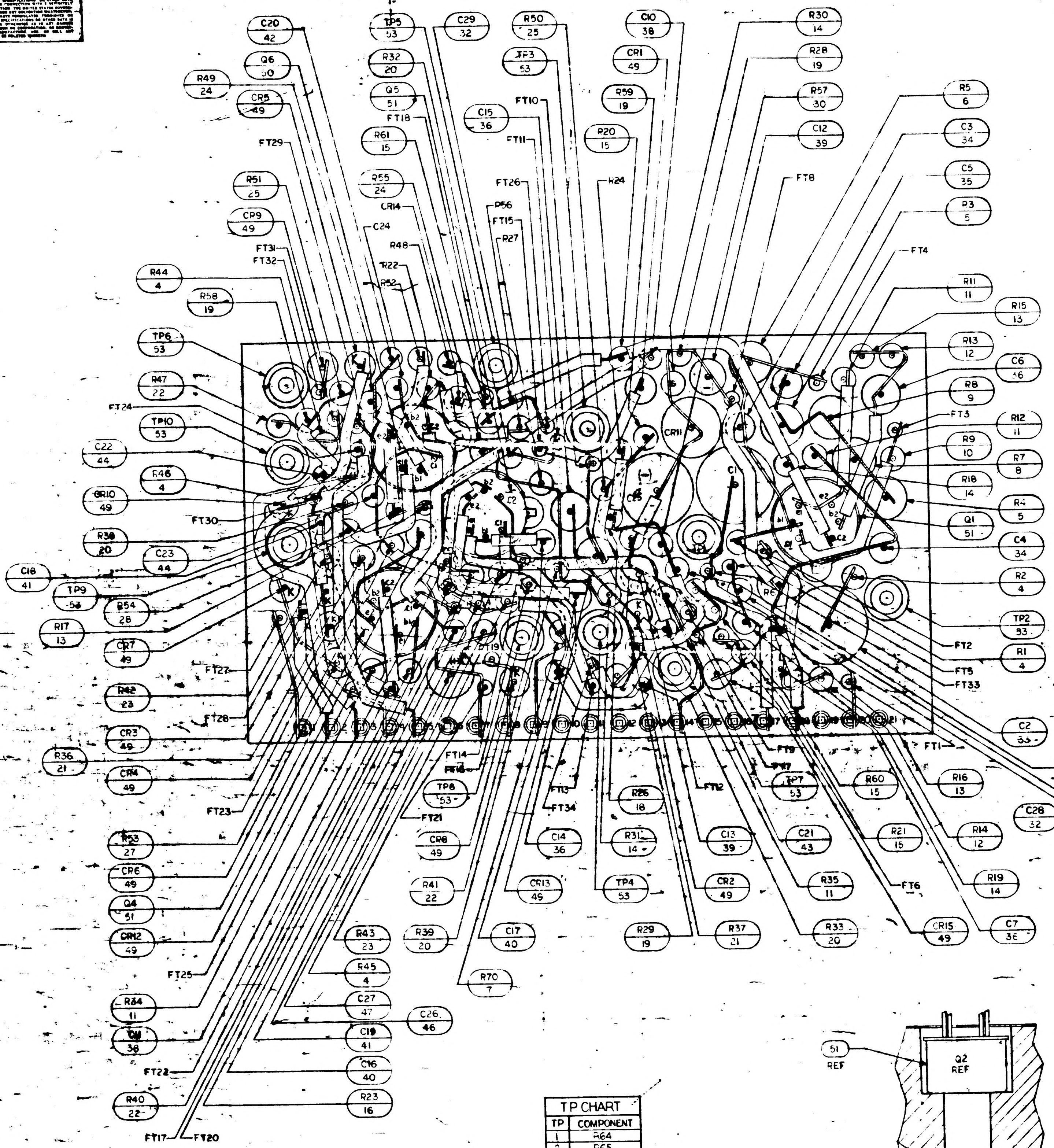
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR
ASSEMBLY

CODE IDENT NO. 80230
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

1007019 P

2/1007019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C10 38
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Q5 51
FT18
C15 36
FT10
R59 19
R57 30
R5 6
FT29
R61 15
FT11
R20 15
C12 39
C3 34
R51 25
R55 24
FT26
R24
FT8
C5 35
CR14
P56
CP9 49
C24
FT15
R27
R3 5
FT31
FT32
R48
FT4
R44 4
R22
R11 11
R58 19
R15 13
TP6 53
R13 12
C6 46
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FT3
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R12 11
R9 10
C22 44
R7 8
R46 4
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CR10 49
R4 5
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C23 44
C18 41
R2 4
TP9 53
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TP2 53
R17 13
R1 4
CR7 49
FT2
FT27
FT5
FT33
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FT1
R36 21
FT14
FT16
FT9
R25 17
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TP7 53
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R10 10
FT23
FT21
FT13
FT34
FT12
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CR8 49
C14 36
R31 14
C13 39
C21 43
R21 15
R14 12
R53 27
CR6 49
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TP4 53
CR2 49
R35 11
FT6
R19 14
Q4 51
CR12 49
R43 23
R39 20
C17 40
R29 19
R37 21
R33 20
CR15 49
C7 38
FT25
R45 4
R70 7
R34 11
C27 47
C26 46
C11 38
C19 41
FT22
C16 40
R40 22
R23 16
FT17
FT20
K

NOTES

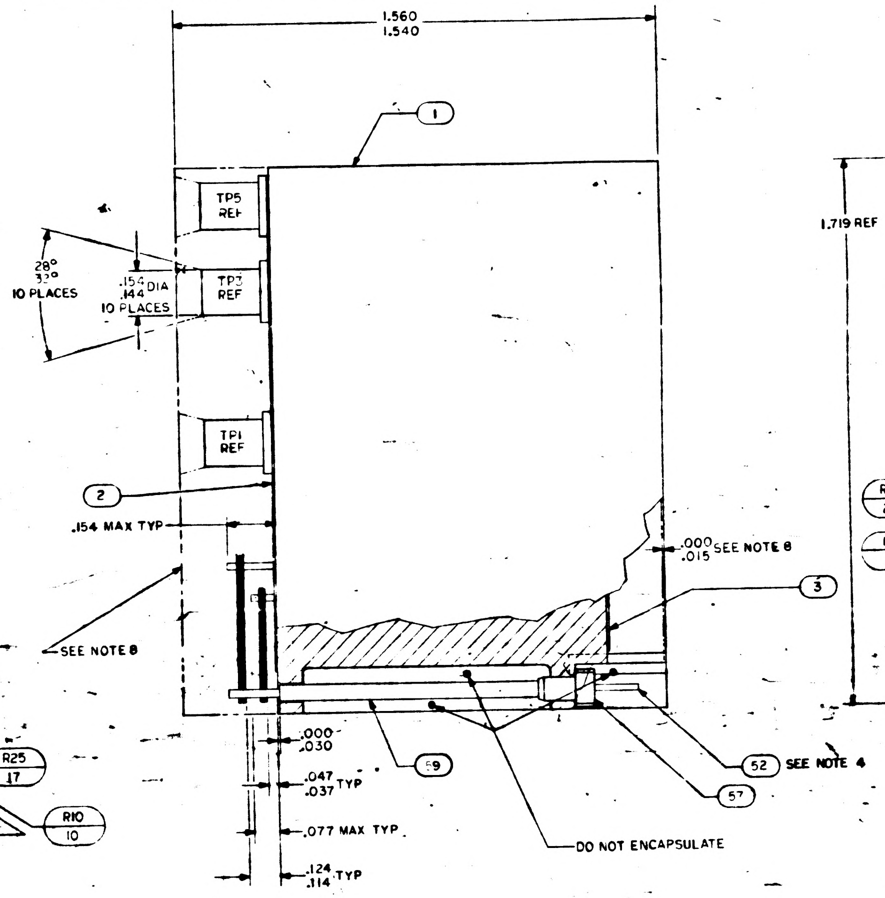
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. MUST MEET REQUIREMENTS OF ND 1002136
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE
10. + DENOTES CAPACITOR POLARITY
11. PROCURE PER PS 1007019.
12. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~
13. CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.

TP CHART

TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA. .12 FROM EXTERNAL HEATSINK SURFACE 80% OF AREA. .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ±.03 OF EXTERNAL SURFACE	100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ±.03 OF EXTERNAL EDGE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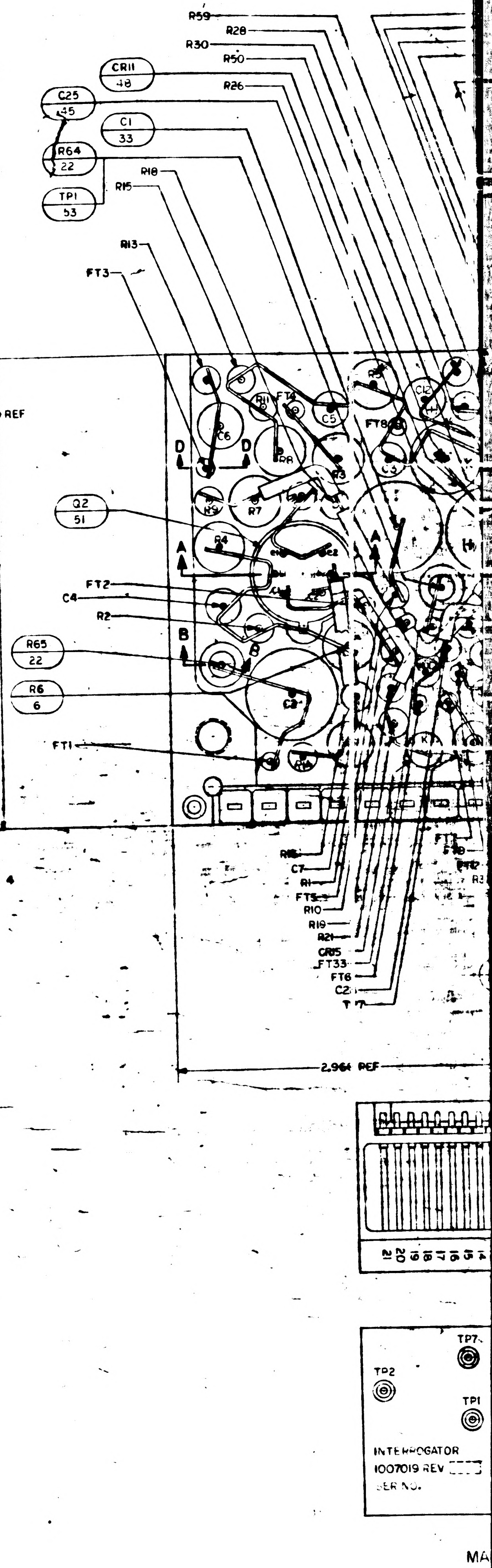
1.540
1
TP5 REF
TP3 REF
TP1 REF
28°
32°
10 PLACES
.154
.144 DIA
10 PLACES
2
.154 MAX TYP
SEE NOTE 8
.000
.015 SEE NOTE 8
3
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
59
DO NOT ENCAPSULATE
52 SEE NOTE 4
57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R30
R50
R26
CR11 48
C25 45
C1 33
R64 22
TP1 53
R18
R15
R13
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D
D
Q2 51
FT2
C4
R2
R65 22
R6 6
B
FT1
R7
R16
C7
R1
FT5
R10
R19
R21
CR15
FT33
FT6
C2
T7
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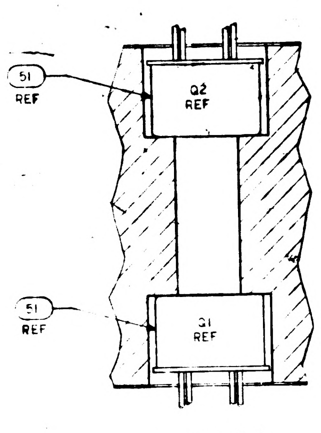
21 20 19 18 17 16 15 14
TP7
TP2
TP1
INTERROGATOR
1007019 REV
SER NO.
MA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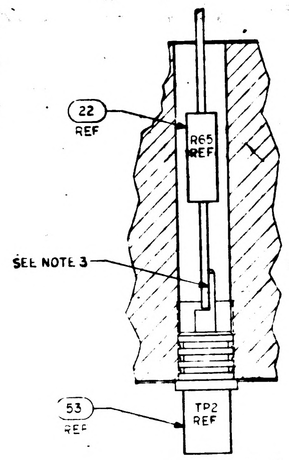
Q2 REF
51 REF
Q1 REF

SECTION A-A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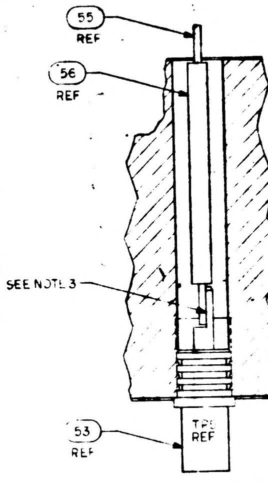
SEE NOTE 3
53 REF
TP2 REF

SECTION B-B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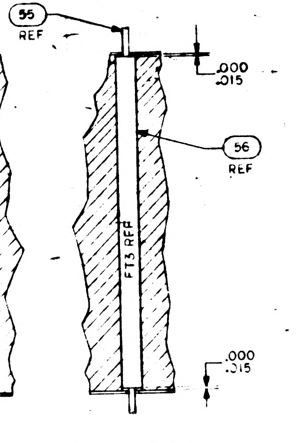
SEE NOTE 3
53 REF
TP2 REF

SECTION C-C

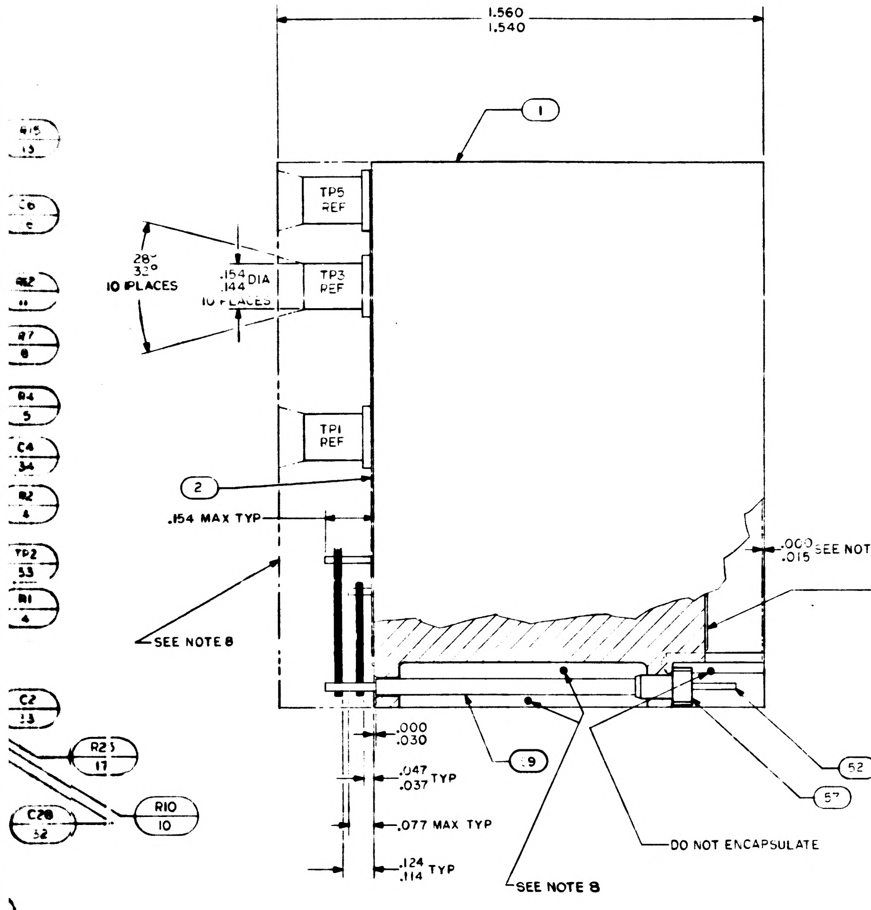

55 REF
.000
.015
56 REF
FT3 REF
.000
.015

SECTION D-D

1007019 R

~~TABLE I~~

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA. .12 FROM EXTERNAL HEATSINK SURFACE 80% OF AREA. .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE	100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ±.03 OF EXTERNAL EDGE



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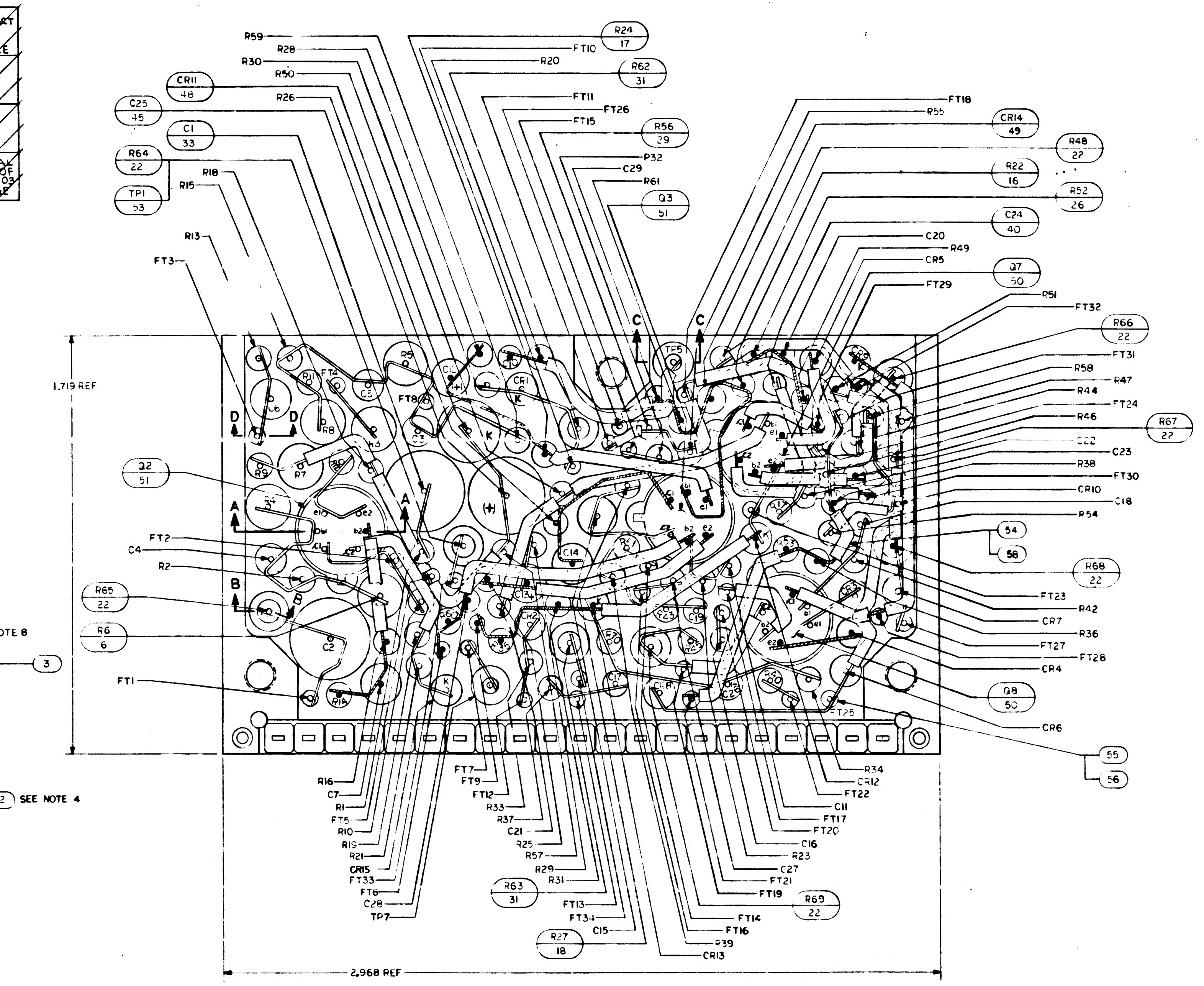
1.540
1
TP5 REF
TP3 REF
TP1 REF
28° 32° 10 PLACES
.154 .144 DIA 10 PLACES
2
.154 MAX TYP
.000 .015 SEE NOTE 8
3
SEE NOTE 8
R23 17
C28 32
R10 10
.000 .030
.047 .037 TYP
.077 MAX TYP
.124 .114 TYP
9
57
52 SEE NOTE 4
DO NOT ENCAPSULATE
SEE NOTE 8



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R28
R30
R50
R26
CR11 48
C25 45
C1 33
R64 22
TP1 53
R18
R15
R13
FT3
R24 17
FT10
R20
R62 31
FT11
FT26
FT15
R56 29
P32
C29
R61
Q3 51
FT18
R55
CR14 49
R48 22
R22 16
R52 26
C24 40
C20
R49
CR5
FT29
Q7 50
R51
FT32
R66 22
FT31
R58
R47
R44
FT24
R46
R67 27
C22
C23
R38
FT30
CR10
C18
R54
54
58
R68 22
FT23
R42
CR7
R36
FT27
FT28
CR4
Q8 50
CR6
55
56
1.719 REF
C C
D D
A A
B B
Q2 51
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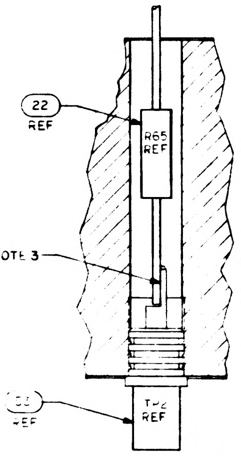
C4
R2
R65 22
R6 6
FT1
R16
C7
FT7
FT9
R1
FT12
FT5
R33
R10
R37
R15
C21
R21
R25
CR15
R57
FT33
R29
FT6
R31
C28
TP7
R63 31
FT13
FT34
C15
R27 18
R34
CR12
FT22
C11
FT17
FT20
C16
R23
C27
FT21
FT19
R69 22
FT14
FT16
R39
CR13
2.968 REF



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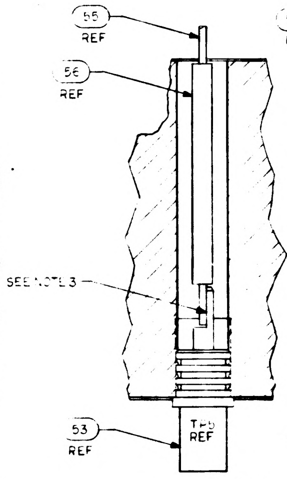
SEE NOTE 3
53 REF
TP5 REF

SECTION B-B



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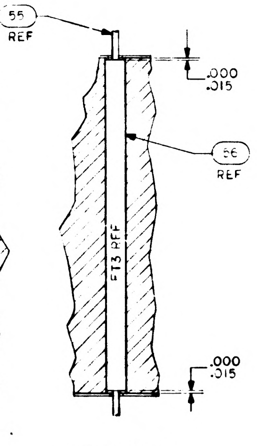
SEE NOTE 3
53 REF
TP5 REF

SECTION C-C



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FT3 REF
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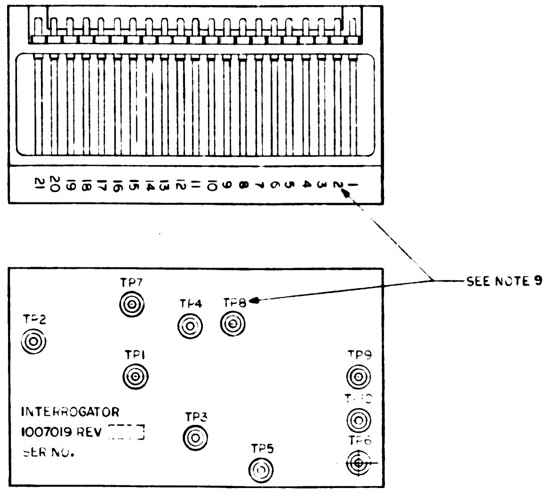

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SEE NOTE 9
TP7
TP4
TP8
TP2
TP1
TP9
TP10
INTERROGATOR
1007019 REV ___
SER NO.
TP3
TP5
TP6

MARKING VIEW
SCALE 2/1

REVISIONS TDRR 00466

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-3-63	DT WK
B	REVISED PER TDRR 01003	4-25-63	DT WK
C	REVISED PER TDRR 01178	5-8-63	D.T. WK
D	REVISED PER TDRR 01720	6-26-63	JJM WK
E	REVISED PER TDRR 03279	9-19-63	JJM WK
F	REVISED PER TDRR 03752	10-8-63	WK
G	REVISED PER TDRR 03753	[illegible]	WK
H	REVISED PER TDRR 05337	11-4-63	[illegible] WK
J	REVISED PER TDRR 05406	12-27-63	[illegible] WK
K	REVISED PER TDRR [illegible]	[illegible]	[illegible] WK
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N	REVISED PER TDRR [illegible]	12 MAR 69	[illegible]
P	REVISED PER TDRR 19473	[illegible] JUN 65	[illegible]
R	REVISED PER TDRR [illegible]	[illegible] 65	[illegible]

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AR	1006776-20	INSULATION SLEEVING	59
AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-8	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010830-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15 UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36 UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR .068 UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22 UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470 Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-12	RESISTOR, FIXED FILM, 150 Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910 Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510 Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, 2%	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-42	RESISTOR, FIXED FILM, 2.7K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	
~~1007102~~	
~~1007101~~	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497

DRAWN W. Horgan DATE [illegible] 63
CHECKED [illegible] 15 FEB 63
APPROVAL [illegible] 25 FEB 63
APPROVAL B.R. Test 25 FEB 63
NASA APPROVAL [illegible] 2-21-63
MIT APPROVAL [illegible] 27 FEB 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

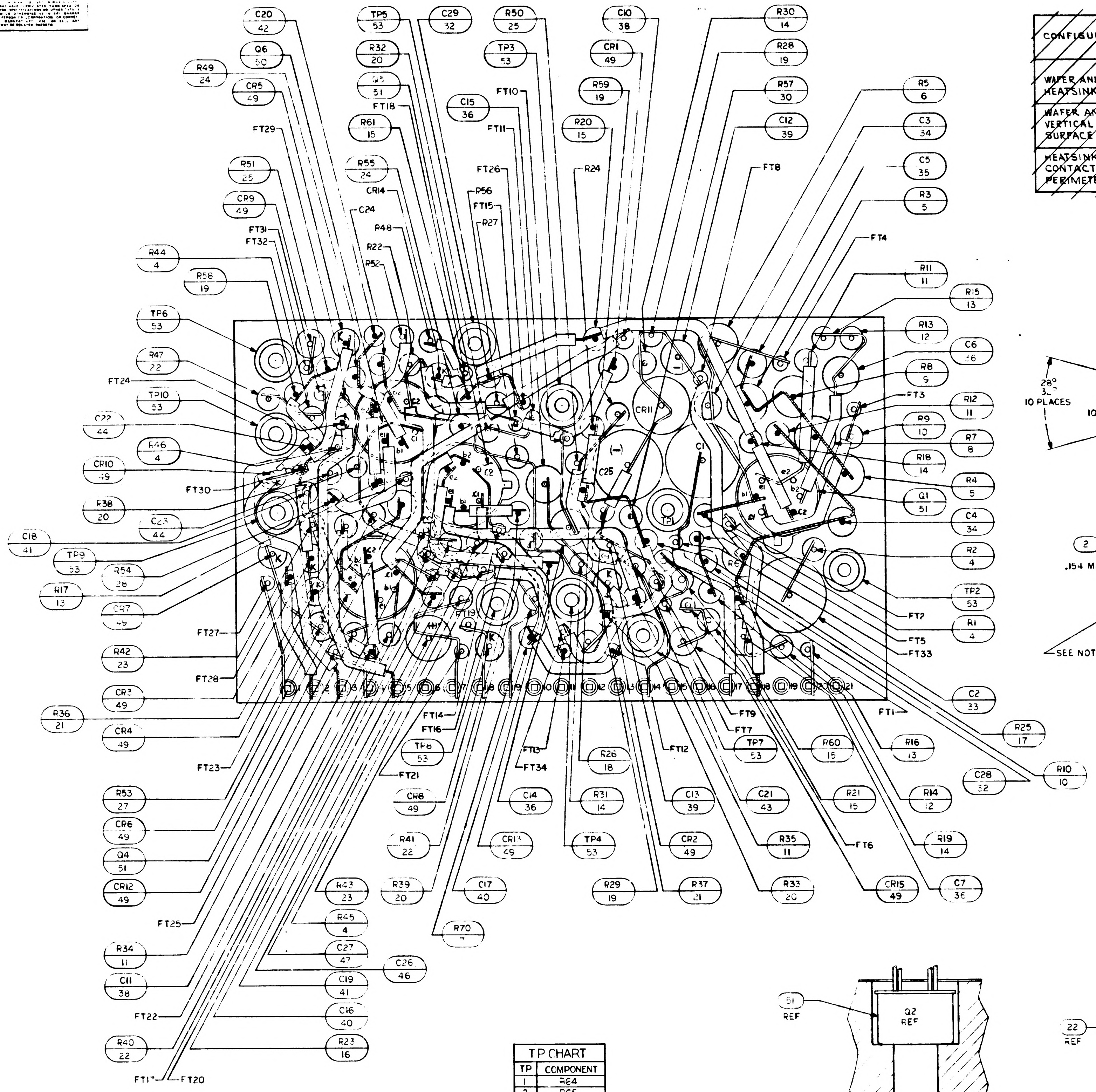
INTERROGATOR ASSEMBLY

CODE IDENT NO 80230
SIZE J
NASA DRAWING NO 1007019
SCALE 5/1
WT
SHEET 1 OF 1

R 1007019

2/-1007019

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT [illegible] AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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R51 25
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FT28
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R36 21
CR4 49
FT23
R53 27
CR6 49
Q4 51
CR12 49
FT25
R34 11
C11 38
FT22
R40 22
FT17
FT20
TP5 53
C29 32
R50 25
C10 38
R30 14
R32 20
TP3 53
CR1 49
R28 19
Q5 51
FT18
C15 36
FT10
R59 19
R57 30
R61 15
FT11
R20 15
C12 39
R55 24
CR14
FT26
R24
FT8
C24
R56
FT15
R48
R27
R22
R52
R5 6
C3 34
C5 35
R3 5
FT4
R11 11
R15 13
R13 12
C6 46
R8 9
FT3
R12 11
R9 10
R7 8
R18 14
R4 5
Q1 51
C4 34
R2 4
TP2 53
R1 4
FT2
FT5
FT33
C2 33
FT1
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R10 10
C28 32
R16 13
R60 15
TP7 53
FT7
FT9
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R19 14
C7 36
FT6
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R33 20
R35 11
C21 43
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C13 39
FT12
R37 21
CR2 49
TP4 53
R31 14
R29 19
R26 18
FT34
FT13
C14 36
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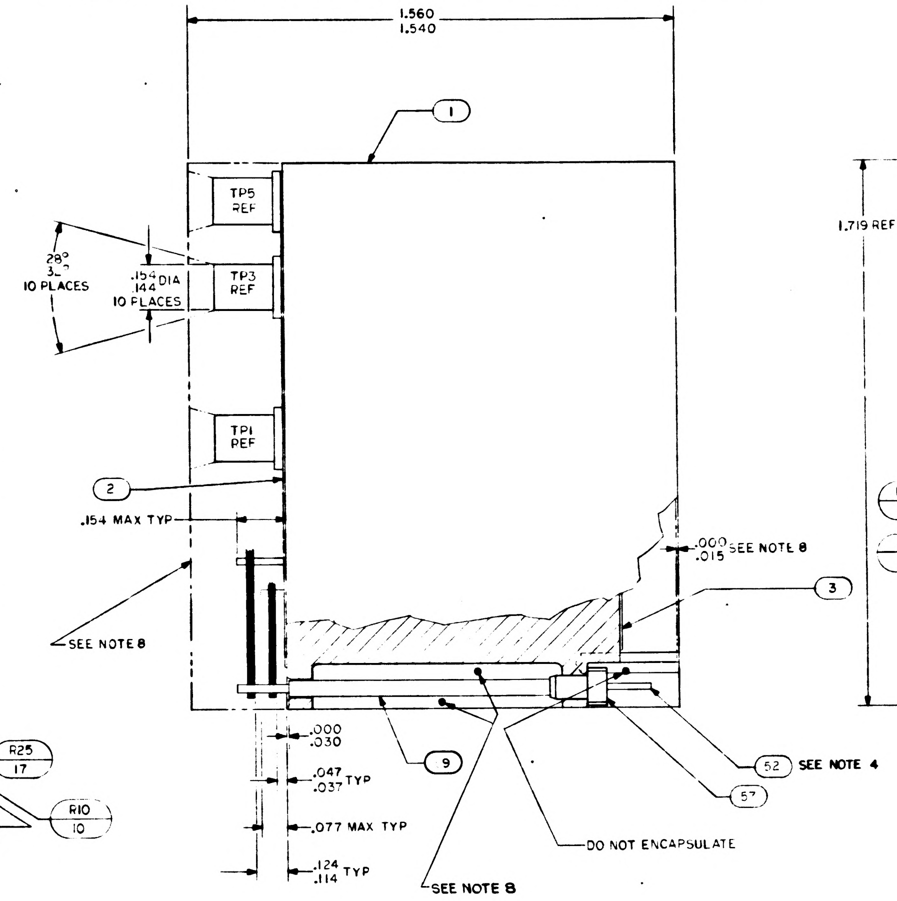
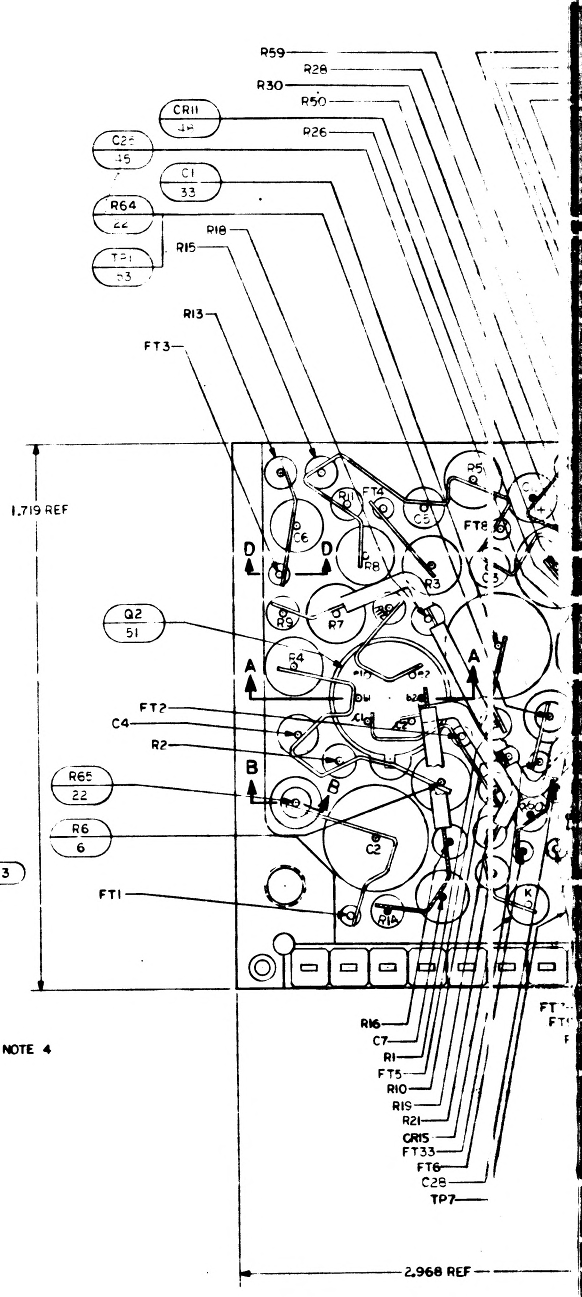
C17 40
R70 7
R43 23
R45 4
C27 47
C19 41
C16 40
R23 16
C26 46
CR11
C1
C25
TP1
(−)

~~TABLE I~~

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
~~WAFER AND FLAT HEATSINK~~	~~100% OF AREA. .12 FROM EXTERNAL HEATSINK SURFACE 80% OF AREA. .25 FROM EXTERNAL HEATSINK SURFACE~~	~~100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~WAFER AND ADJACENT VERTICAL HEATSINK SURFACE~~	~~CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE~~	~~100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~HEATSINK FOAM CONTACT SURFACE PERIMETER~~	~~N/A~~	~~N/A~~	~~.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ±.03 OF EXTERNAL EDGE~~


1.560
1.540
1
28° ± 1°
10 PLACES
.154 DIA
.144
10 PLACES
TP5 REF
TP3 REF
TP1 REF
1.719 REF
2
.154 MAX TYP
.000
.015 SEE NOTE 8
3
SEE NOTE 8
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
9
SEE NOTE 8
DO NOT ENCAPSULATE
52 SEE NOTE 4
57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R30
R50
R26
CR11
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R64
TP1 53
R18
R15
R13
FT3
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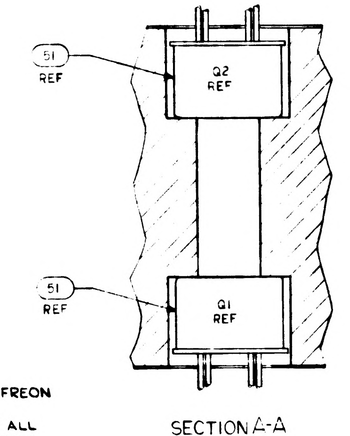
C4
FT2
R2
R65 22
R6 6
FT1
R16
C7
R1
FT5
R10
R19
R21
CR15
FT33
FT6
C28
TP7
A
B
D
2.968 REF

T P CHART	
TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67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Q2 REF
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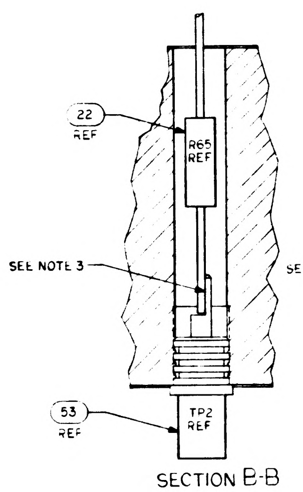
Q1 REF

SECTION A-A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SEE NOTE 3
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TP2 REF

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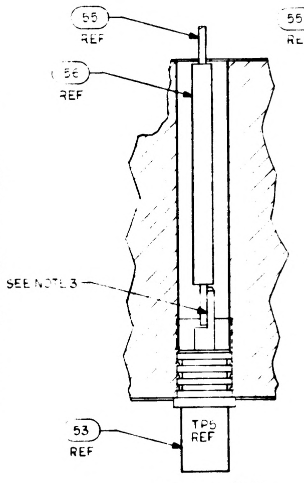
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TP5 REF

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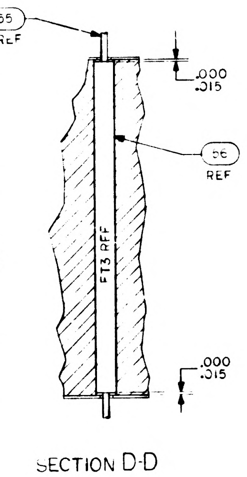
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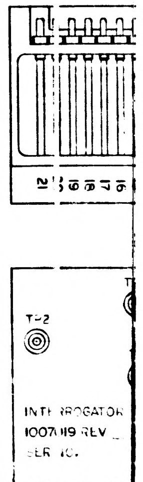
.015

SECTION D-D

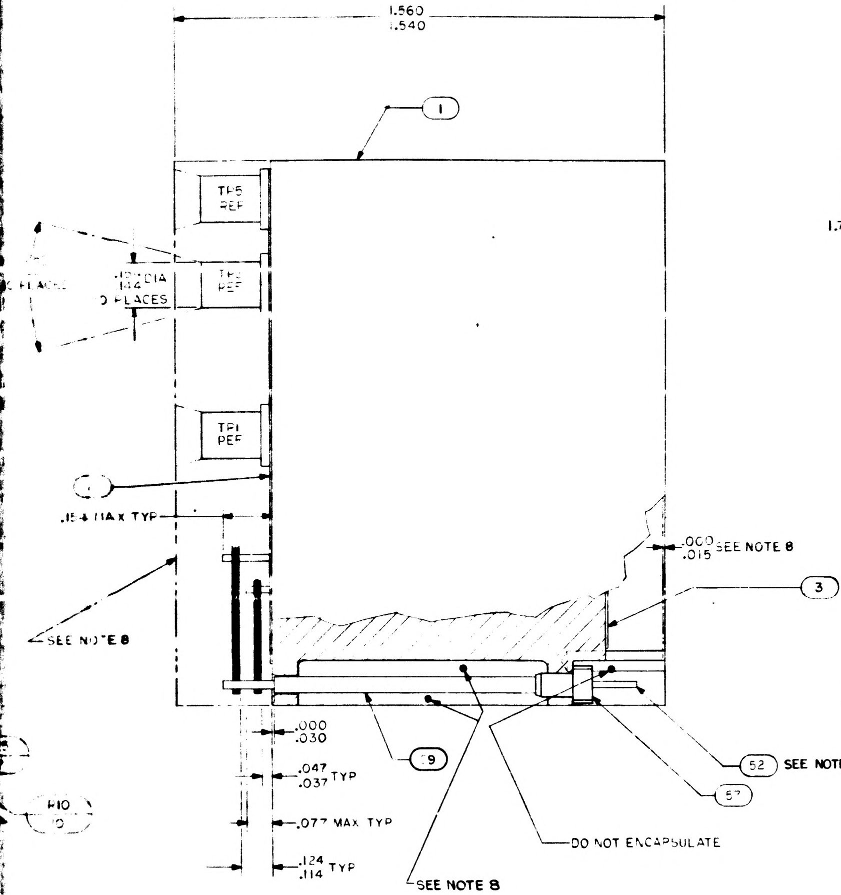

T-2
INTERROGATOR
1007019 REV

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS & FIND NO. 53 PER ND-1002009 METHOD H
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. MUST MEET REQUIREMENTS OF ND 1002136
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE
10. + DENOTES CAPACITOR POLARITY
11. PROCURE PER PS 1007019.
12. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEAT SINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~
13. ~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I~~.
14. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON & ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.
15. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND 1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.

~~TABLE I~~

~~[illegible] ION~~	~~BOND BETWEEN WAFER AND HEATSINK~~	~~TOP OF WAFER~~	~~HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE~~
~~WAFER [illegible] FLAT [illegible]~~	~~100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~[illegible] AND ADJACENT [illegible] CAL HEATSINK~~	~~CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 OF EXTERNAL SURFACE~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~[illegible] FOAM [illegible] SURFACE~~	~~N/A~~	~~N/A~~	~~.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 .03 OF EXTERNAL EDGE~~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1.540
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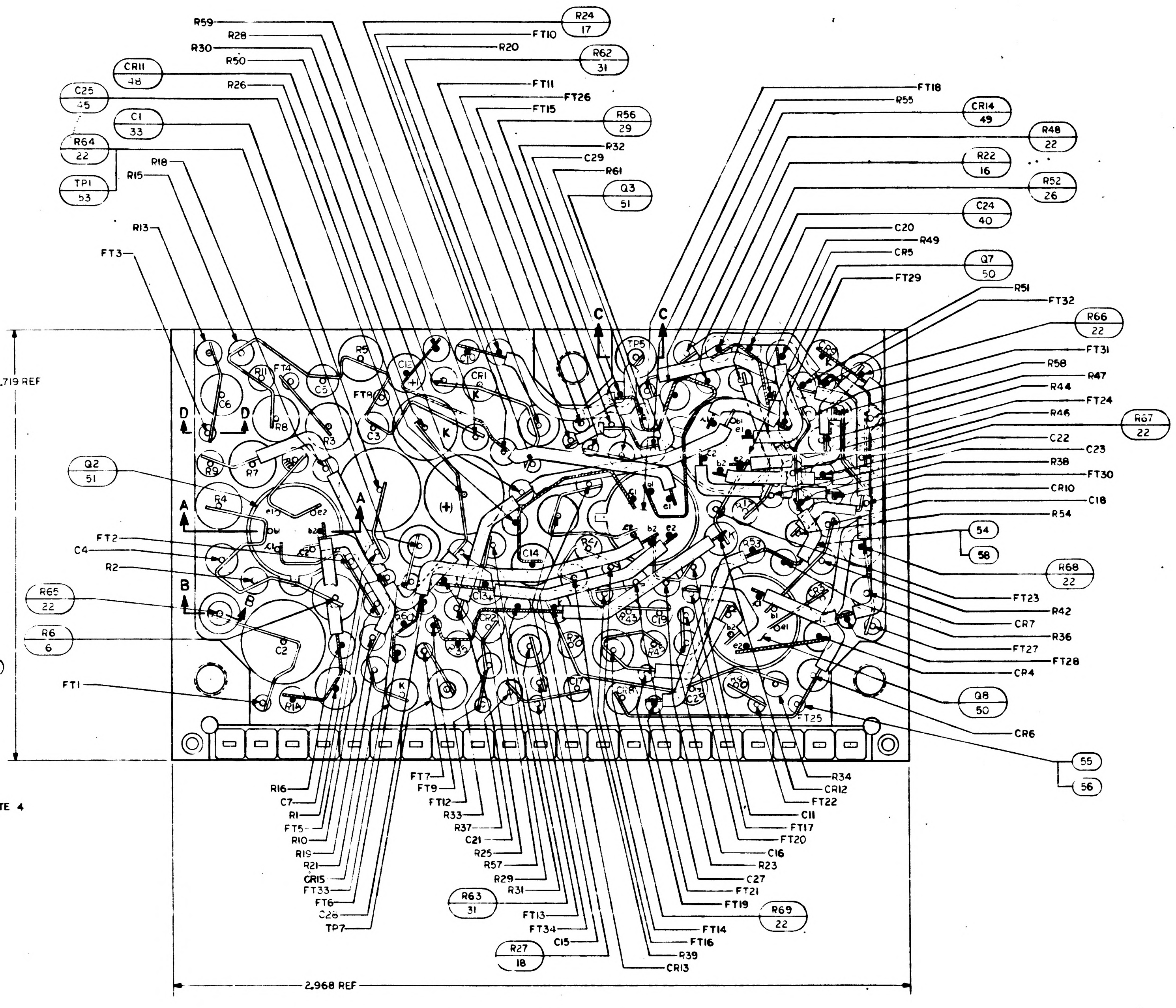
TP5 REF
TP3 REF
TP1 REF
.144 DIA
O PLACES
.154 MAX TYP
SEE NOTE 8
.000
.015 SEE NOTE 8
3
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
9
52 SEE NOTE 4
57
DO NOT ENCAPSULATE
SEE NOTE 8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R68 22
Q8 50
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R63 31
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R59
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R30
R50
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R15
R13
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C4
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FT32
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R58
R47
R44
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R46
C22
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R38
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C18
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FT23
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R36
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FT28
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CR6
R34
CR12
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C11
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C16
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R57
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C21
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R33
FT12
FT9
FT7
R16
C7
R1
FT5
R10
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FT6
C28
TP7
FT25
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B
C
D
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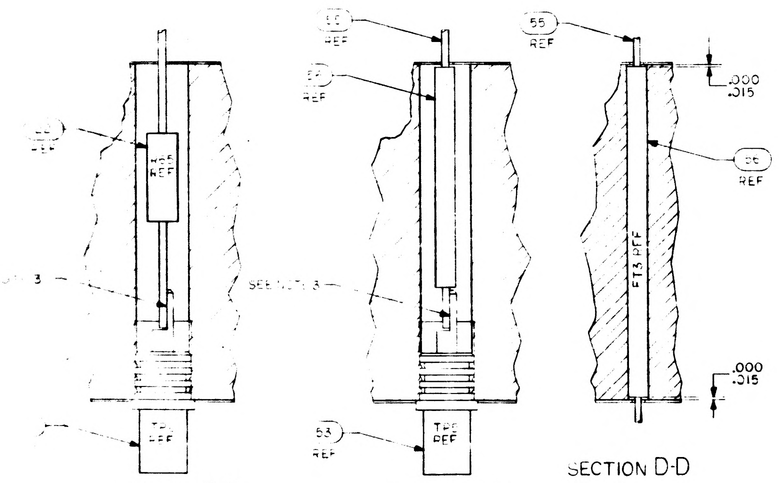
2.968 REF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REF
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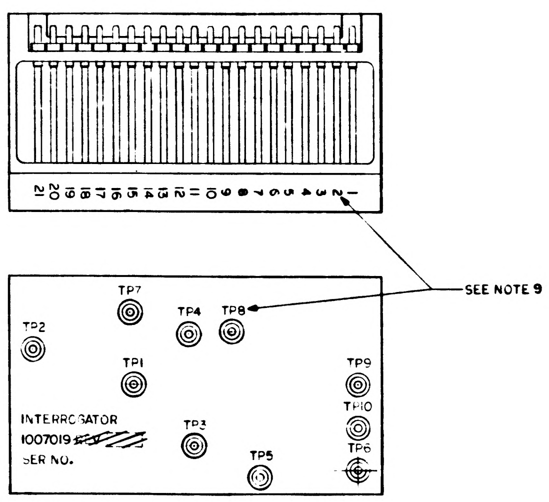
SECTION B-B

SECTION C-C

SECTION D-D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TP2
TP4
TP8
TP1
TP9
TP10
TP3
TP5
TP6
INTERROGATOR
1007019
SER NO.

MARKING VIEW
SCALE 2/1

S 1007019

REVISIONS TDRR 00466

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00721	4-3-63	DT WK
B	REVISED PER TDRR 01003	4-25-63	DT WK
C	REVISED PER TDRR 01178	5-8-63	DT. WK
D	REVISED PER TDRR 01720	6-26-63	JJM WK
E	REVISED PER TDRR 03279	9-19-63	JJM WK
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J	REVISED PER TDRR 05406	12-27-63	WK
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N	REVISED PER TDRR 17301	12 MAR 65	EF
P	REVISED PER TDRR 19473	JUN 65	J.R.L. MGM
R	REVISED PER TDRR 19480	JUN 65	JW EF
S	REVISED PER TDRR 24382	6 DEC 65	MGM

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1010013	SCHEMATIC	
AR	1006776-20	INSULATION SLEEVING	59
AR	1006776-21	INSULATION SLEEVING	58
21	1006775	INSULATOR, WRAPOST-MALE, MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006757-8	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006732-4	CONTACT, WRAPOST-MALE, MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
14	1010385	DIODE	49
1	1010830-9	DIODE	48
1	1006777-19	CAPACITOR, CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V, 10%	46
1	1006755-83	CAPACITOR, TANT 15 UF, 35V, 10%	45
2	1006777-8	CAPACITOR, CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR, CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR, CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR, CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR, CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR, CER 36 UUF, 100V, 10%	38
			37
4	1006777-31	CAPACITOR, CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR, CER .0047 UF, 100V, 10%	35
2	1006777-27	CAPACITOR, CER .0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR .068 UF, 200V, 5%	33
2	1006777-3	CAPACITOR, CER 22 UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 2%	31
1	1006750-24	RESISTOR, FIXED FILM, 470 Ω, 1/4W, 2%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 2%	29
1	1006750-12	RESISTOR, FIXED FILM, 150 Ω, 1/4W, 2%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 2%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 2%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 2%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 2%	24
2	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 2%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 2%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 2%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 2%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 2%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 2%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 2%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 2%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 2%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 2%	14
3	1006750-31	RESISTOR, FIXED FILM, 910 Ω, 1/4W, 2%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 2%	12
4	1006750-25	RESISTOR, FIXED FILM, 510 Ω, 1/4W, 2%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, %	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-106	RESISTOR, FIXED WW, 6.2K, 1/10W, 1%	8
1	1006750-42	RESISTOR, FIXED FILM, 2.7K, 1/4W, 2%	7
2	1010377-105	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 2%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1

LIST OF MATERIALS

S 1007019

NEXT ASSY	USED ON
1007154	
1007153	
~~1007102~~	
~~1007101~~	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497

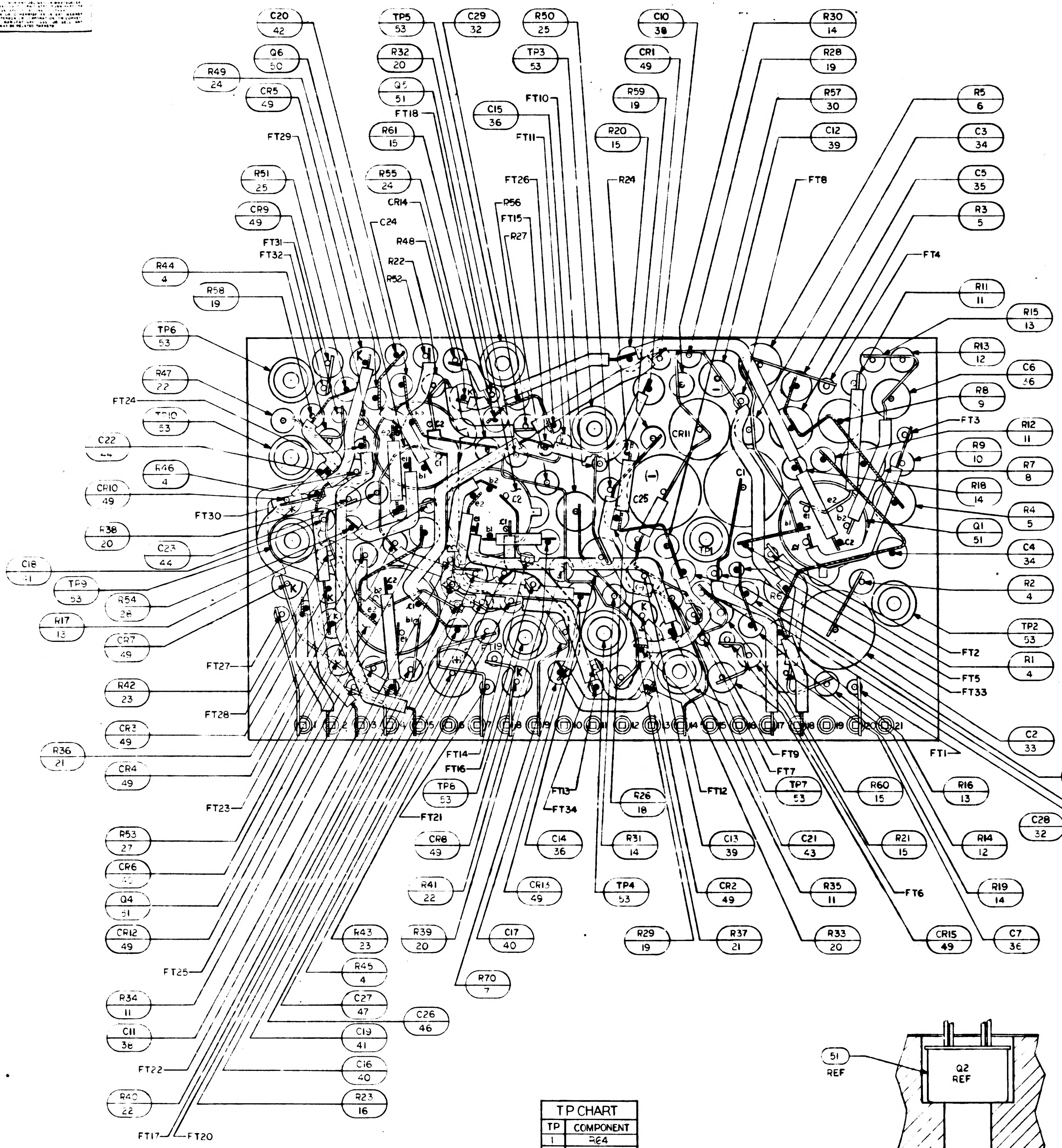
DRAWN W. Horgan DATE 2-8-63
CHECKED 15 FEB 63
APPROVAL 25 Feb 63
APPROVAL 25 FEB 63
NASA APPROVAL 2-27-63
MIT APPROVAL 27 FEB 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INTERROGATOR
ASSEMBLY

CODE IDENT NO 80230
SIZE J
NASA DRAWING NO 1007019
SCALE 5/1
WT
SHEET 1 OF 1

2/1007019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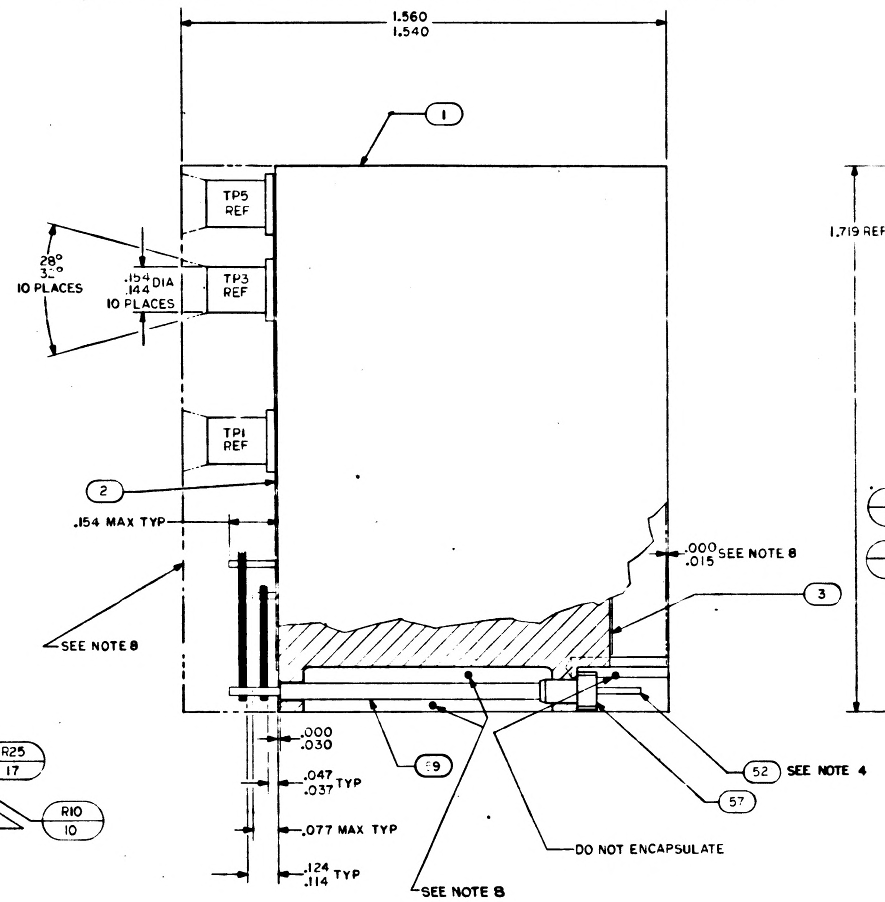
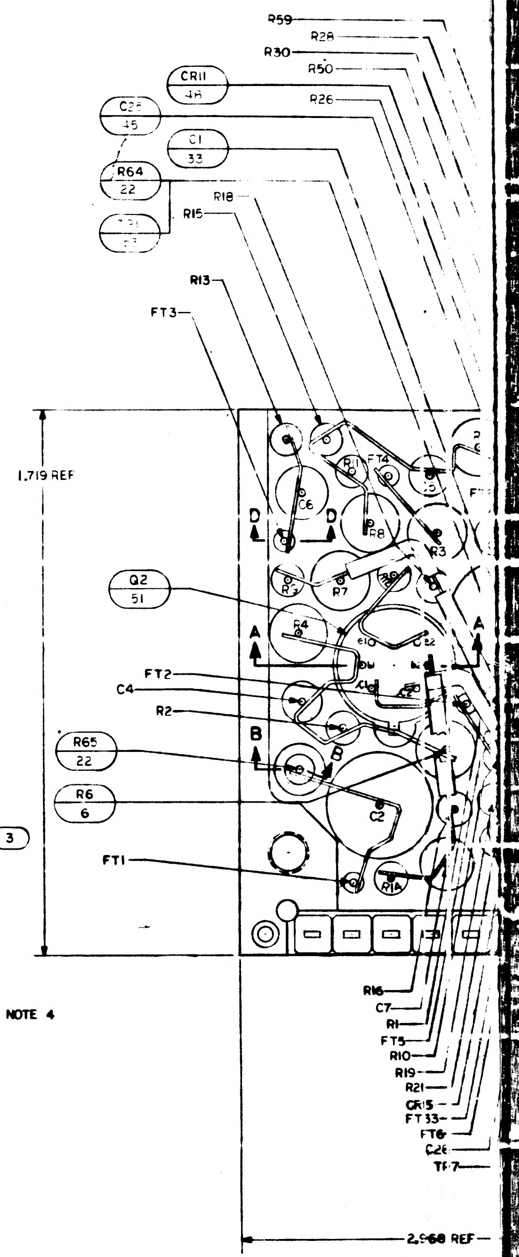
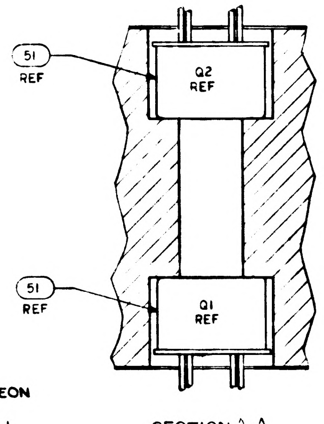
TP5 53
C29 32
R50 25
C10 38
R30 14
Q6 50
R32 20
TP3 53
CR1 49
R28 19
R49 24
CR5 49
Q5 51
FT18
FT10
R59 19
R57 30
C15 36
R61 15
FT11
R20 15
C12 39
FT29
R5 6
C3 34
R51 25
R55 24
FT26
R24
FT8
C5 35
CR9 49
CR14
R56
FT15
R27
R3 5
C24
FT31
FT32
R48
FT4
R44 4
R22
R52
R58 19
R11 11
R15 13
TP6 53
R13 12
C6 46
R47 22
R8 9
FT24
TP10 53
FT3
R12 11
C22
R9 10
R46 4
R7 8
CR10 49
R18 14
FT30
R4 5
R38 20
Q1 51
C23 44
C4 34
C18 41
TP9 53
R2 4
R54 26
R17 13
TP2 53
CR7 49
FT2
R1 4
FT27
FT5
FT33
R42 23
CR3 49
FT28
C2 33
R36 21
FT1
CR4 49
FT14
FT16
FT9
FT7
R25 17
TP6 53
R26 18
FT12
TP7 53
R60 15
R16 13
FT13
FT34
FT23
FT21
C28 32
R10 10
R53 27
CR8 49
C14 36
R31 14
C13 39
C21 43
R21 15
R14 12
CR6
Q4 51
R41 22
CR13 49
TP4 53
CR2 49
R35 11
FT6
R19 14
CR12 49
R43 23
R39 20
C17 40
R29 19
R37 21
R33 20
CR15 49
C7 36
FT25
R45 4
R70 7
R34 11
C27 47
C26 46
C11 38
C19 41
FT22
C16 40
R40 22
R23 16
FT17
FT20

~~TABLE I~~

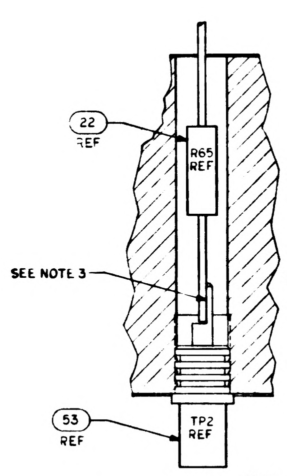
CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA. .12 FROM EXTERNAL HEATSINK SURFACE 80% OF AREA. .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE	100% OF AREA. .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ±.03 OF EXTERNAL EDGE


1.560
1.540
1
TP5 REF
TP3 REF
TP1 REF
28° 3°
10 PLACES
.154 DIA
.144
10 PLACES
2
.154 MAX TYP
.000
.015
SEE NOTE 8
3
SEE NOTE 8
.000
.030
9
52
SEE NOTE 4
.047
.037
TYP
57
.077 MAX TYP
DO NOT ENCAPSULATE
.124
.114
TYP
SEE NOTE 8

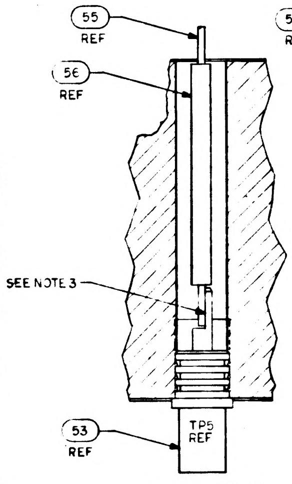

R59
R28
R30
R50
R26
CR11 48
C24 45
C1 33
R64 22
R18
R15
R13
FT3
1.719 REF
D
D
C6
R8
R7
Q2 51
R4
A
A
C4
FT2
R2
R65 22
B
B
R6 6
C2
FT1
R16
C7
R1
FT5
R10
R19
R21
CR15
FT33
FT6
C28
TP7
2.968 REF


51 REF
Q2 REF
51 REF
Q1 REF

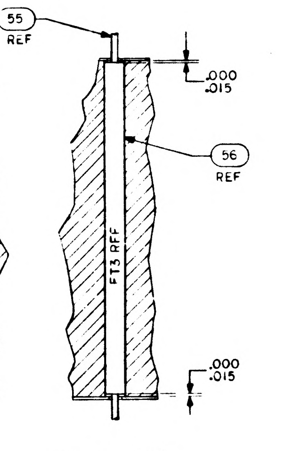
SECTION A-A


22 REF
R65 REF
SEE NOTE 3
53 REF
TP2 REF

SECTION B-B


55 REF
56 REF
SEE NOTE 3
53 REF
TP5 REF

SECTION C-C


55 REF
.000
.015
56 REF
FT3 REF
.000
.015

SECTION D-D

TP CHART	
TP	COMPONENT
1	R64
2	R65
3	R62
4	R63
5	FIND 55 & 56
6	R66
7	FIND 55 & 56
8	R69
9	R68
10	R67

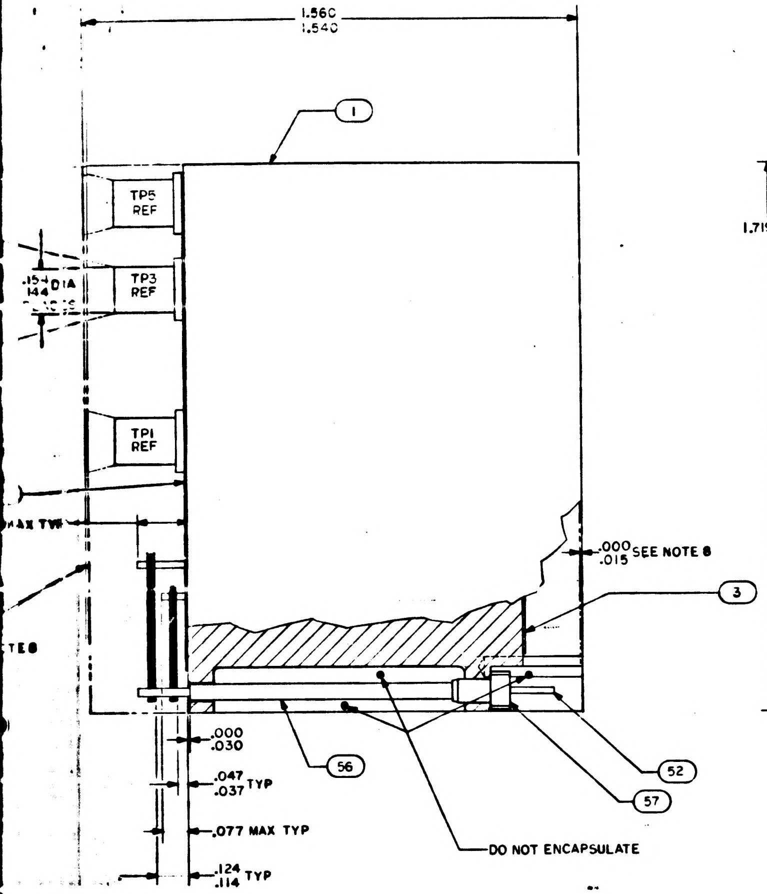
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS & FIND NO. 53 PER ND 1002009 METHOD J.
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005
4. MUST MEET REQUIREMENTS OF ND 1002136
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
9. MARK PIN NUMBERS .08 HIGH (WHITE) ~~AND SERIALIZE~~ AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND 1002019. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE. SERIALIZE PER ND 1002023.
10. + DENOTES CAPACITOR POLARITY
11. PROCURE PER PS 1007019.
12. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEAT SINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~
13. ~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~
14. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON & ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.
15. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND 1002279, USING 1010992 PRIMER AND 1008809-4 PAINT. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE OF PAINT.

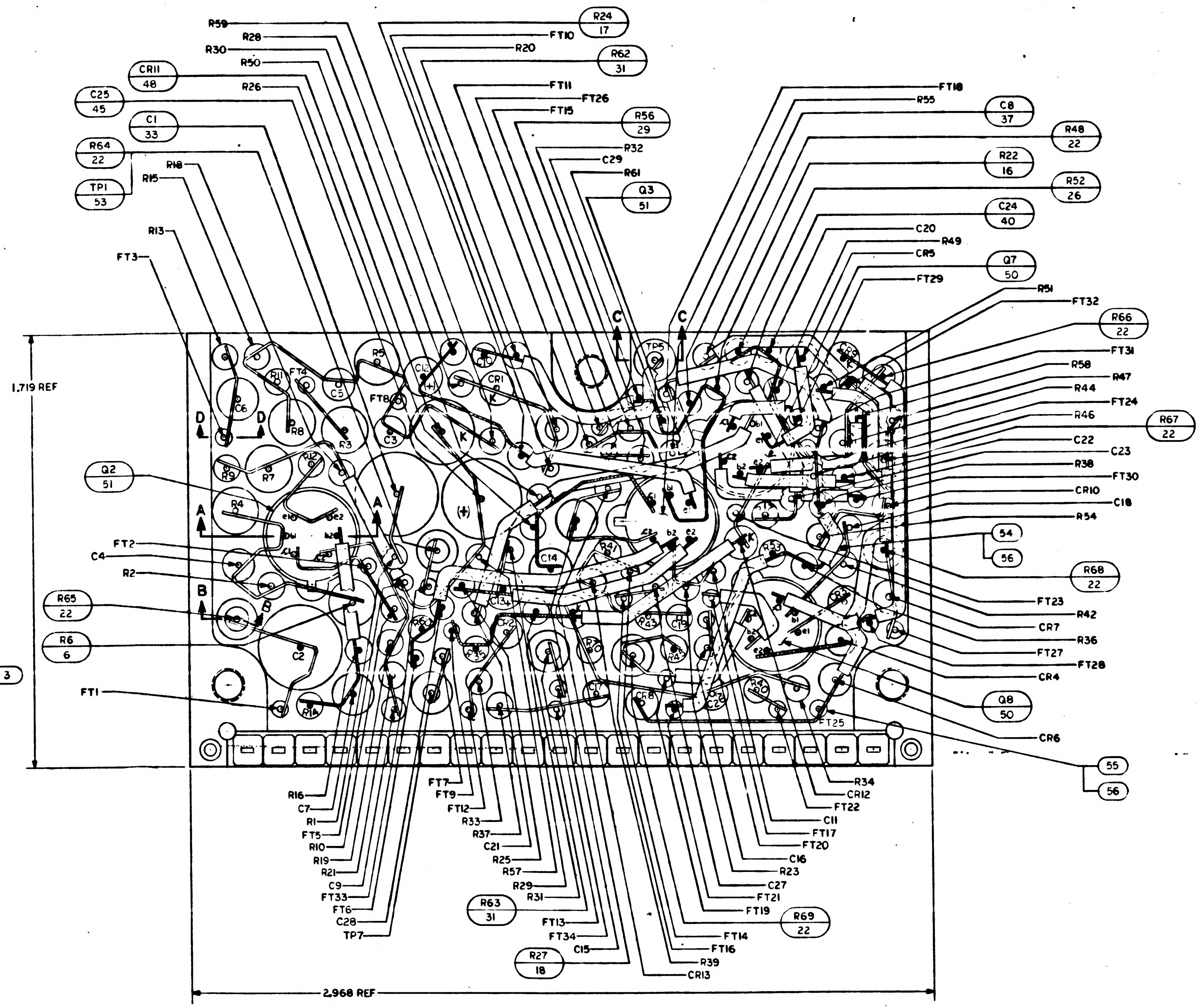
1007019

REVISIONS TDRR 00466

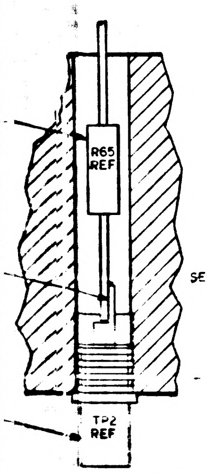
SYM	DESCRIPTION	DATE	APPROVAL



1.560
1.540
1
TP5 REF
TP3 REF
TP1 REF
.154 DIA
.144
MAX TYP
.000
.015 SEE NOTE 8
3
56
52
57
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
DO NOT ENCAPSULATE

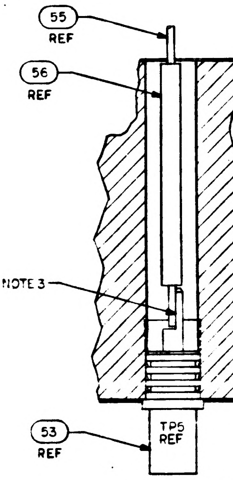


R59
R28
R30
R50
R26
CR11 48
C25 45
C1 33
R64 22
TP1 53
R18
R15
R13
FT3
R24 17
FT10
R20
R62 31
FT11
FT26
FT15
R56 29
R32
C29
R61
Q3 51
FT18
R55
C8 37
R48 22
R22 16
R52 26
C24 40
C20
R49
CR5
Q7 50
FT29
R51
FT32
R66 22
FT31
R58
R47
R44
FT24
R46
R67 22
C22
C23
R38
FT30
CR10
C18
R54
54
56
R68 22
FT23
R42
CR7
R36
FT27
FT28
CR4
Q8 50
CR6
55
56
Q2 51
FT2
C4
R2
R65 22
R6 6
FT1
1.719 REF
2.968 REF
C
C
D
D
A
A
B
B
R16
C7
R1
FT5
R10
R19
R21
C9
FT33
FT6
C28
TP7
FT7
FT9
FT12
R33
R37
C21
R25
R57
R29
R31
R63 31
FT13
FT34
C15
R27 18
R34
CR12
FT22
C11
FT17
FT20
C16
R23
C27
FT21
FT19
R69 22
FT14
FT16
R39
CR13



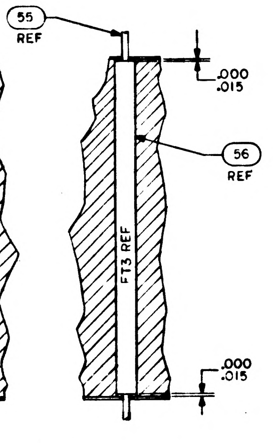
R65 REF
TP2 REF

SECTION B-B



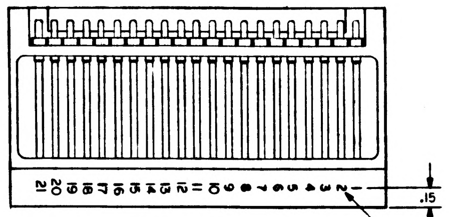
55 REF
56 REF
SEE NOTE 3
53 REF
TP5 REF

SECTION C-C

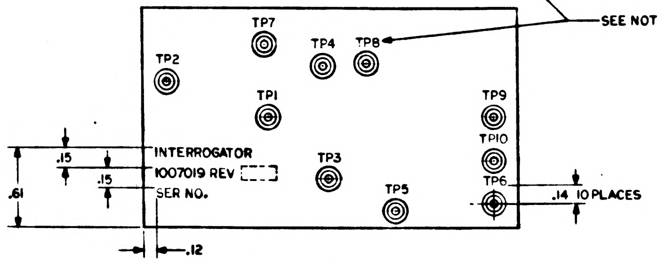


55 REF
.000
.015
56 REF
FT3 REF
.000
.015

SECTION D-D



SEE NOTE 9



TP7
TP2
TP4
TP8
TP1
TP9
TP10
TP3
TP5
TP6
INTERROGATOR
1007019 REV
SER NO.
.15
.15
.61
.12
.14 10 PLACES

MARKING VIEW
SCALE 2/1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010013	SCHEMATIC	
21	1006775	INSULATOR, WRAPOST-MALE,MIN	57
AS REQ	1006776-22	INSULATION SLEEVING	56
AS REQ	1006787-2	WIRE ELEC .020 DIA	55
AS REQ	1006757-1	WIRE ELEC .010 × .020	54
10	1010292-2	TERMINAL FEEDTHRU INSULATED	53
21	1006782-4	CONTACT, WRAPOST-MALE,MIN	52
5	1010376-1	TRANSISTOR	51
3	1010395	TRANSISTOR	50
12	1010385	DIODE	49
1	1010286	DIODE	48
1	1006777-19	CAPACITOR,CER 360 UUF, 100V, 10%	47
1	1006755-79	CAPACITOR, TANT 6.8 UF, 35V. 10%	46
1	1006755-83	CAPACITOR, TANT 15UF, 35V, 10%	45
2	1006777-8	CAPACITOR,CER 50 UUF, 100V, 10%	44
1	1006777-11	CAPACITOR,CER 75 UUF, 100V, 10%	43
1	1006777-15	CAPACITOR,CER 150 UUF, 100V, 10%	42
2	1006777-17	CAPACITOR,CER 270 UUF, 100V, 10%	41
3	1006777-24	CAPACITOR,CER .001 UF, 100V, 10%	40
2	1006755-69	CAPACITOR, TANT 1.0 UF, 35V, 10%	39
2	1006777-5	CAPACITOR,CER 36UUF, 100V, 10%	38
2	1006777-2	CAPACITOR,CER 20 UUF, 100V, 10%	37
4	1006777-31	CAPACITOR,CER .01 UF, 100V, 10%	36
1	1006777-28	CAPACITOR,CER .0047 UF. 100V. 10%	35
2	1006777-27	CAPACITOR,CER.0033 UF, 100V, 10%	34
2	1010264-23	CAPACITOR, MYLAR .068UF. 200V, 10%	33
2	1006777-3	CAPACITOR,CER 22UUF, 100V, 10%	32
2	1006750-63	RESISTOR, FIXED FILM, 20K, 1/4W, 5%	31
1	1006750-24	RESISTOR, FIXED FILM, 470Ω 1/4W, 5%	30
1	1006750-45	RESISTOR, FIXED FILM, 3.6K, 1/4W, 5%	29
1	1006750-17	RESISTOR, FIXED FILM, 240Ω, 1/4W, 5%	28
1	1006750-46	RESISTOR, FIXED FILM, 3.9K, 1/4W, 5%	27
1	1006750-36	RESISTOR, FIXED FILM, 1.5K, 1/4W, 5%	26
2	1006750-51	RESISTOR, FIXED FILM, 6.2K, 1/4W, 5%	25
2	1006750-60	RESISTOR, FIXED FILM, 15K, 1/4W, 5%	24
2	1006750-72	RESISTOR, FIXED FILM, 47K, 1/4W, 5%	23
10	1006750-56	RESISTOR, FIXED FILM, 10K, 1/4W, 5%	22
2	1006750-73	RESISTOR, FIXED FILM, 51K, 1/4W, 5%	21
4	1006750-49	RESISTOR, FIXED FILM, 5.1K, 1/4W, 5%	20
4	1006750-39	RESISTOR, FIXED FILM, 2K, 1/4W, 5%	19
2	1006750-54	RESISTOR, FIXED FILM, 8.2K, 1/4W, 5%	18
2	1006750-55	RESISTOR, FIXED FILM, 9.1K, 1/4W, 5%	17
2	1006750-65	RESISTOR, FIXED FILM, 24K, 1/4W, 5%	16
4	1006750-80	RESISTOR, FIXED FILM, 100K, 1/4W, 5%	15
4	1006750-53	RESISTOR, FIXED FILM, 7.5K, 1/4W, 5%	14
3	1006750-31	RESISTOR, FIXED FILM, 910Ω, 1/4W, 5%	13
2	1006750-41	RESISTOR, FIXED FILM, 2.4K, 1/4W, 5%	12
4	1006750-25	RESISTOR, FIXED FILM, 510Ω, 1/4W, 5%	11
2	1006750-43	RESISTOR, FIXED FILM, 3K, 1/4W, 5%	10
1	1010377-51	RESISTOR, FIXED WW, 5K, 1/10W, 1%	9
1	1010377-50	RESISTOR, FIXED WW, 20K, 1/10W, 1%	8
1	1006750-66	RESISTOR, FIXED FILM, 27K, 1/4W, 5%	7
2	1010377-	RESISTOR, FIXED WW, 16K, 1/10W, 1%	6
2	1010377-49	RESISTOR, FIXED WW, 39K, 1/10W, 1%	5
5	1006750-32	RESISTOR, FIXED FILM, 1K, 1/4W, 5%	4
1	1008037-2	INSULATOR, BOTTOM	3
1	1008037-1	INSULATOR, TOP	2
1	1008036	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN W. Horgan DATE 2-8-63
CHECKED W. J. Gifford 15 FEB 63
APPROVAL 25 Feb 63
APPROVAL A. R. Test 26 FEB 63
NASA APPROVAL W. J. Rhine 2-27-63
MIT APPROVAL W. Kupfer 27 Feb 63

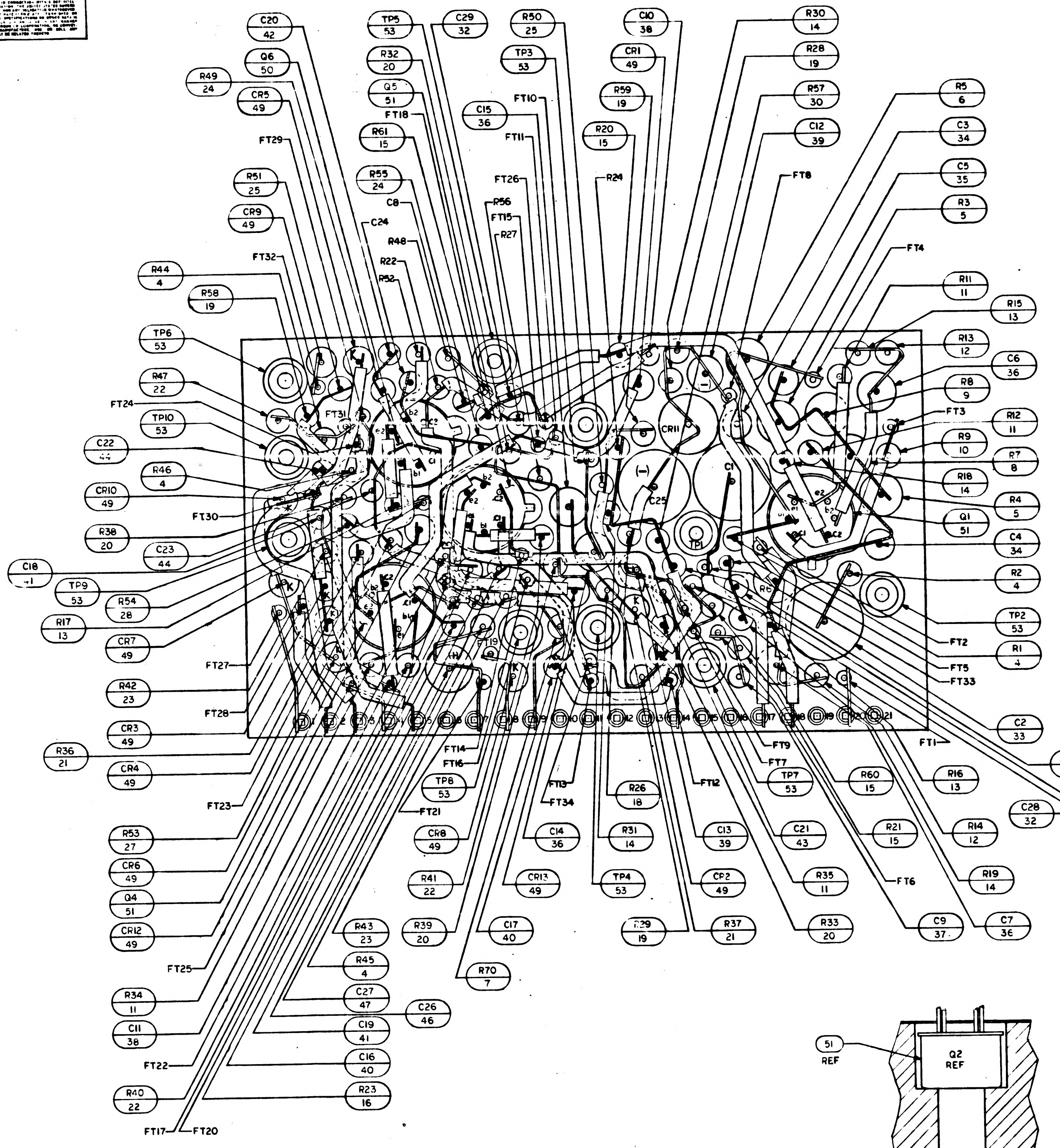
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

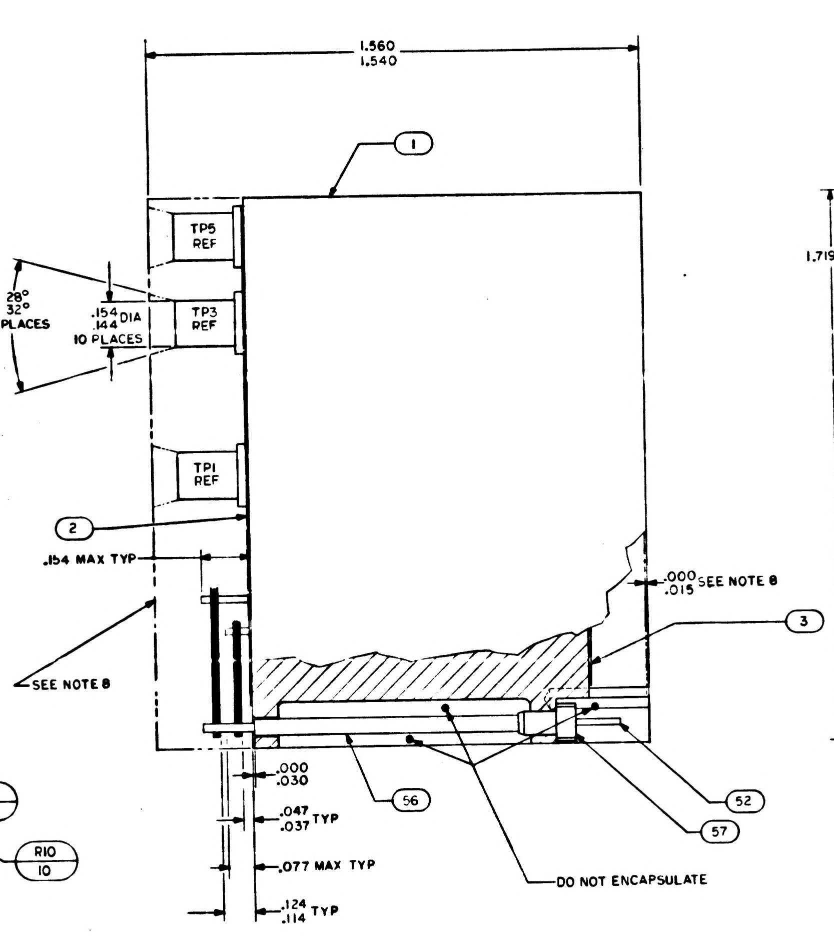
INTERROGATOR ASSEMBLY

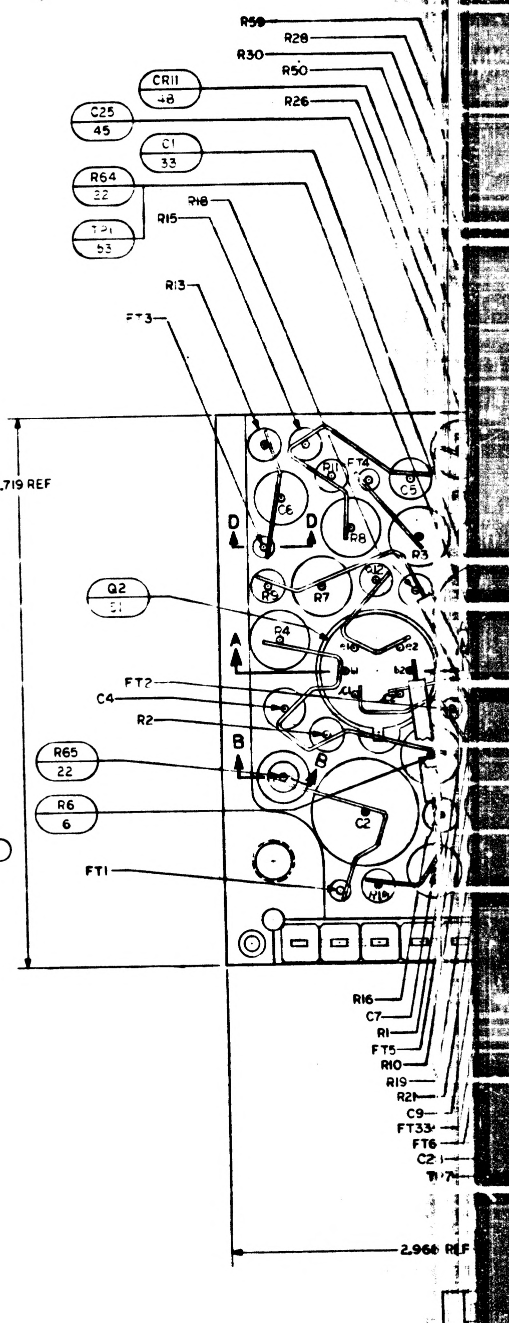
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007019
SCALE 5/1
WT
SHEET 1 OF 1

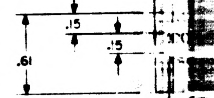
1007019

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.


C20 42
TP5 53
C29 32
R50 25
C10 38
R30 14
Q6 50
R32 20
TP3 53
CR1 49
R28 19
R49 24
Q5 51
C15 36
FT10
R59 19
R57 30
CR5 49
FT18
R61 15
FT11
R20 15
C12 39
R5 6
FT29
C3 34
R55 24
FT26
R24
FT8
C5 35
R51 25
C8
R56
FT15
R27
R3 5
CR9 49
C24
FT4
FT32
R48
R22
R52
R44 4
R11 11
R58 19
R15 13
TP6 53
R13 12
C6 36
R47 22
R8 9
FT24
FT3
FT31
TP10 53
R12 11
C22 44
R9 10
R46 4
R7 8
CR10 49
R18 14
CR11
C1
C25
FT30
R4 5
R38 20
Q1 51
C23 44
C4 34
C18 41
TP9 53
R54 28
R2 4
R17 13
TP1
TP2 53
CR7 49
FT2
R1 4
FT27
FT5
FT33
R42 23
FT28
C2 33
CR3 49
FT1
R36 21
FT14
FT9
FT16
FT7
R25 17
CR4 49
TP8 53
FT13
R26 18
FT12
TP7 53
R60 15
R16 13
R10 10
FT34
C28 32
FT23
FT21
CR8 49
C14 36
R31 14
C13 39
C21 43
R21 15
R14 12
R53 27
CR6 49
R41 22
CR13 49
TP4 53
CP2 49
R35 11
FT6
R19 14
Q4 51
CR12 49
R43 23
R39 20
C17 40
R29 19
R37 21
R33 20
C9 37
C7 36
R45 4
FT25
R70 7
R34 11
C27 47
C26 46
C11 38
C19 41
FT22
C16 40
R40 22
R23 16
FT17
FT20
K

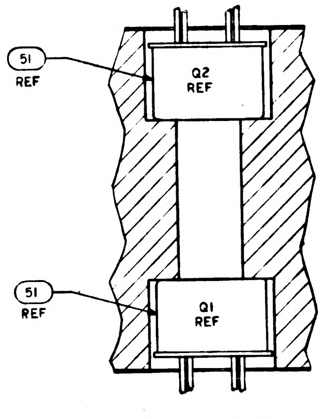

1.560
1.540
1
TP5 REF
TP3 REF
TP1 REF
28°
32°
10 PLACES
.154
.144 DIA
10 PLACES
2
.154 MAX TYP
.000
.015 SEE NOTE 8
3
SEE NOTE 8
.000
.030
.047
.037 TYP
.077 MAX TYP
.124
.114 TYP
56
52
57
DO NOT ENCAPSULATE


R59
R28
R30
R50
CR11 48
R26
C25 45
C1 33
R64 22
R18
TP1 53
R15
R13
FT3
1.719 REF
D
D
C6
R11
FT4
C5
R8
R3
R6
R7
Q2 51
R4
A
FT2
C4
R2
B
B
R65 22
R10
R6 6
C2
FT1
R16
C7
R1
FT5
R10
R19
R21
C9
FT33
FT6
C2
2.964 REF

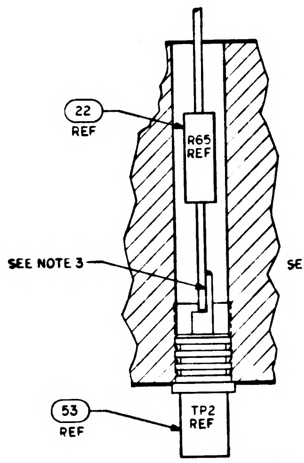


NOTES

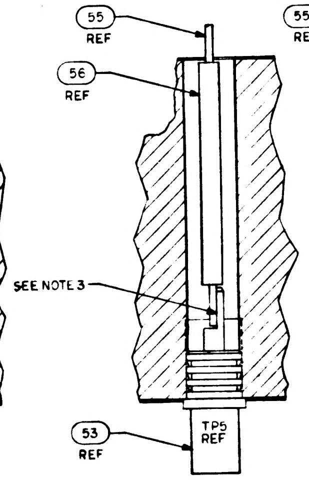
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. STAKE ALL COMPONENTS PER ND1002009 AND FIND NUMBER 53
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002C05
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
5. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. K INDICATES CATHODE SIDE OF DIODE
8. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM)
9 MARK .100/.060 HIGH WHITE PER ND1002019


51 REF
Q2 REF
51 REF
Q1 REF

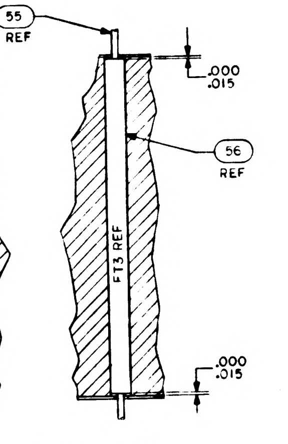
SECTION A-A


22 REF
R65 REF
SEE NOTE 3
53 REF
TP2 REF

SECTION B-B


55 REF
56 REF
SEE NOTE 3
53 REF
TP5 REF

SECTION C-C


55 REF
.000
.015
56 REF
FT3 REF
.000
.015

SECTION D-D

APOLLO G&N Specification
PS-1007019
31 January 1964
Class A Release
TDRR 06053

PROCUREMENT SPECIFICATION
FOR
INTERROGATOR

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 6 , inclusive.

APOLLO G&N Specification
PS-1007019
31 January 1964
TDR 06053

PROCUREMENT SPECIFICATION
FOR
INTERROGATOR

The purpose of this document is to establish the requirements for the procurement of the Interrogator for use in the APOLLO Guidance and Navigation Equipment.

W.A. Kupfer 31 Jan 64
MIT/IL DATE

1/3./64
NASA/MSC APPROVAL DATE

APOLLO G&N Specification
PS-1007019
31 January 1964

PROCUREMENT SPECIFICATION
FOR
INTERROGATOR

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Interrogator, Drawing 1007019, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007019	Interrogator

DRAWINGS

APOLLO G&N

1007019	Interrogator

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007020 A

REVISIONS TDRR 00493

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00473	[illegible]	J.T. W[illegible]

D

C

B

1007020 A

A

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS-1222-06E	INSERT, SCREW LOCKING	1

LIST OF MATERIALS

NEXT ASSY	1007021
USED ON	
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±
DECIMALS ±.005 ±.02
ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING

MATERIAL: SEE NOTE 2

HEAT TREATMENT:

FINAL FINISH: SEE NOTE 11

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN [illegible] DATE 2/?/63
CHECKED [illegible] 1 MAR 63
APPROVAL [illegible] 1 MAR 63
APPROVAL

NASA APPROVAL [illegible] 3/?/63

MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
PULSE TORQUE
GYRO CALIBRATION

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007020
SCALE 5/1
WT
SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

1007020 A

	DESCRIPTION	REVISIONS
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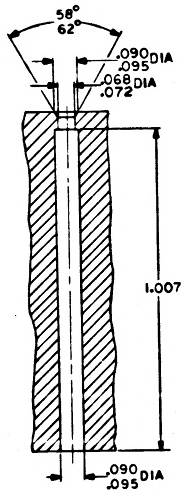
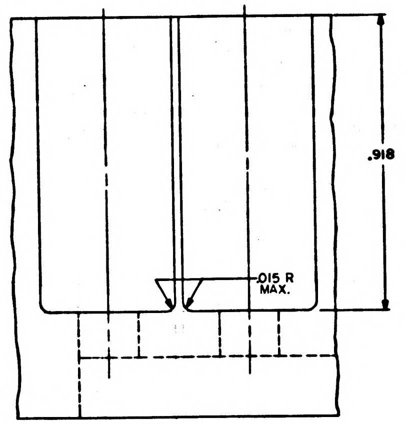


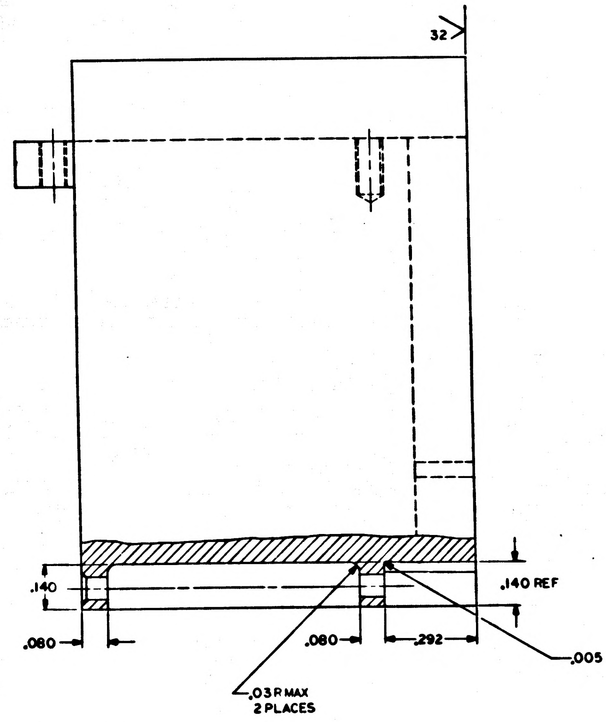
58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A

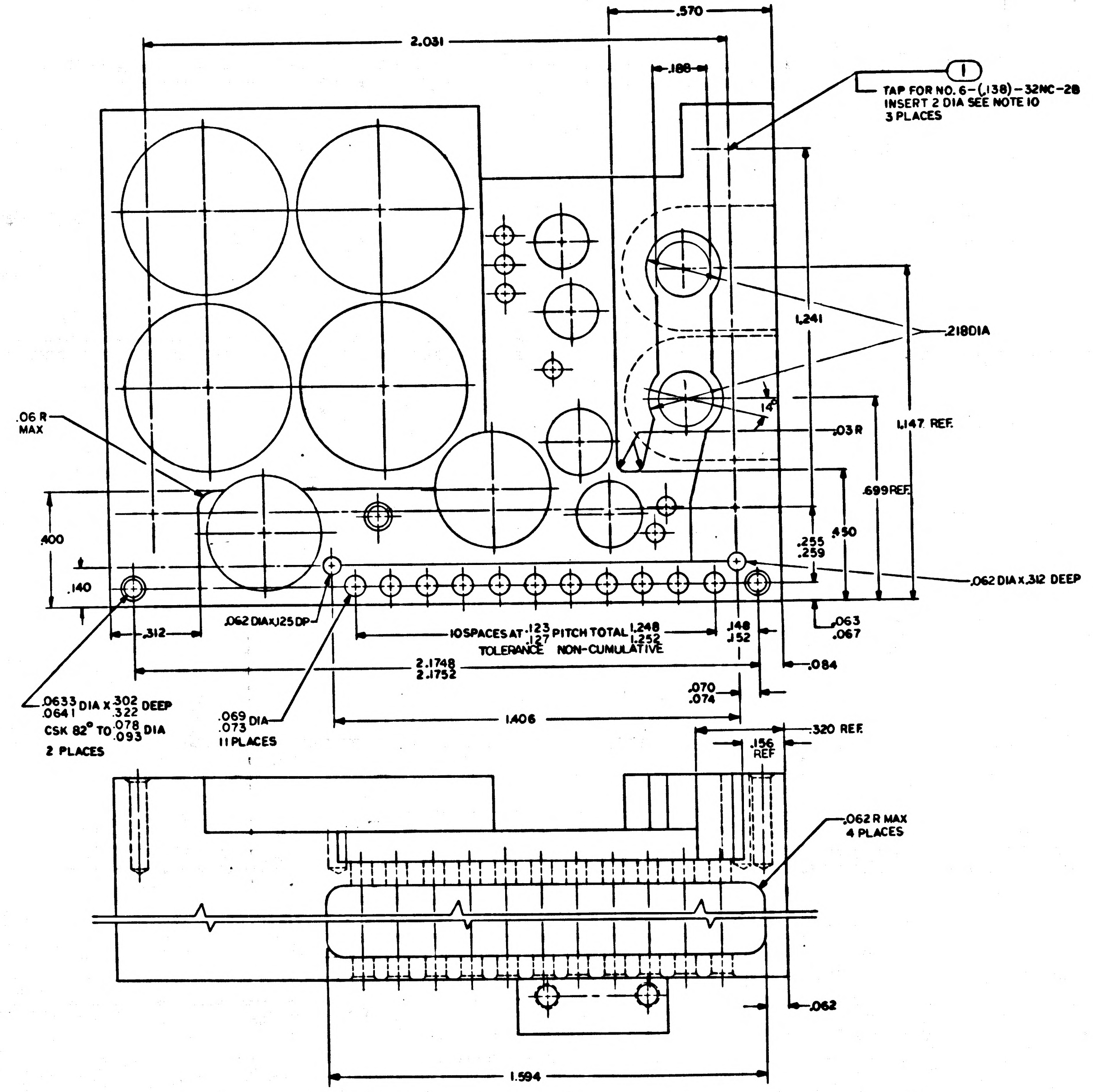


.918
.015 R
MAX.

VIEW A-A



32
.140
.140 REF
.080
.080
.292
.005 R MAX.
.03 R MAX
2 PLACES



.570
2.031
.188
①
TAP FOR NO. 6-(.138)-32NC-2B
INSERT 2 DIA SEE NOTE 10
3 PLACES
1.241
.218 DIA
14°
.03 R
1.147 REF.
.699 REF.
.450
.255
.259
.06 R
MAX
.400
.140
.062 DIA x .312 DEEP
.312
.062 DIA x .125 DP
10 SPACES AT .123 .127 PITCH TOTAL 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.063
.067
.084
2.1748
2.1752
.070
.074
.0633
.0641 DIA x .302 .322 DEEP
CSK 82° TO .078 .093 DIA
2 PLACES
.069
.073 DIA
11 PLACES
1.406
.320 REF.
.156
REF
.062 R MAX
4 PLACES
.062
1.594

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE DESCRIPTION
3	NAS-1222-06E	INSERT, SCREW LOCK

LIST OF MATERIALS

1007021	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTE 2
HEAT TREATMENT
FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 2/7/63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 3/4/63
MIT APPROVAL

MANNED SPACECR
HOUSTON, T

HEATS
PULSE TO
GYRO CAL

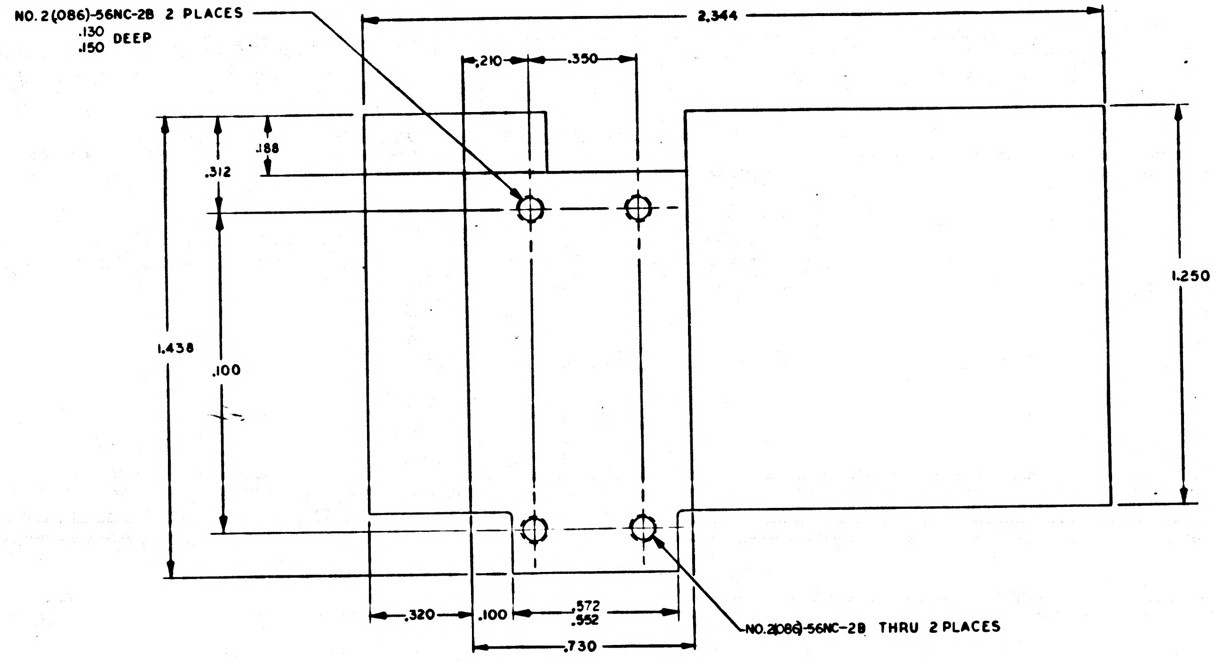
CODE IDENT NO
SIZE J
SCALE 5/1
WT

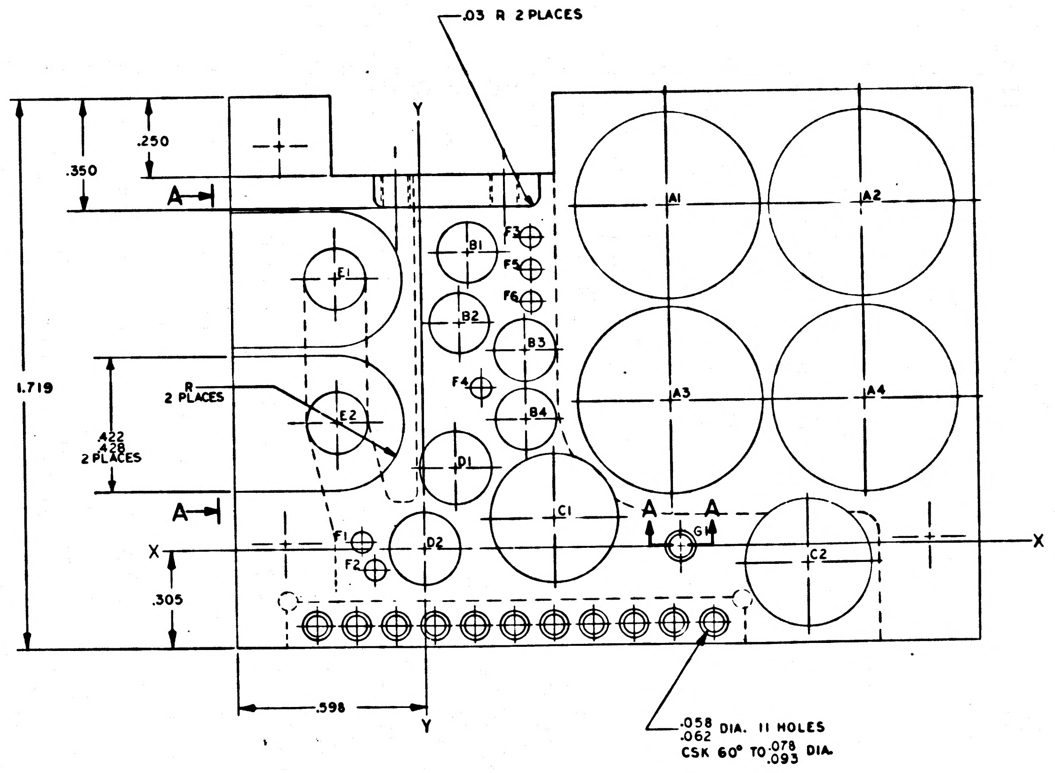
MASTER

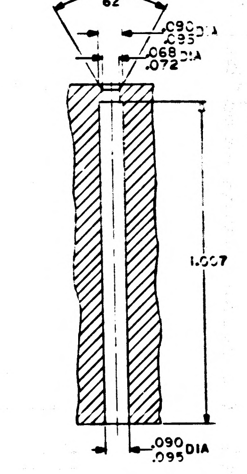
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

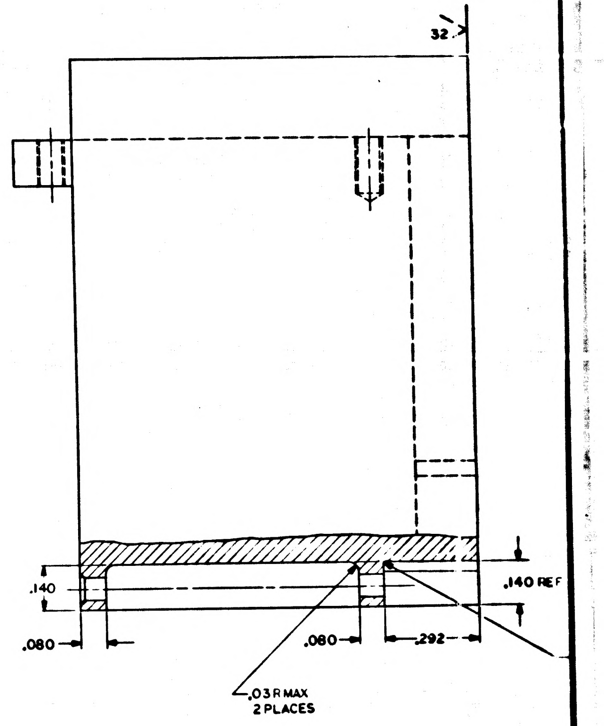
HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.780	1.060	.006	.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920	.006	.181 .185	4
B2	.120	.700			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090	.006	.392 .399	2
C2	1.205	−.055			
D1	.100	.250	.006	.227 .231	2
D2	0.000	0.000			
E1	−.272	.842	.006	.188	2
E2	−.272	.394			
F1	−.200	.020	.006	.058 .062	9
F2	−.160	−.065			
F3	.350	.965			
F4	.185	.500			
F5	.350	.865			
F6	.350	.765			
G1	.805	0.000	.006	SEE SECTION A-A	1


NO.2(086)-56NC-2B 2 PLACES
.130 .150 DEEP
2.344
.210
.350
.188
.312
1.438
.100
1.250
.320
.100
.572 .552
.730
NO.2(086)-56NC-2B THRU 2 PLACES


.03 R 2 PLACES
Y
.250
.350
A
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
D1
D2
E1
E2
F1
F2
F3
F4
F5
F6
G1
1.719
R 2 PLACES
.422 .428 2 PLACES
X
.305
.598
.058 .062 DIA. 11 HOLES
CSK 60° TO .078 .093 DIA.


58° 62°
.090 .095 DIA
.068 .072 DIA
1.007
.090 .095 DIA

SECTION A-A


32
.140
.140 REF
.080
.080
.292
.03 R MAX 2 PLACES

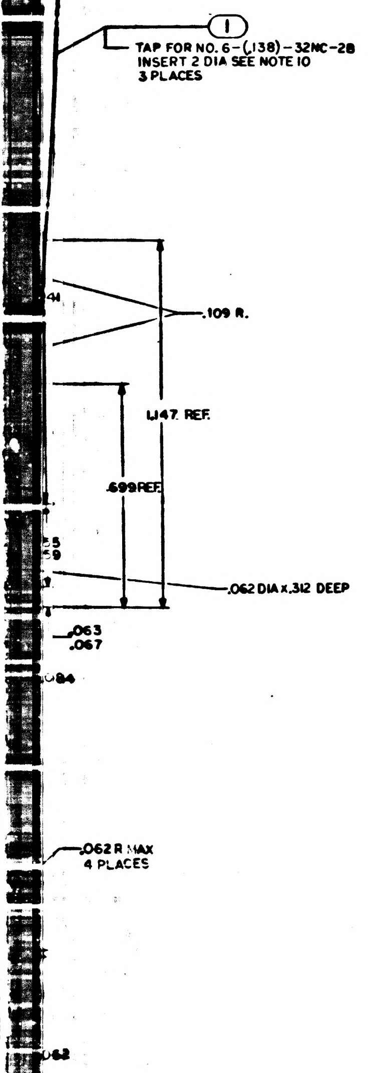
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PERSCRIBED BY MIL-D-70327
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO1 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO1 PER MS33537 EXCEPT DIM. F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: ANODIZE PER MIL-M-3171A, TYPE IV

INCHES
PHOTOGRAPHIC SCALE ONLY

1007020 B

REVISIONS TDRR 00493			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	4/17/63	W.T. W
B	REVISED PER TDRR 01176	4-30-63	D.T. W


TAP FOR NO. 6-(.138)-32NC-2B
INSERT 2 DIA SEE NOTE 10
3 PLACES
①
.109 R.
1.147 REF.
.699 REF.
.062 DIA x .312 DEEP
.063
.067
.062 R MAX
4 PLACES

D

C

B

1007020 B

A

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS-1222-06E	INSERT, SCREW LOCKING	1

LIST OF MATERIALS

1007021	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN W.F. Tracy DATE 2/7/63
CHECKED 14 Mar 63
APPROVAL 1 MAR 63
APPROVAL

NASA APPROVAL 3/6/63
MIT APPROVAL 6 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
PULSE TORQUE
GYRO CALIBRATION

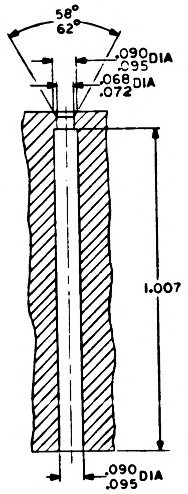
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007020
SCALE 5/1
WT
SHEET 1 OF 1

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

1007020 B

SYM	DESCRIPTION	
A	REVISED PER	TDRR C
B	REVISED PER	TDRR 2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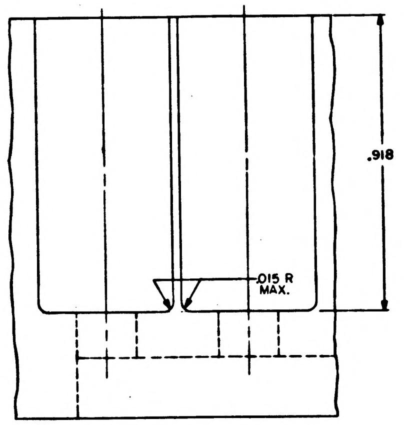
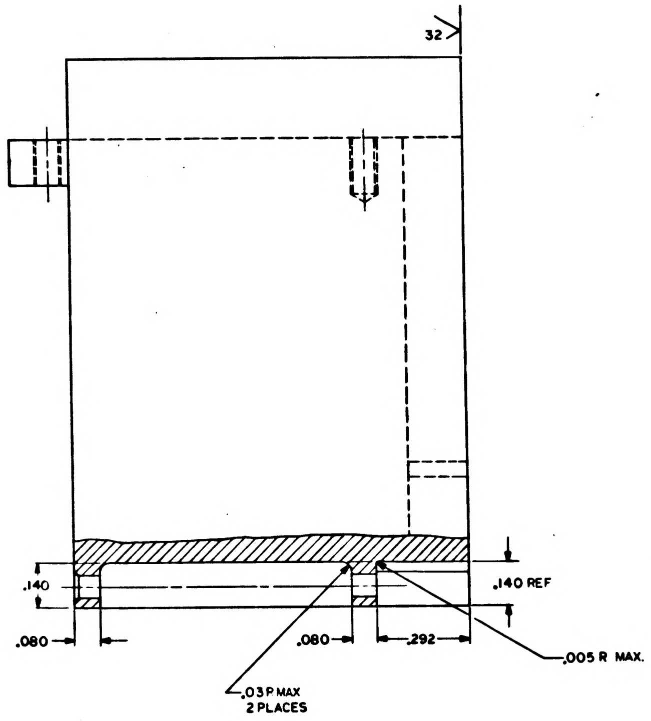
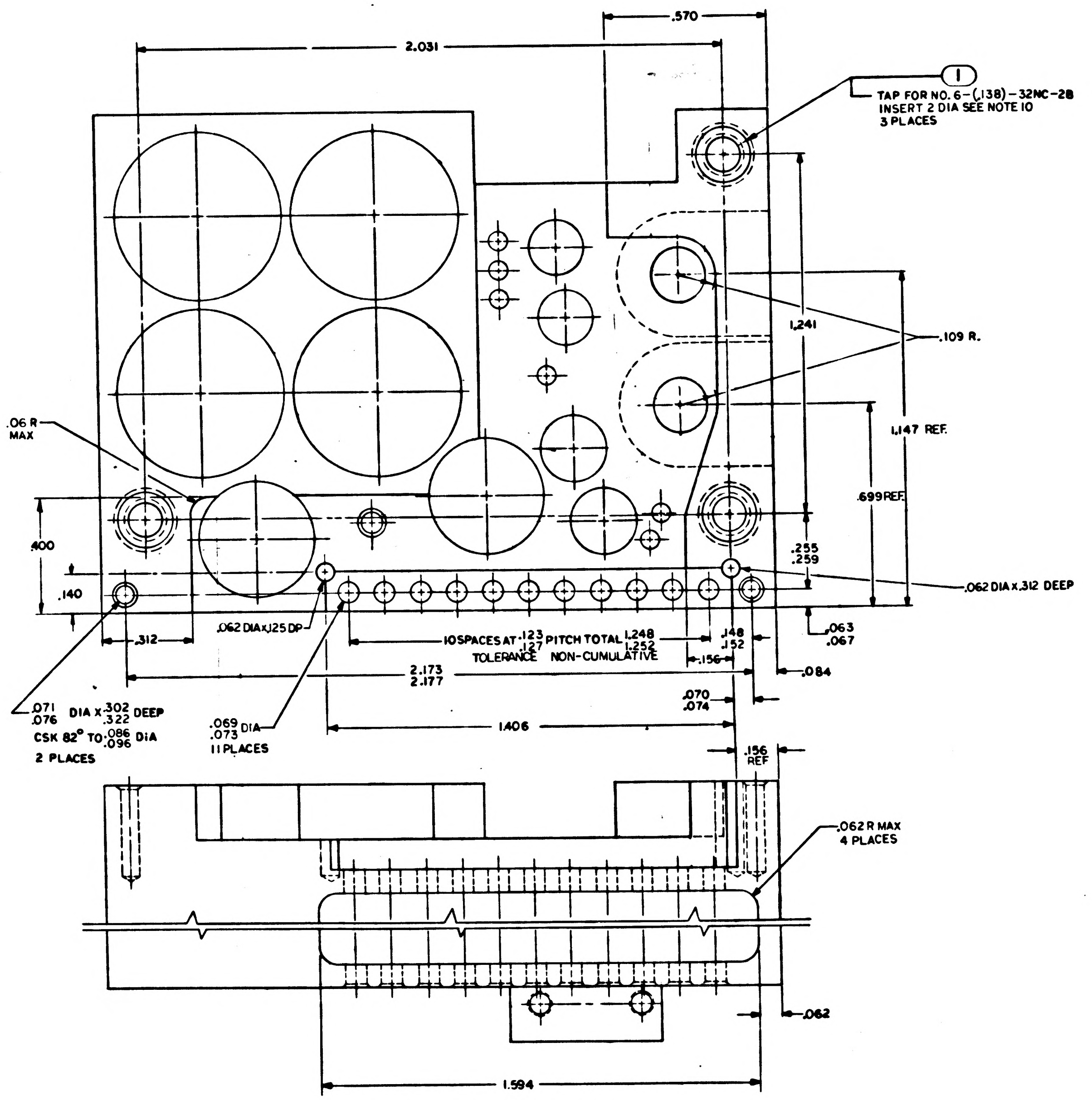
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


.918
.015 R
MAX.

VIEW A-A


32
.140
.140 REF
.080
.080
.292
.005 R MAX.
.03P MAX
2 PLACES


.570
2.031
①
TAP FOR NO. 6-(.138)-32NC-2B
INSERT 2 DIA SEE NOTE 10
3 PLACES
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R
MAX
.400
.140
.255
.259
.062 DIA X .312 DEEP
.062 DIA x .125 DP
.312
10 SPACES AT .123 .127 PITCH TOTAL 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.063
.067
.156
.084
2.173
2.177
.070
.074
.071 .076 DIA x .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 PLACES
.069 .073 DIA
11 PLACES
1.406
.156
REF
.062 R MAX
4 PLACES
.062
1.594

3	NAS-1222-06E	INSERT, SCREW L
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE DESCR
		LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

1007021
NEXT ASSY | USED ON
APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN W. Tony DATE 2/9/63
CHECKED
APPROVAL
APPROVAL

NASA APPROVAL 3/4/63

MIT APPROVAL

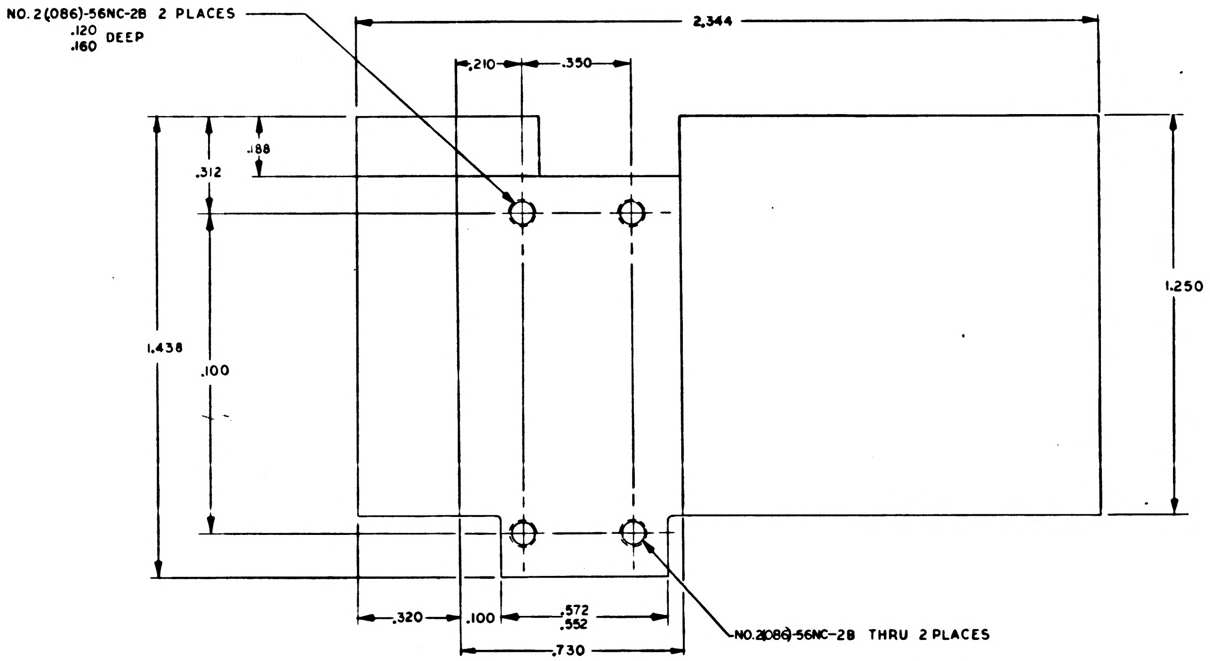
MANNED SPAC
HOUSTON

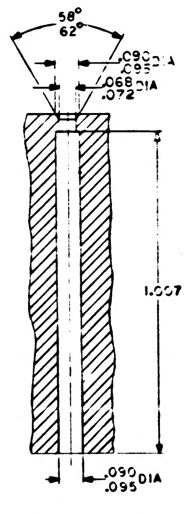
HEAT
PULSE
GYRO CA

CODE IDENT NO.
SIZE J
SCALE 3/1

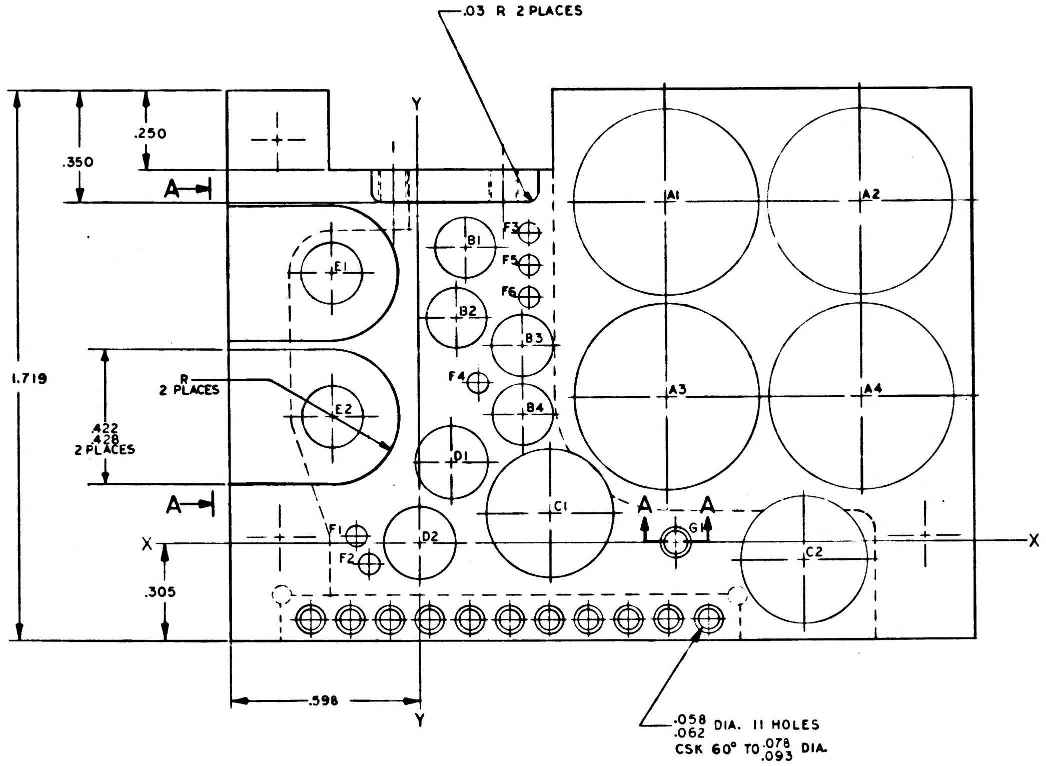
INCHES
PHOTOGRAPHIC SCALE ONLY

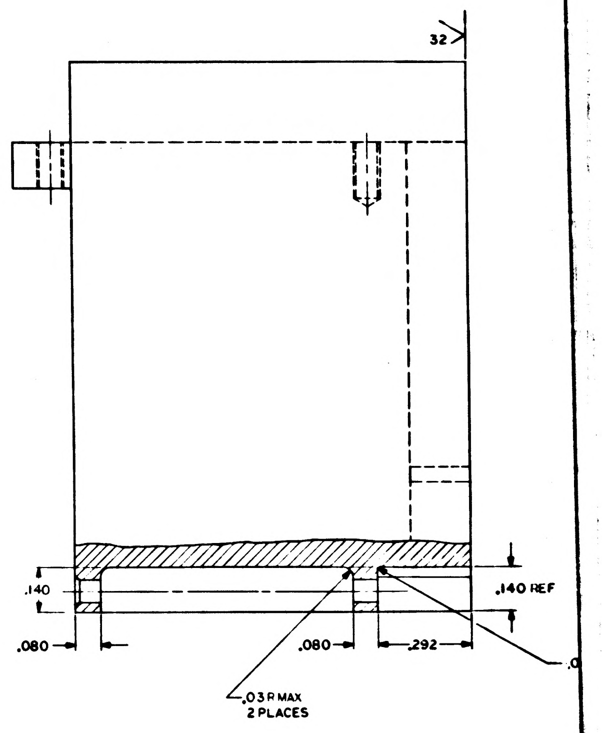
HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.780	1.060	.006	.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920	.006	.181 .185	4
B2	.120	.700			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090	.006	.392 .399	2
C2	1.205	−.055			
D1	.100	.250	.006	.227 .231	2
D2	0.000	0.000			
E1	−.272	.842	.006	.188	2
E2	−.272	.394			
F1	−.200	.020	.006	.058 .062	9
F2	−.160	−.065			
F3	.350	.965			
F4	.185	.500			
F5	.350	.865			
F6	.350	.765			
G1	.805	0.000	.006	SEE SECTION A-A	1


NO. 2(086)-56NC-2B 2 PLACES
.120
.160 DEEP
2.344
.210
.350
.188
.312
1.438
.100
1.250
.320
.100
.572
.552
.730
NO.2(086)-56NC-2B THRU 2 PLACES


58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


.03 R 2 PLACES
Y
.250
.350
A
1.719
R
2 PLACES
.422
.428
2 PLACES
A
X
.305
.598
Y
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
D1
D2
E1
E2
F1
F2
F3
F4
F5
F6
G1
A
A
X
.058
.062 DIA. 11 HOLES
CSK 60° TO .078
.093 DIA.


32
.140
.140 REF
.080
.080
.292
.03 R MAX
2 PLACES

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED 125✓ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.1 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO 1 PER MS 33537 EXCEPT DIM. F TO BE .594 BREAK OFF DRIVING TANG
11. FINISH: ANODIZE PER MIL-M-3171A, TYPE IV

1007020 C

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	4/17/63	W.T. WK
B	REVISED PER TDRR 01176	4-30-63	D.F. WK
C	REVISED PER TDRR 01357	5-22-63	RVV WK

REVISIONS TDRR 00493

1007020 C

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
3	NAS – 1222-06E	INSERT SCREW LOCKING	2
1	1007020 - 1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007021	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE II

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN W. F. Tong DATE 2/19/63
CHECKED
APPROVAL 1 MAR 63
APPROVAL
NASA APPROVAL 3/6/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

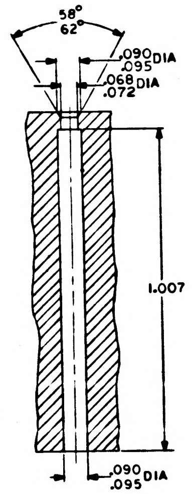
HEATSINK
PULSE TORQUE
GYRO CALIBRATION

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007020
SCALE 5/1
WT
SHEET 1 OF 1

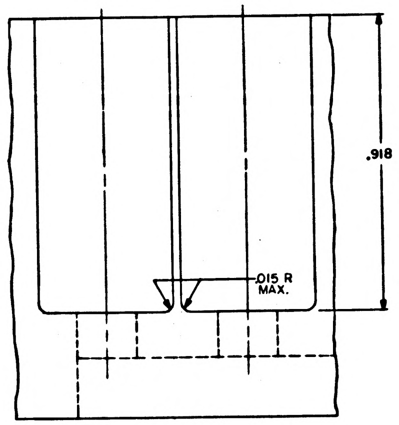
INCHES
PHOTOGRAPHIC SCALE ONLY

1007020 C

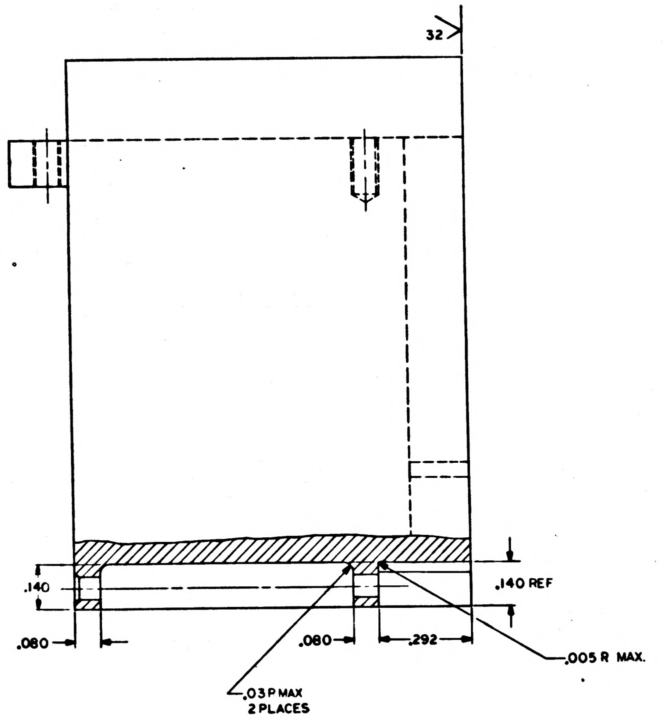
A	REVISED	
B	REVISED PER	
C	REVISED PER	

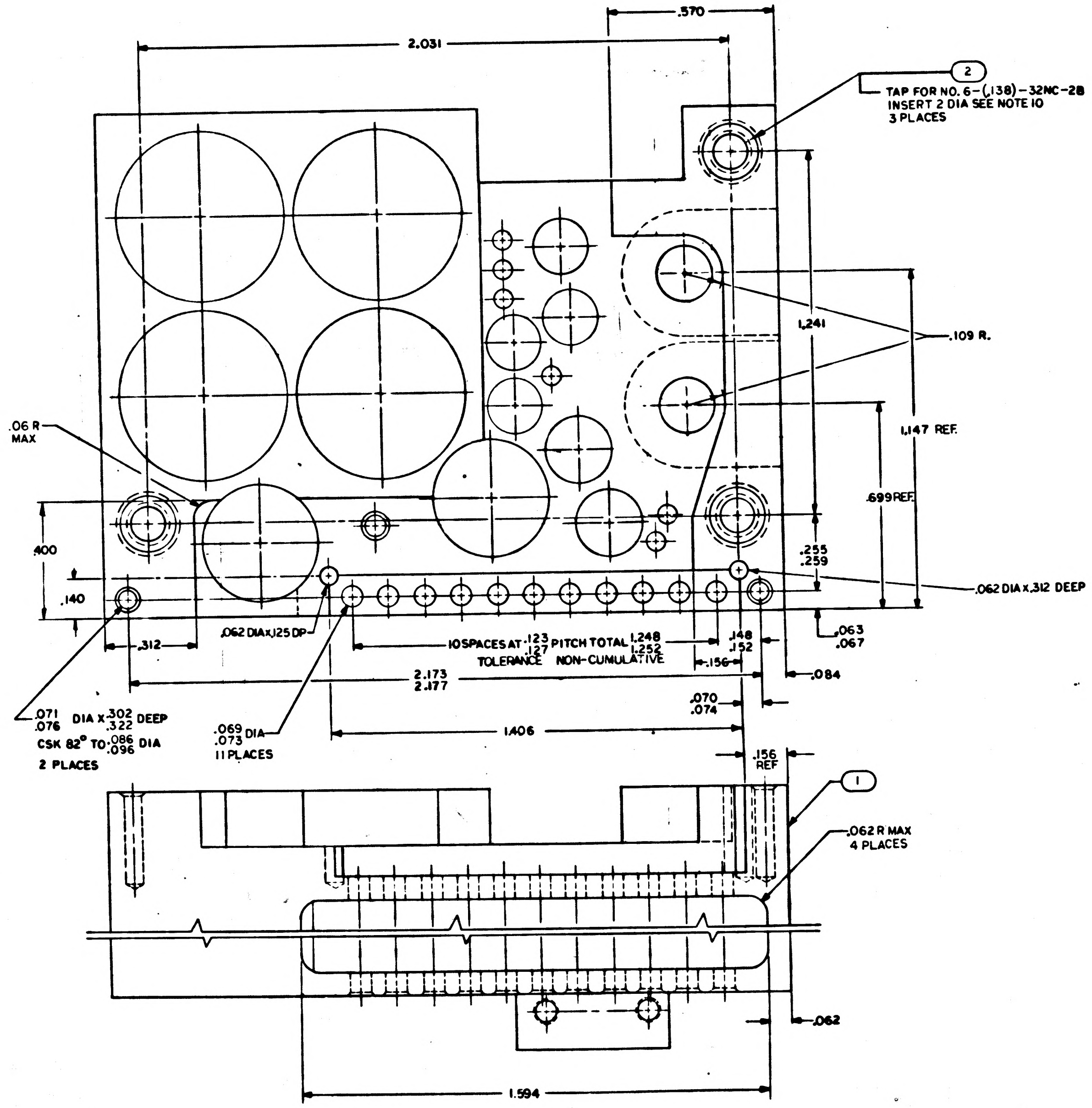

58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


.918
.015 R
MAX.

VIEW A-A


32
.140
.140 REF
.080
.080
.292
.03 R MAX
2 PLACES
.005 R MAX.


.570
2.031
2
TAP FOR NO. 6-(.138)-32NC-2B
INSERT 2 DIA SEE NOTE 10
3 PLACES
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R
MAX
.400
.140
.255
.259
.062 DIA X .312 DEEP
.312
.062 DIA X .125 DP
10 SPACES AT .123/.127 PITCH TOTAL 1.248/1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.156
.063
.067
2.173
2.177
.084
.070
.074
.071
.076 DIA X .302/.322 DEEP
CSK 82° TO .086/.096 DIA
2 PLACES
.069
.073 DIA
11 PLACES
1.406
.156
REF
1
.062 R MAX
4 PLACES
.062
1.594

3 NAS - 222-C6E INSERT SCREW
1007020 - HEATS

QTY REQD	PART OR IDENTIFYING NO.	NOMENC DESC

LIST OF MATERIALS

1007021	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

HEAT TREATMENT

FINAL FINISH SEE NOTE 11

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN DATE 2/9/63
CHECKED
APPROVAL
APPROVAL

NASA APPROVAL 3/63
MIT APPROVAL

MANNED SPAC

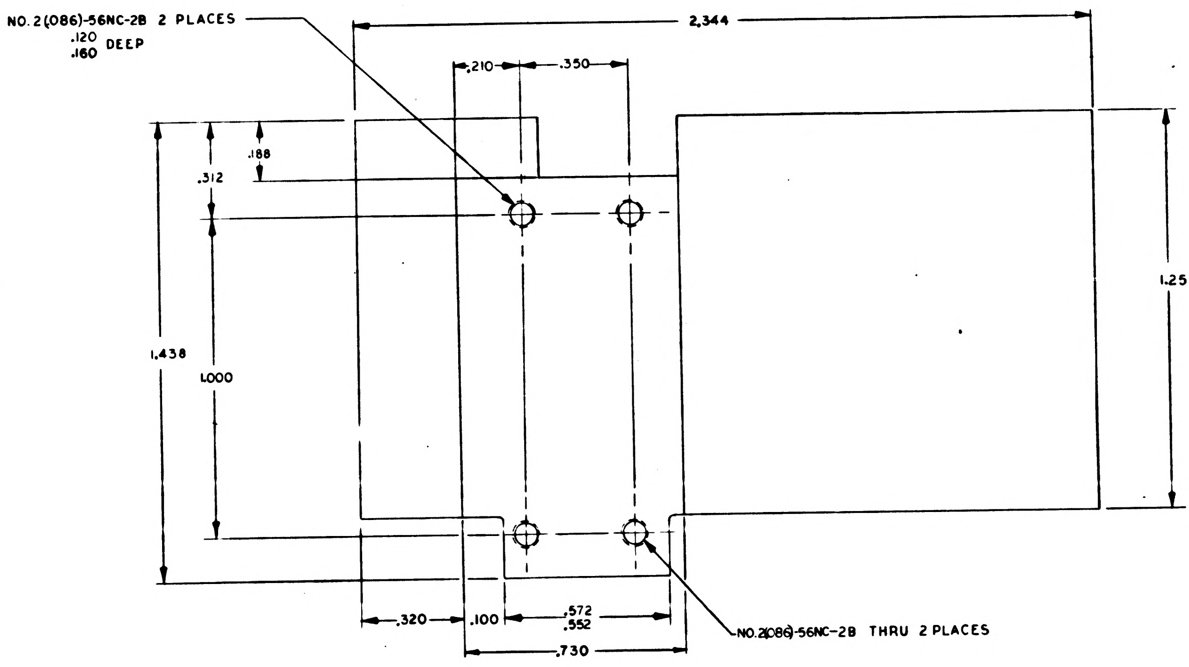
HEAT
PULSE
GYRO CA

CODE IDENT NO.
SIZE J
SC 5/1
WT

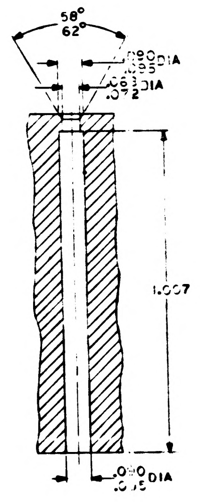
MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.780	1.060	.006	.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920	.006	.181 .185	4
B2	.120	.700			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090	.006	.392 .399	2
C2	1.205	−.055			
D1	.100	.250	.006	.227 .231	2
D2	0.000	0.000			
E1	−.272	.842	.006	.188	2
E2	−.272	.394			
F1	−.200	.020	.006	.058 .062	9
F2	−.160	−.065			
F3	.350	.965			
F4	.185	.500			
F5	.350	.865			
F6	.350	.765			
G1	.805	0.000	.006	SEE SECTION A-A	1

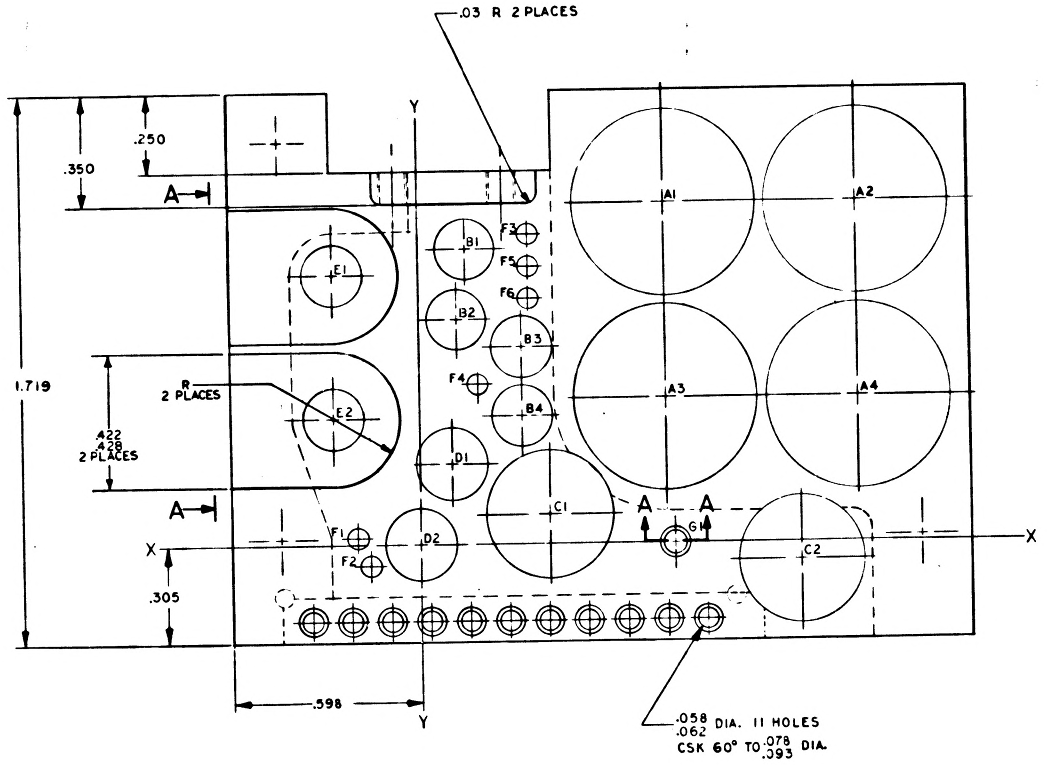


NO. 2(086)-56NC-2B 2 PLACES .120 .160 DEEP
2.344
.210
.350
.188
.312
1.250
1.438
1.000
.320
.100
.572 .552
.730
NO.2(086)-56NC-2B THRU 2 PLACES

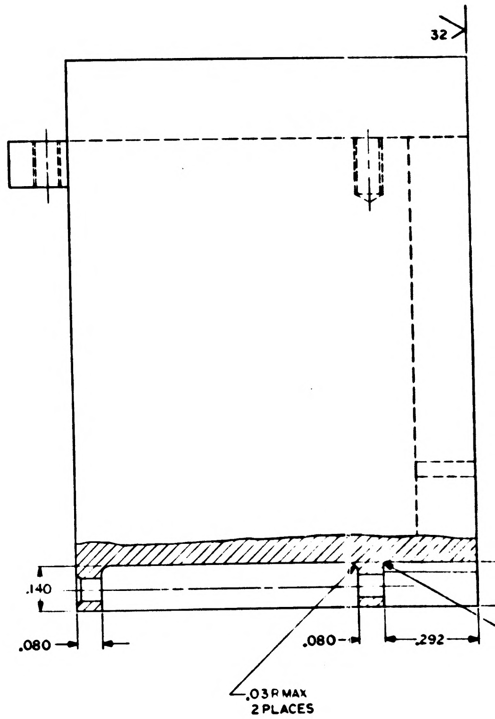


58° 62°
.080 .095 DIA
.063 .072 DIA
1.007
.040 .045 DIA

SECTION A-A



.03 R 2 PLACES
Y
.250
.350
A
1.719
R 2 PLACES
.422 .428 2 PLACES
A
X
.305
.598
Y
X
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
D1
D2
E1
E2
F1
F2
F3
F4
F5
F6
G1
A A
.058 .062 DIA. 11 HOLES CSK 60° TO .078 .093 DIA.



32
.140
.080
.080
.292
.03 R MAX 2 PLACES

NOTES

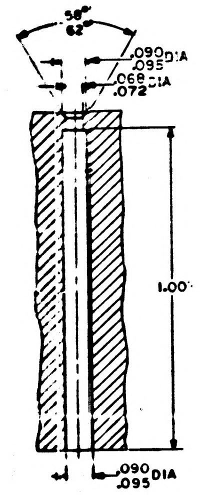
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.1 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO1 PER MS 33537 EXCEPT DIM. F TO BE .594. BREAK OFF DRIVING TANG
11. FINISH: ANODIZE PER MIL-M-3171A, TYPE IV

INCHES
PHOTOGRAPHIC SCALE ONLY

1007020 D

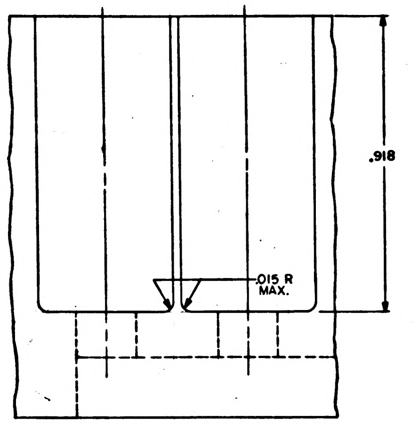
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873		
B	REVISED PER TDRR 01176	4-30-63	D.T.
C	REVISED PER TDRR 01357	5-22-63	
D	REVISED PER TDRR 01864	7-2-63	

REVISIONS TDRR 00493



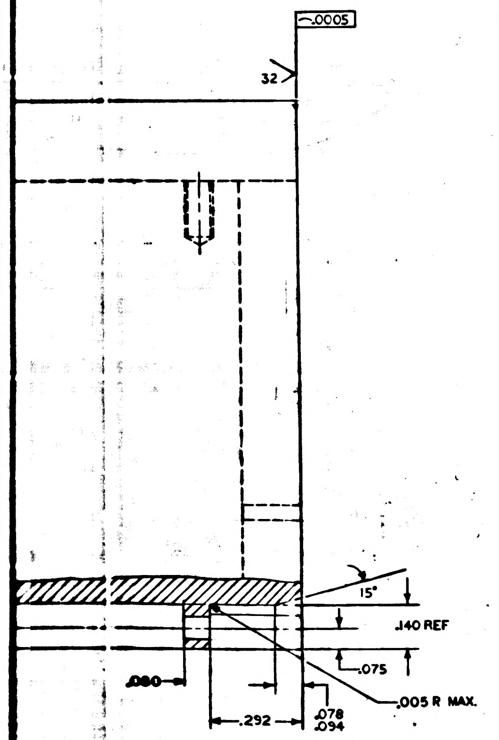
58°
62°
.090 .095 DIA
.068 .072 DIA
1.00
.090 .095 DIA

SECTION A-A

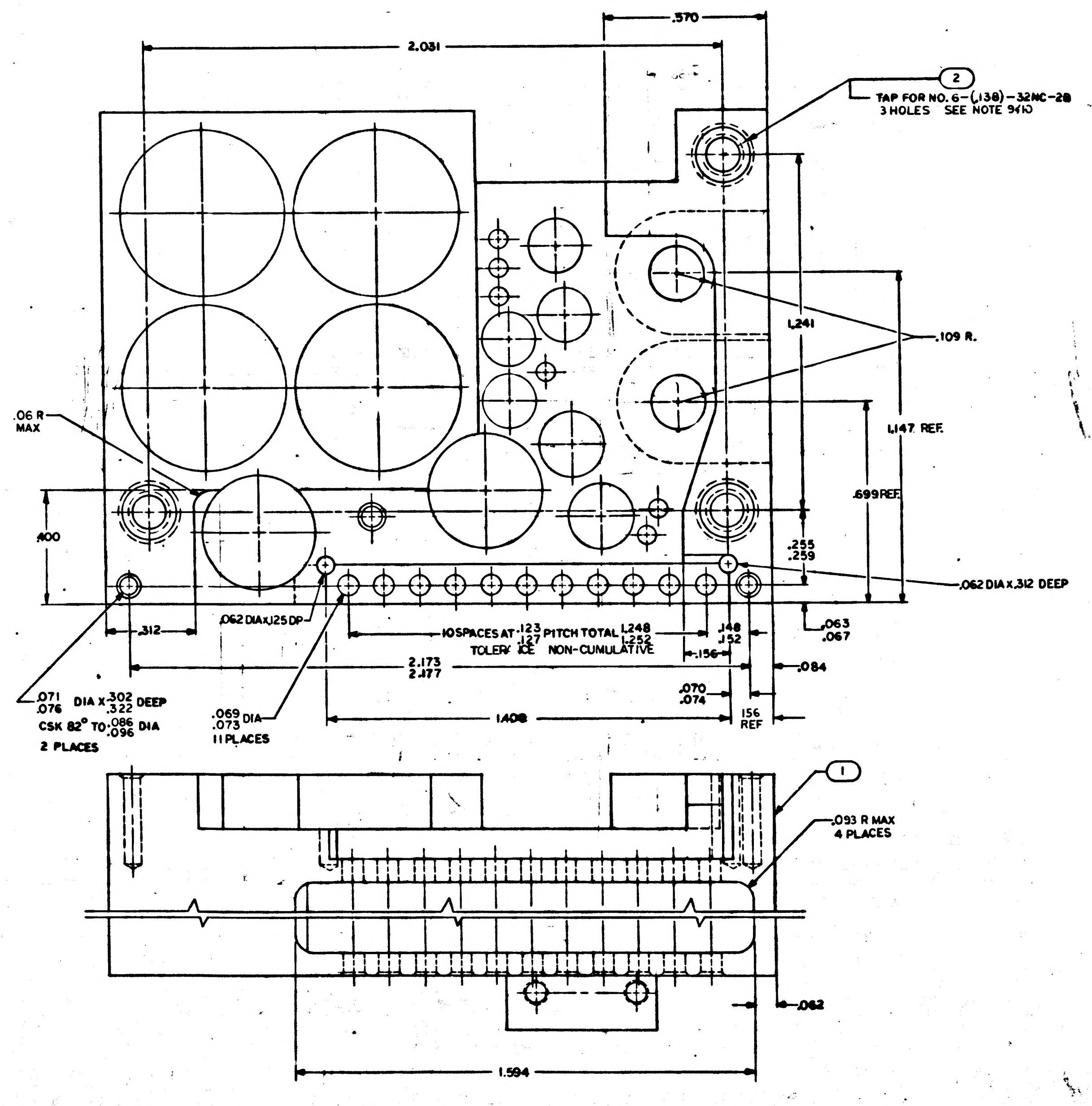


.918
.015 R MAX.

VIEW A-A



.0005
32
15°
.140 REF
.075
.080
.292
.078 .094
.005 R MAX.



.570
2.031
2
TAP FOR NO. 6-(.138)-32NC-2B 3 HOLES SEE NOTE 9(1)
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R MAX
.400
.255 .259
.062 DIA x .312 DEEP
.312
.062 DIA x .125 DP
10 SPACES AT .123 .127 PITCH TOTAL 1.248 1.252 TOLERANCE NON-CUMULATIVE
.148 .152
.063 .067
.156
.084
2.173 2.177
.070 .074
.071 .076 DIA x .302 .322 DEEP CSK 82° TO .086 .096 DIA 2 PLACES
.069 .073 DIA 11 PLACES
1.408
.156 REF
1
.093 R MAX 4 PLACES
.062
1.594

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS – 1222-06E	INSERT SCREW LOCKING	2
1	1007020 - 1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007021	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 8

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN DATE 3/9/63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 3/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
PULSE TORQUE
GYRO CALIBRATION

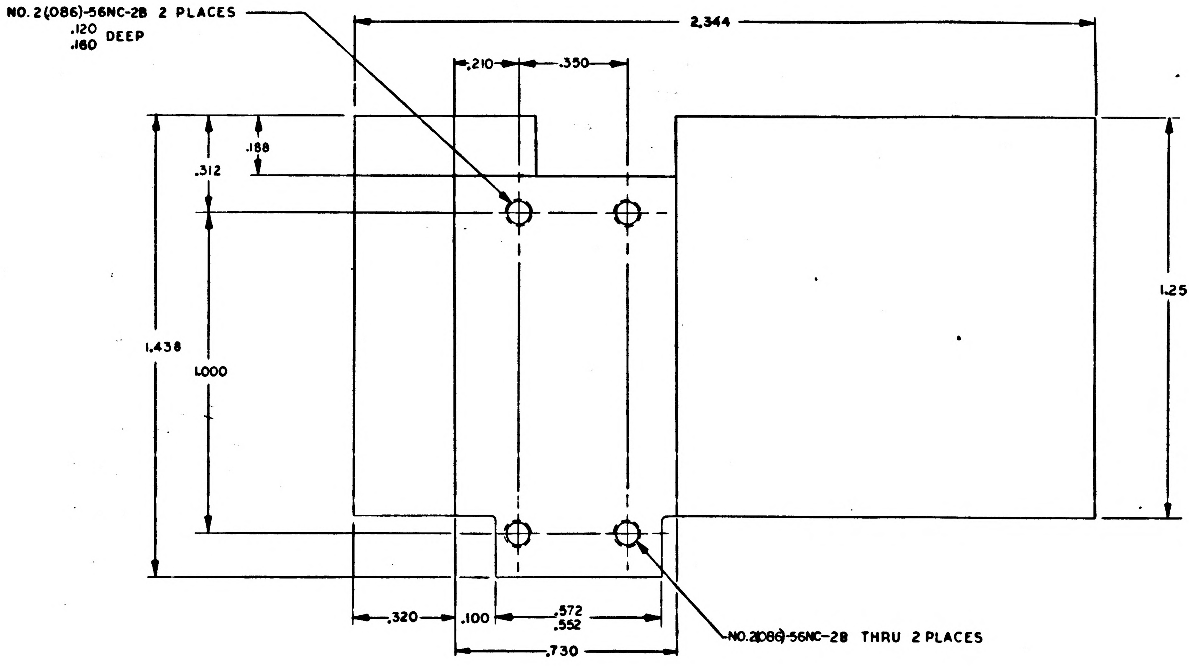
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007020
SCALE 5/1
WT
SHEET 1 OF 1

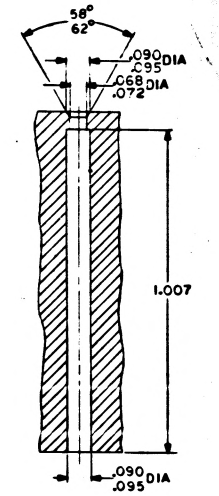
MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

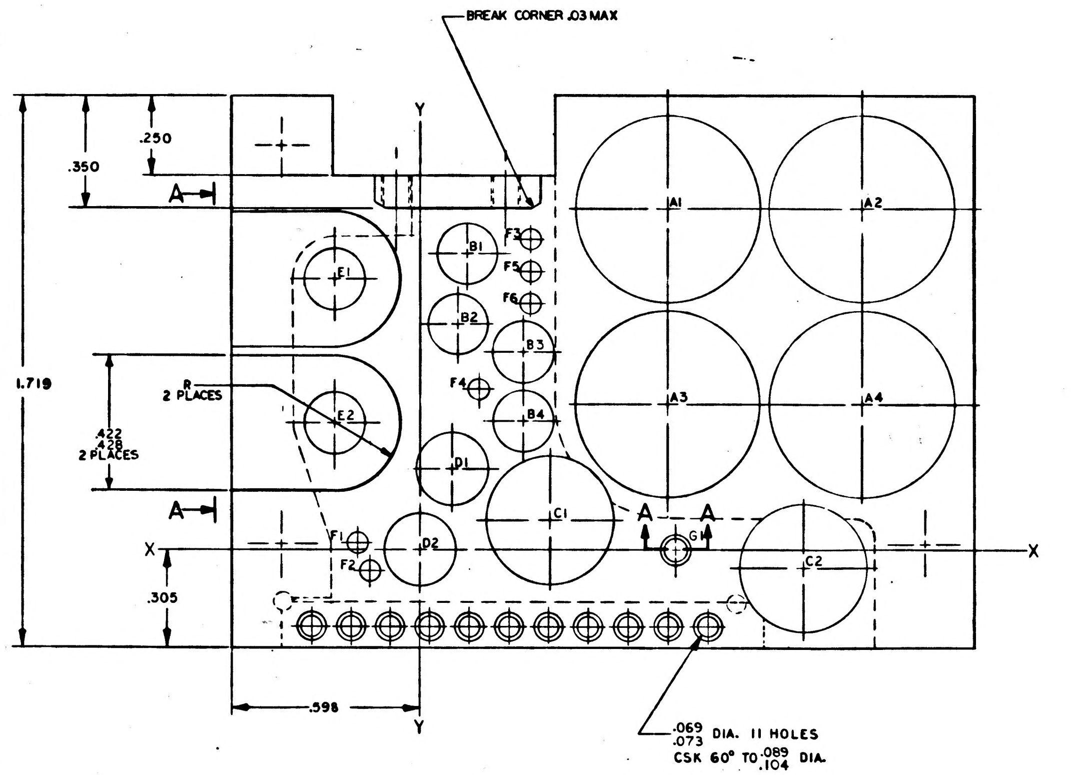
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

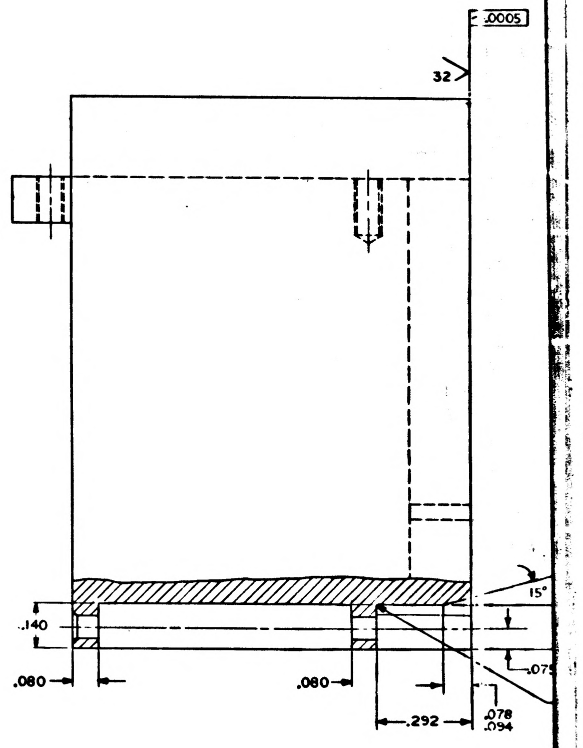
HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.780	1.060	.006	.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920	.006	.181 .185	4
B2	.120	.700			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090	.006	.392 .399	2
C2	1.205	−.055			
D1	.100	.250	.006	.227 .231	2
D2	0.000	0.000			
E1	−.272	.842	.006	.188	2
E2	−.272	.394			
F1	−.200	.020	.006	.058 .062	9
F2	−.160	−.065			
F3	.350	.965			
F4	.185	.500			
F5	.350	.865			
F6	.350	.765			
G1	.805	0.000	.006	SEE SECTION A-A	1


NO. 2(086)-56NC-2B 2 PLACES
.120
.160 DEEP
2.344
.210
.350
.188
.312
1.438
1.000
1.250
.320
.100
.572
.552
.730
NO.2(086)-56NC-2B THRU 2 PLACES


58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


BREAK CORNER .03 MAX
Y
.250
.350
A
1.719
R
2 PLACES
.422
.428
2 PLACES
A
X
.305
.598
Y
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
D1
D2
E1
E2
F1
F2
F3
F4
F5
F6
G1
A
A
X
.069
.073 DIA. 11 HOLES
CSK 60° TO .089
.104 DIA.


.0005
32
15°
.140
.080
.080
.075
.292
.078
.094

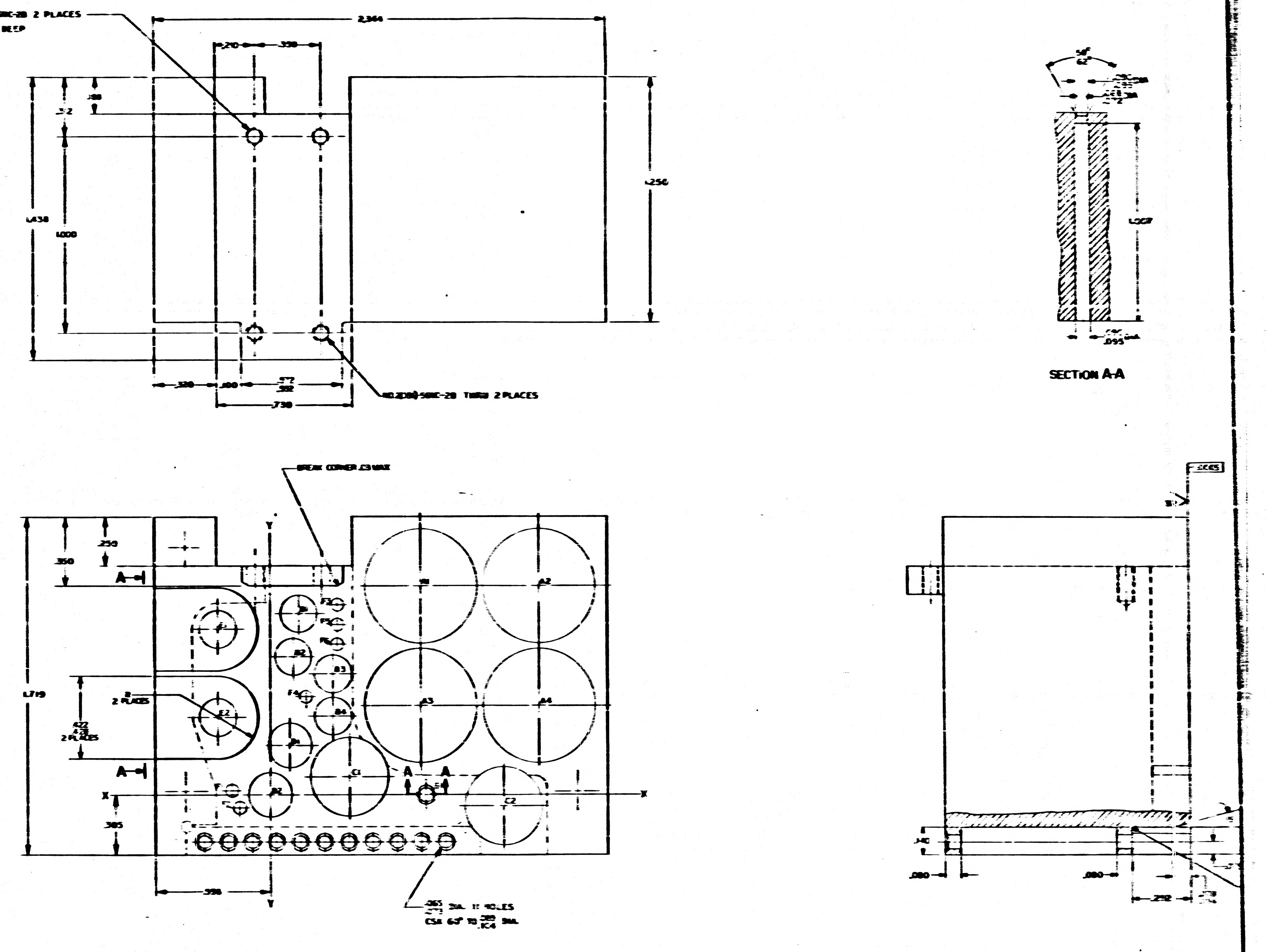
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED $\sqrt{125}$ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO2 PER MS 33646 EXCEPT DIM. F TO BE .594. BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV

INCHES
0 2
PHOTOGRAPHIC SCALE ONLY

F1 1007020

HOLE IDENT	X BASIC DIM	Y BASIC DIM	⌖ DIA	HOLE DIA	QTY
A1	.780	1.060	.006	.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920	.006	.381 .385	4
B2	.320	.750			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090	.006	.392 .399	2
C2	.205	-.055			
D1	.100	.250	.006	.227 .231	2
D2	0.000	0.000			
E1	-.272	.842	.006	.416	2
E2	-.272	.394			
F1	-.220	.020	.006	.058 .062	9
F2	-.160	-.065			
F3	.350	.965			
F4	.355	.500			
F5	.350	.865			
F6	.350	.765			
G1	.825	0.000	.006	SEE SECTION A-A	1

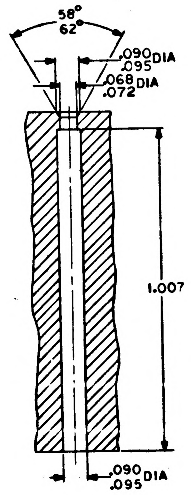

NO.2(.086)-56UNC-2B 2 PLACES
.120
.180 DEEP
2.344
.210
.350
.312
.188
1.438
1.000
1.250
.320
.180
.572
.592
.730
NO.2(.086)-56UNC-2B THRU 2 PLACES
58°
62°
.130 DIA
.125
1.007
.093 DIA
SECTION A-A
BREAK CORNER .03 MAX
.250
.350
A
1.719
2 PLACES
.422
.428
2 PLACES
X
Y
.385
.550
.063
.073 DIA. 11 HOLES
CSK 63° TO .095 .104 DIA
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
E1
E2
F1
F2
F3
F4
.080
.250

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31 A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. TRUE POSITION AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .002
6. UNLESS OTHERWISE SPECIFIED 125/ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO. 2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO. 2 PER MS 33646 EXCEPT DIM F TO BE .594 BREAK OFF DRIVING TANG
11. FINISH PLUG [illegible] HOLES AND ANODIZE PER MIL-M-3171A TYPE [illegible]

10070120

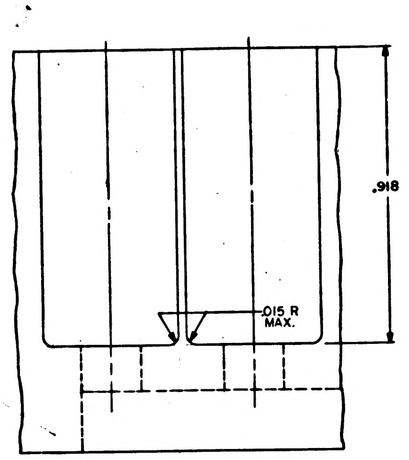
1007020 D

SYM	DESCRIPTION
A	REVISED PER TDRR [illegible]
B	REVISED PER TDRR 0117
C	REVISED PER TDRR
D	REVISED PER TDRR [illegible]



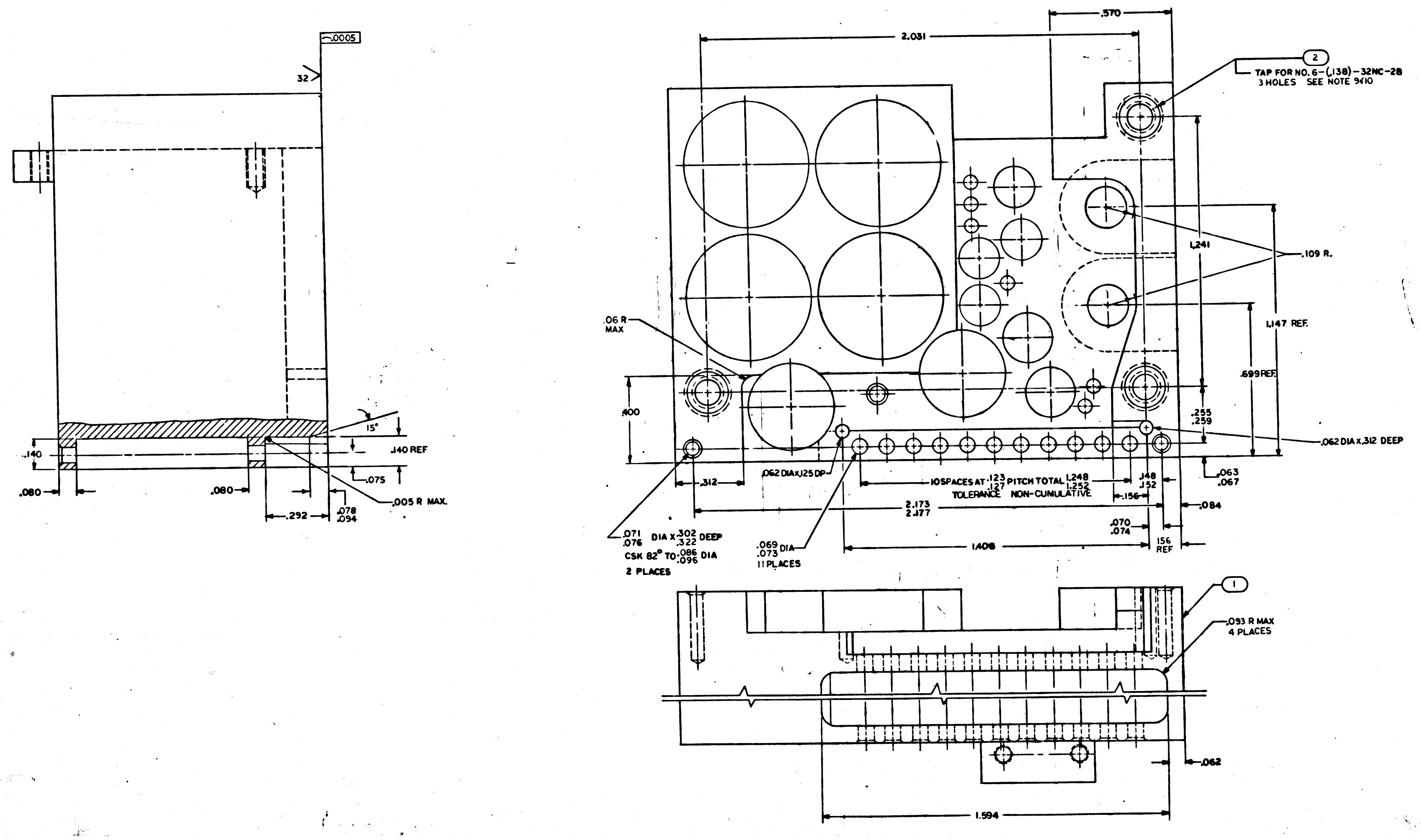
58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A



.918
.015 R
MAX.

VIEW A-A



.0005
32
15°
.140
.140 REF
.075
.080
.080
.292
.078
.094
.005 R MAX.
.570
2.031
2
TAP FOR NO. 6-(.138)-32NC-2B
3 HOLES SEE NOTE 9&10
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R
MAX
.400
.255
.259
.062 DIA X .312 DEEP
.063
.067
.062 DIA X .125 DP
.312
10 SPACES AT .123 .127 PITCH TOTAL 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.156
2.173
2.177
.084
.070
.074
1.408
156
REF
.071
.076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 PLACES
.069
.073 DIA
11 PLACES
1
.093 R MAX
4 PLACES
.062
1.594

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE DESCRIPTION
3	NAS - 222-06E	INSERT SCREW LOC
	1007020 - 1	HEATSINK

LIST OF MATERIALS

NEXT ASSY	USED ON
1007021	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN [illegible] DATE 2/7/63
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL
NASA APPROVAL [illegible] 3/4/63
MIT APPROVAL [illegible]

MANNED SPACECR
HOUSTON, TE

HEATSI
PULSE TO
GYRO CALI

CODE IDENT NO.
SIZE J
SCALE 5/1
WT

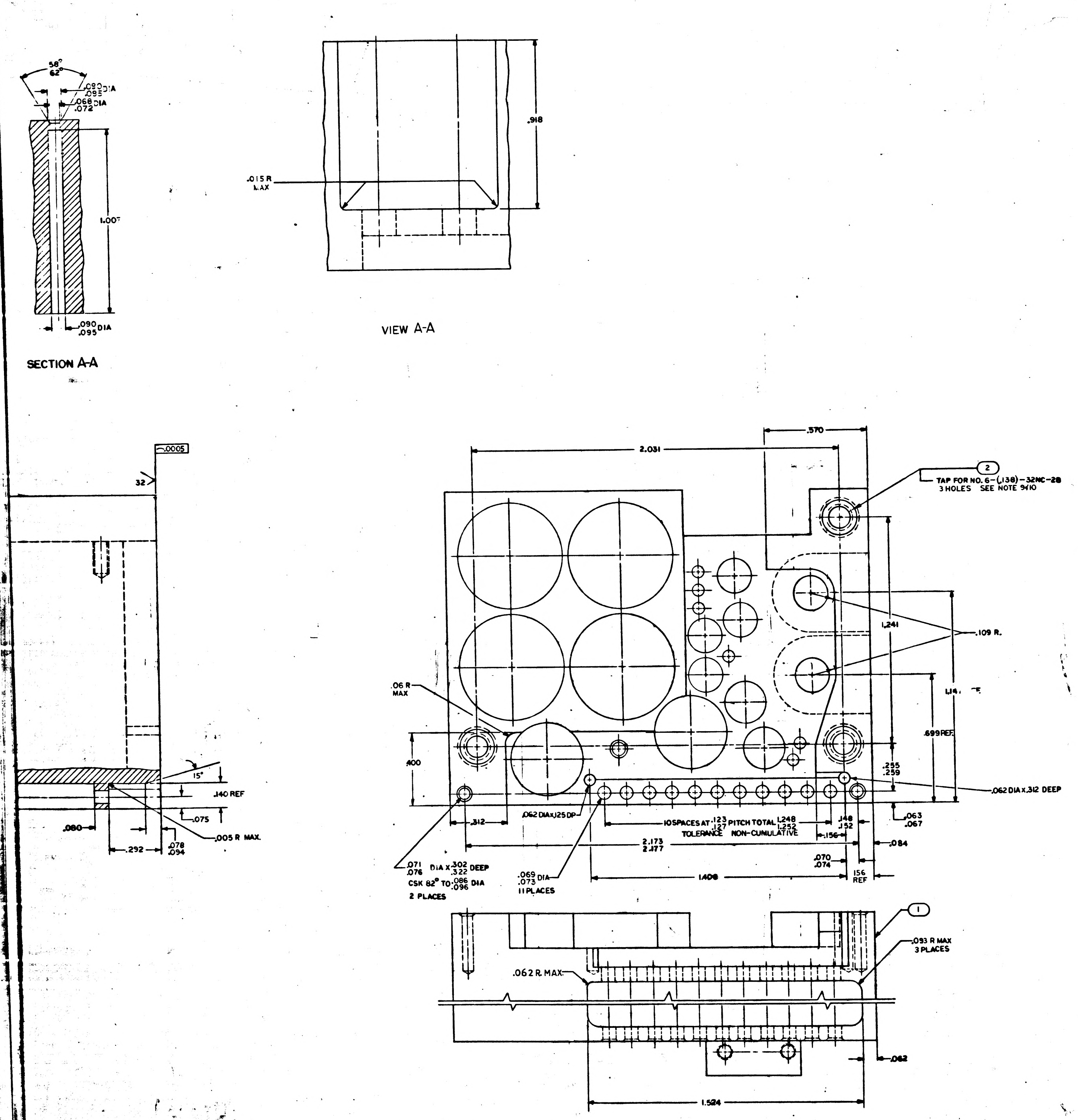
F-2

1007020

1007020 E

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	1/17/63	J.T. WK
B	REVISED PER TDRR 01176	4-30-63	D.T. WK
C	REVISED PER TDRR 01357	5-22-63	RVV WK
D	REVISED PER TDRR 01864	7-2-63	JJM WK
E	REVISED PER TDRR 01965	7-20-63	RPK JJM WK

REVISIONS TDRR 00693


58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA
SECTION A-A
.918
.015 R
MAX
VIEW A-A
.0005
32
15°
.140 REF
.075
.080
.292
.078
.094
.005 R MAX.
.570
2.031
2
TAP FOR NO. 6-(.138)-32NC-2B
3 HOLES SEE NOTE 9&10
1.241
.109 R.
1.14
.699 REF.
.06 R
MAX
.400
.255
.259
.062 DIA X .312 DEEP
.312
.062 DIA X .125 DP
10 SPACES AT .123 .127 PITCH TOTAL 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.156
.063
.067
2.173
2.177
.084
.070
.074
.071
.076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 PLACES
.069
.073 DIA
11 PLACES
1.408
156
REF
1
.093 R MAX
3 PLACES
.062 R MAX
.062
1.524

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS — 1222-06E	INSERT SCREW LOCKING	2
1	1007020 - 1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007021	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 2/9/63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 3/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
PULSE TORQUE
GYRO CALIBRATION

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007020
SCALE 5/1
WT
SHEET 1 OF 1

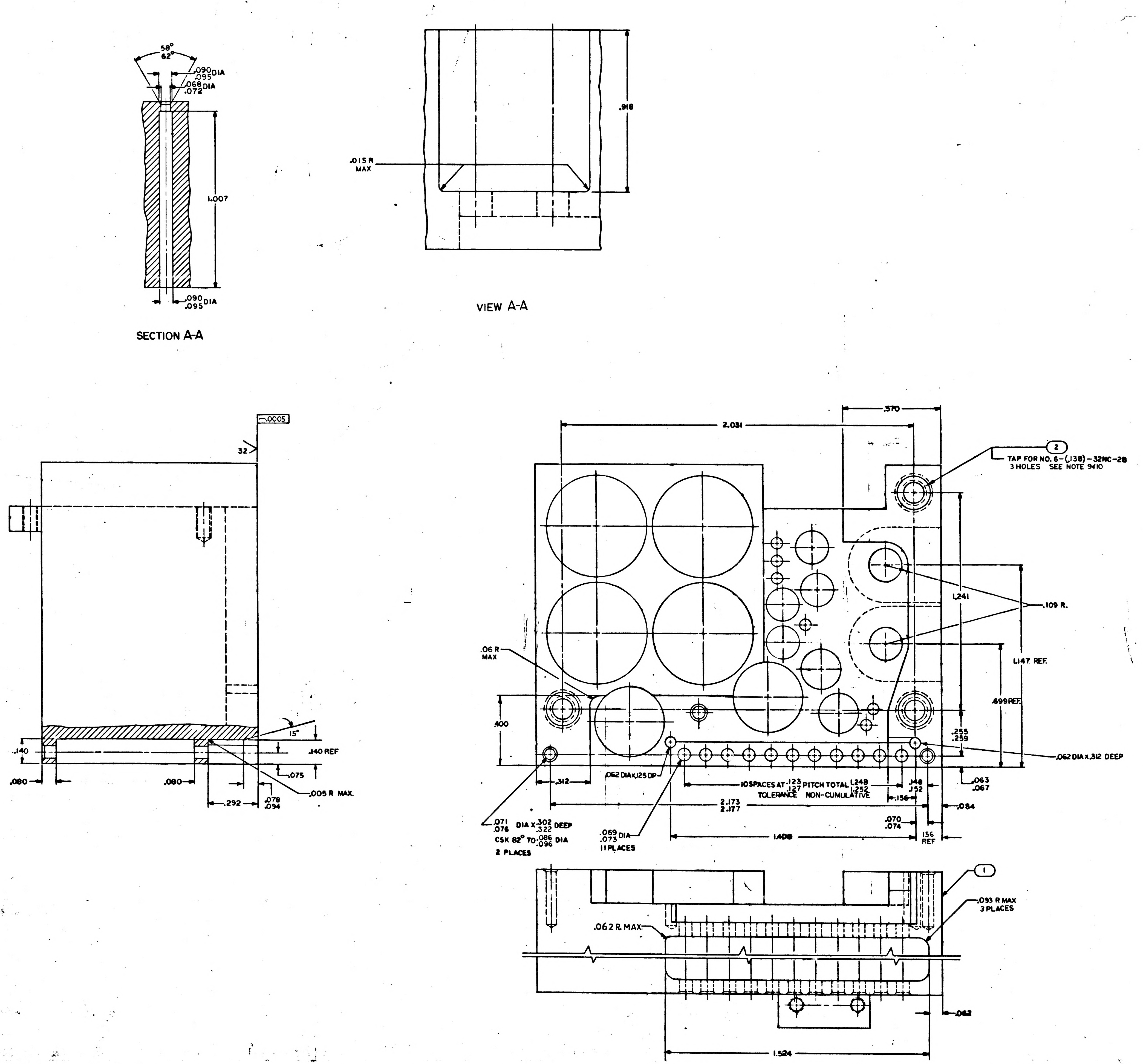
MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

F3 1007020

E	1007020

A	REVISED
B	REVISED
C	REVISED
D	REVISED
E	REVISED


58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA
SECTION A-A
.918
.015 R
MAX
VIEW A-A
.0005
32
.140
.080
.080
15°
.140 REF
.075
.292
.078
.094
.005 R MAX.
2.031
.570
2
TAP FOR NO. 6-(.138)-32NC-2B
3 HOLES SEE NOTE 9&10
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R
MAX
.400
.255
.259
.062 DIA X .312 DEEP
.312
.062 DIA X .125 DP
10 SPACES AT .123 .127 PITCH TOTAL 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.156
.063
.067
2.173
2.177
.084
.070
.074
1.408
156
REF
.071
.076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 PLACES
.069
.073 DIA
11 PLACES
1
.093 R MAX
3 PLACES
.062 R MAX
.062
1.524

3	NAS - 22 -06E	
1	1007020 - 1	
QTY REQD	PART OR IDENTIFYING NO.	

1007021

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN DATE 2/7/63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 3/63
MIT APPROVAL

SCALE 5/1

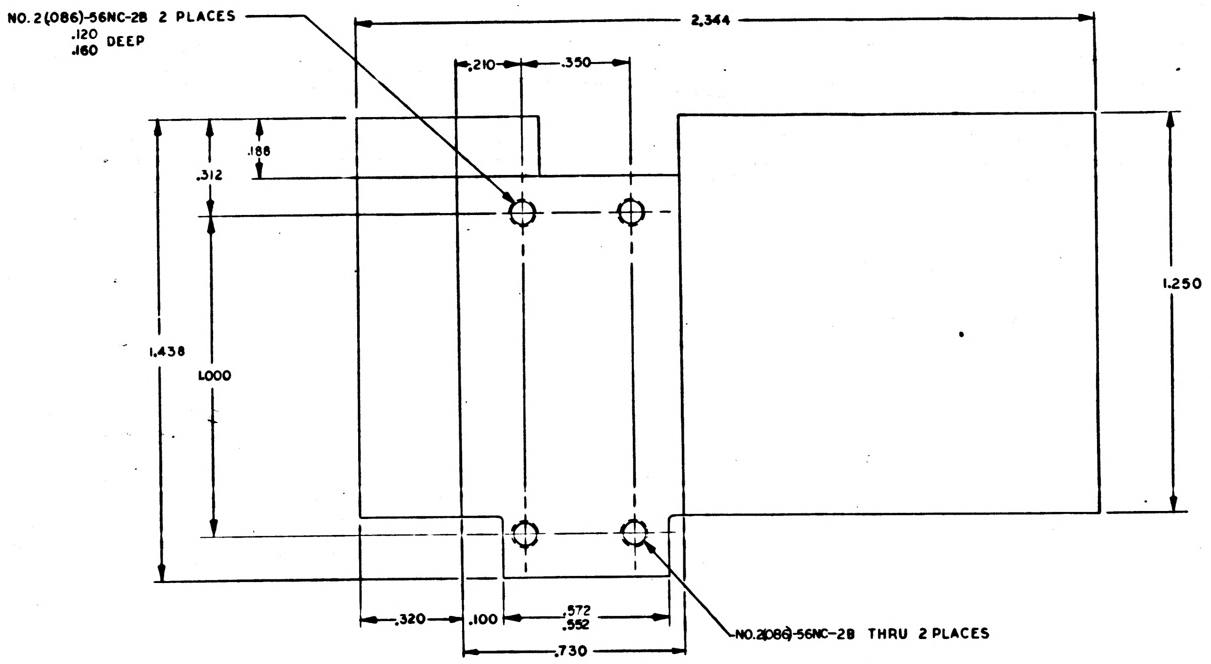
MASTER

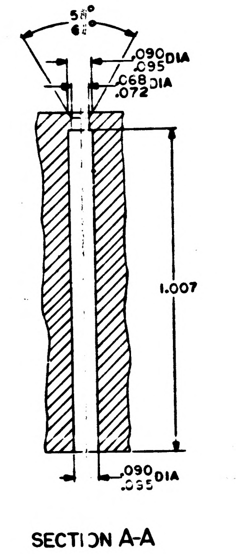
INCHES
PHOTOGRAPHIC SCALE ONLY

E2

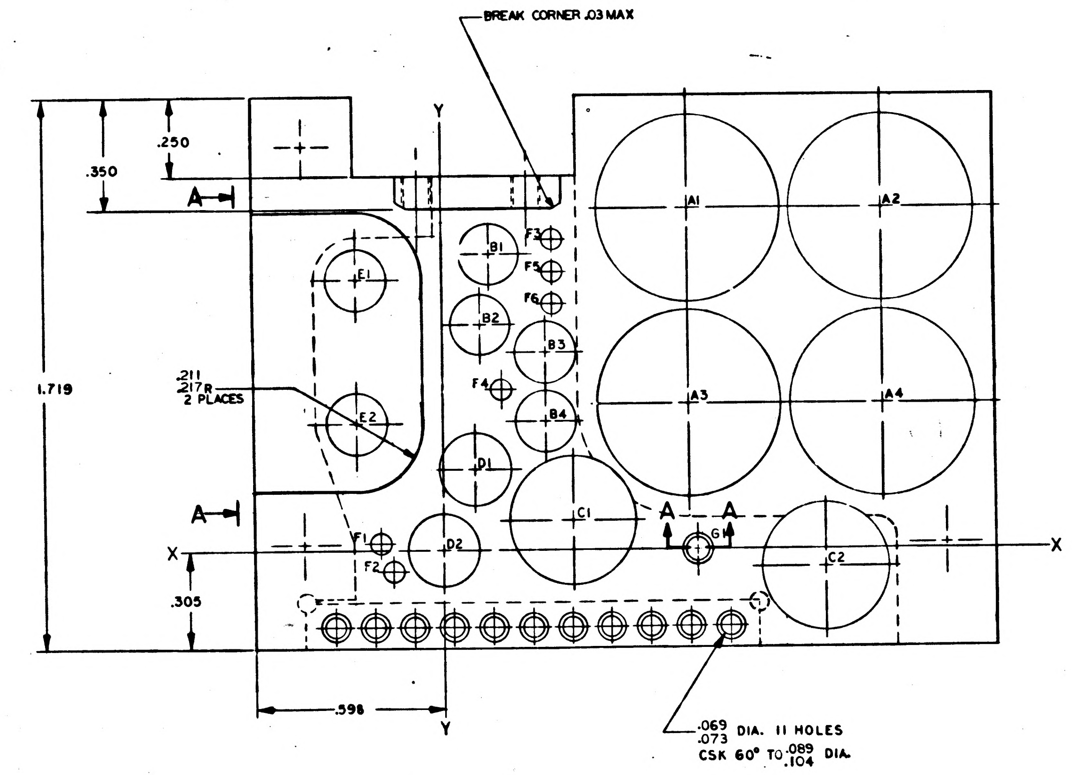
1007020

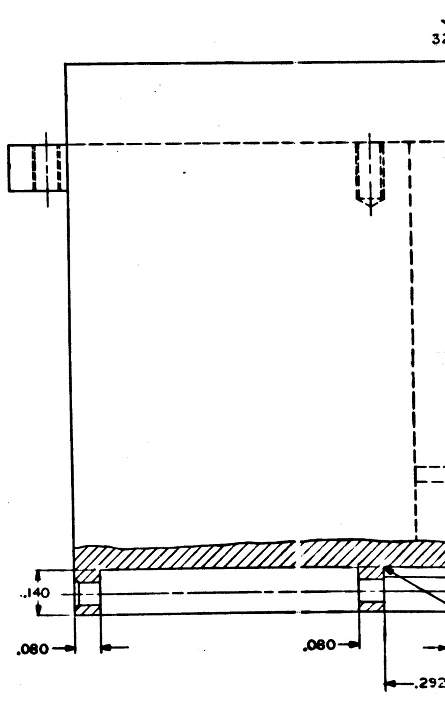
HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIA	HOLE DIA	QTY
[illegible]	.780	1.060	.006	.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920	.006	.181 .185	4
B2	.120	.700			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090	.006	.392 .399	2
C2	1.205	−.055			
D1	.100	.250	.006	.227 .231	2
D2	0.000	0.000			
E1	−.272	.842	.006	.188	2
E2	−.272	.394			
F1	−.200	.020	.006	.058 .062	9
F2	−.160	−.065			
F3	.350	.965			
F4	.185	.500			
F5	.350	.865			
F6	.350	.765			
G1	.805	0.000	.006	SEE SECTION A-A	1


NO. 2 (086)-56NC-2B 2 PLACES
.120
.160 DEEP
2.344
.210
.350
.188
.312
1.438
1.000
1.250
.320
.100
.572
.552
.730
NO.2(086)-56NC-2B THRU 2 PLACES


58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


BREAK CORNER .03 MAX
Y
.250
.350
A
A1
A2
A3
A4
B1
B2
B3
B4
F3
F5
F6
F4
E1
E2
D1
D2
C1
C2
F1
F2
G1
A
A
.211
.217 R
2 PLACES
1.719
X
X
.305
.598
Y
.069
.073 DIA. 11 HOLES
CSK 60° TO .089
.104 DIA.


32
.140
.080
.080
.292

NOTES

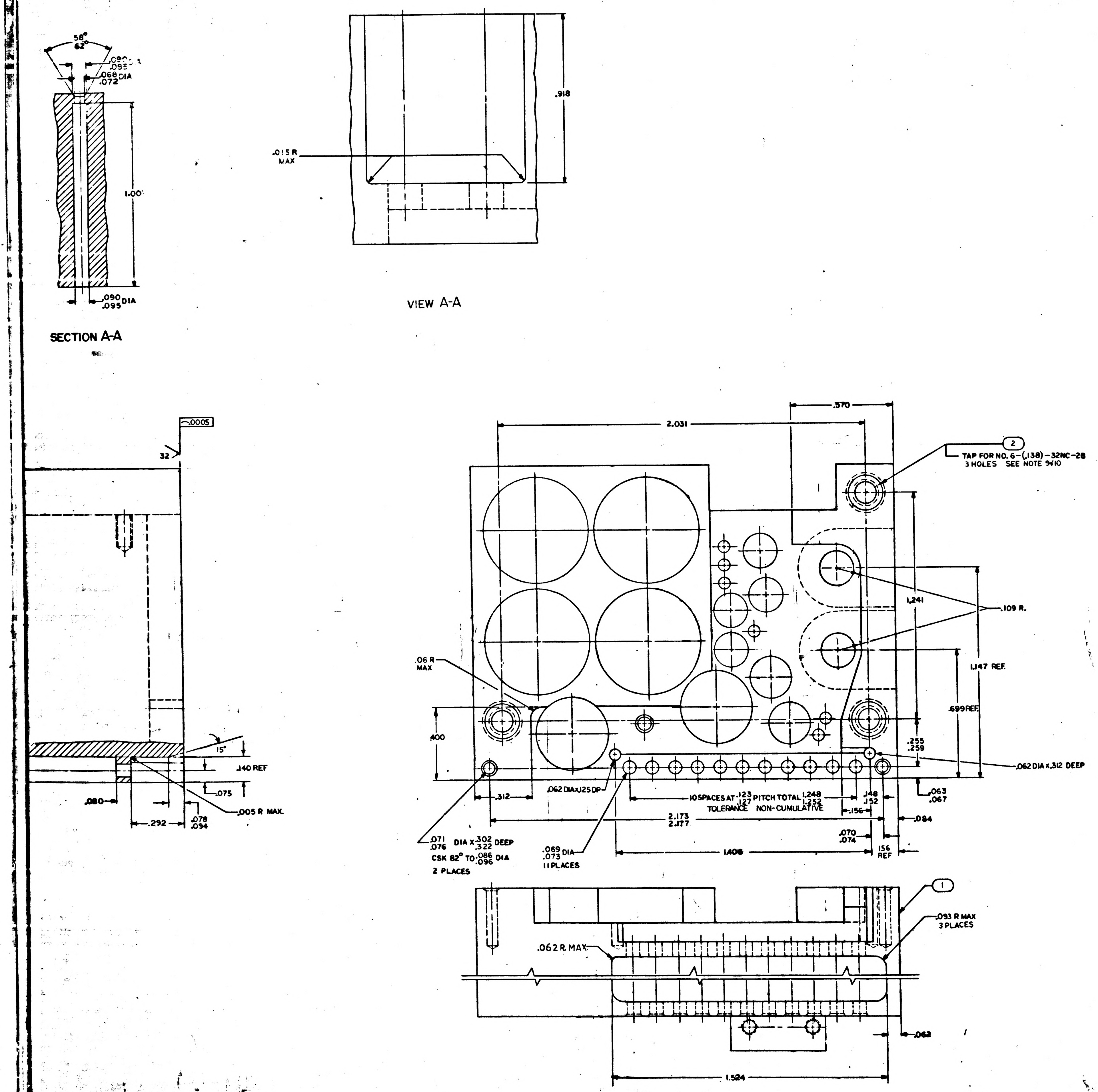
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO2 PER MS 33646 EXCEPT DIM. F TO BE .594. BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV

INCHES
PHOTOGRAPHIC SCALE ONLY

F1 1007020

1007020 E

SYM	REVISIONS TDRR 00493 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	[illegible]	D.T. WK
B	REVISED PER TDRR 01176	4-30-63	D.T. WK
C	REVISED PER TDRR 01357	5-22-63	AVV WK
D	REVISED PER TDRR 01864	7-2-63	JJM WK
E	REVISED PER TDRR 01965	7-29-63	JJM WK
F	REVISED PER TDRR 03776	10-8-63	JJM WK



56°
62°
.090
.095 DIA
.068
.072 DIA
1.00
.090
.095 DIA
SECTION A-A
.918
.015 R MAX
VIEW A-A
.0005
32
15°
.140 REF
.075
.080
.005 R MAX.
.292
.078
.094
.570
2.031
2
TAP FOR NO. 6-(.138)-32NC-2B 3 HOLES SEE NOTE 9&10
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R MAX
.400
.255
.259
.062 DIA x .312 DEEP
.312
.062 DIA x .125 DP
10 SPACES AT .123 .127 PITCH TOTAL 1.248 1.252
TOLERANCE NON-CUMULATIVE
.156
.148
.152
.063
.067
2.173
2.177
.084
.070
.074
.071
.076 DIA x .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 PLACES
.069
.073 DIA
11 PLACES
1.408
.156 REF
1
.093 R MAX
3 PLACES
.062 R MAX
.062
1.524

MASTER

3	NAS — 1222-06E	INSERT SCREW LOCKING	2
1	1007020 - 1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007021	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 11

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN W.T. Toy DATE 2/7/63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 3/6/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
PULSE TORQUE
GYRO CALIBRATION

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007020
SCALE 5/1 WT SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

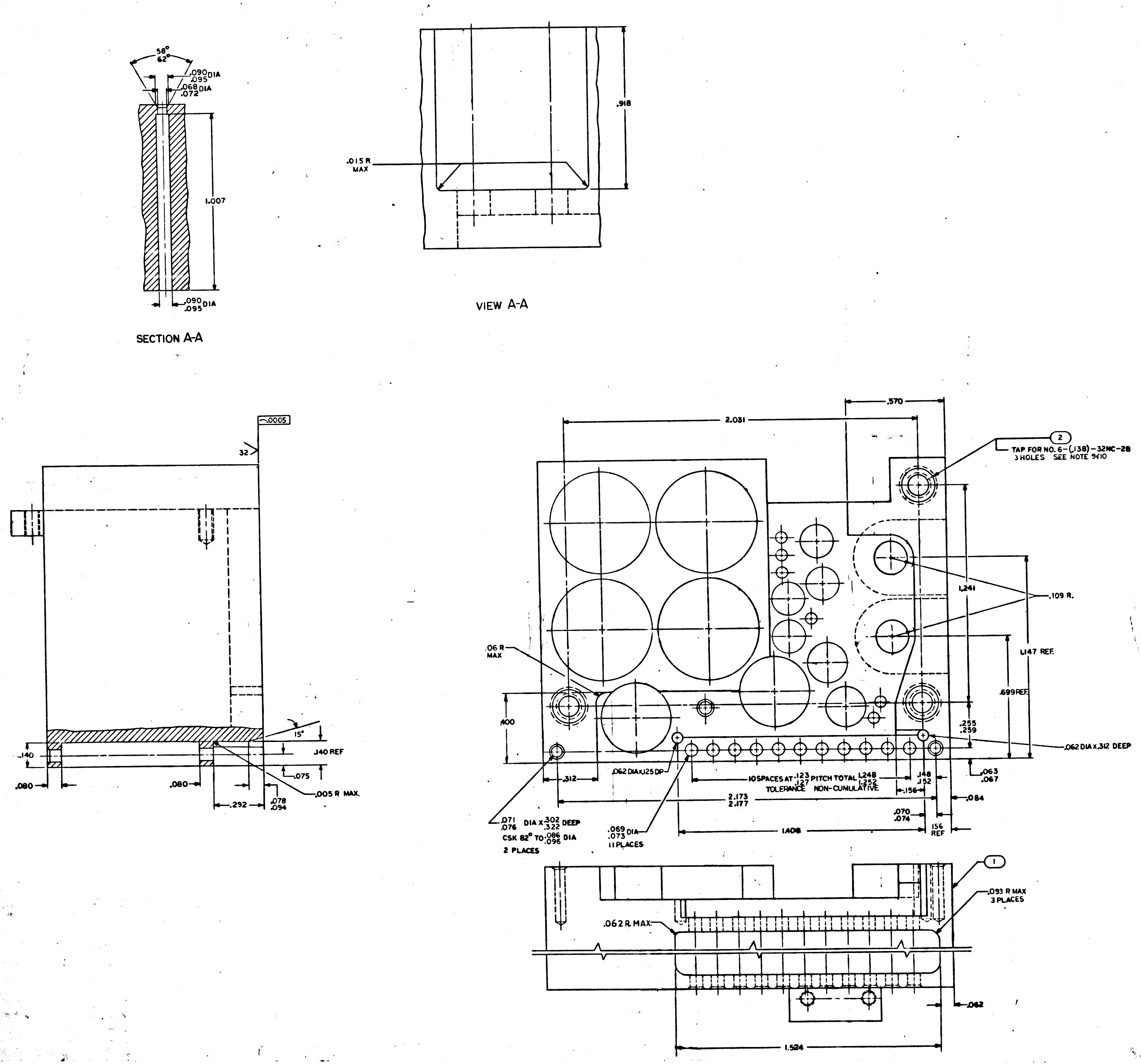
F3

1007020

1007020 F

1007020 E

A	REVISED PER TDRR
B	REVISED PER TDRR
C	REVISED PER TDRR
D	REVISED PER TDRR
E	REVISED PER TDRR
F	REVISED PER TDRR



58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA
SECTION A-A
.015 R MAX
.918
VIEW A-A
.0005
32
.140
.080
.080
.140 REF
15°
.075
.292
.078
.094
.005 R MAX.
2.031
.570
2
TAP FOR NO. 6-(.138)-32NC-2B
3 HOLES SEE NOTE 9/10
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R MAX
.400
.255
.259
.062 DIA X .312 DEEP
.312
.062 DIA X .125 DP
10 SPACES AT .123 .127 PITCH TOTAL 1.248 1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.156
.063
.067
2.173
2.177
.084
.070
.074
1.408
.156 REF
.071 .076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096 DIA
2 PLACES
.069 .073 DIA
11 PLACES
1
.093 R MAX
3 PLACES
.062 R MAX
.062
1.524

MASTER

3	NAS – 222-06E	INSERT SCREW
1	1007020 -1	HEATS
QTY REQD	PART OR IDENTIFYING NO.	NOMENCL

LIST OF MATERIALS

1007021	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 8

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN W. F. Tong DATE 2/1/63
CHECKED 1 MAR 63
APPROVAL 1 MAR 63
APPROVAL

NASA APPROVAL 3/63
MIT APPROVAL

MANNED SPAC

HEAT
PULSE
GYRO CA

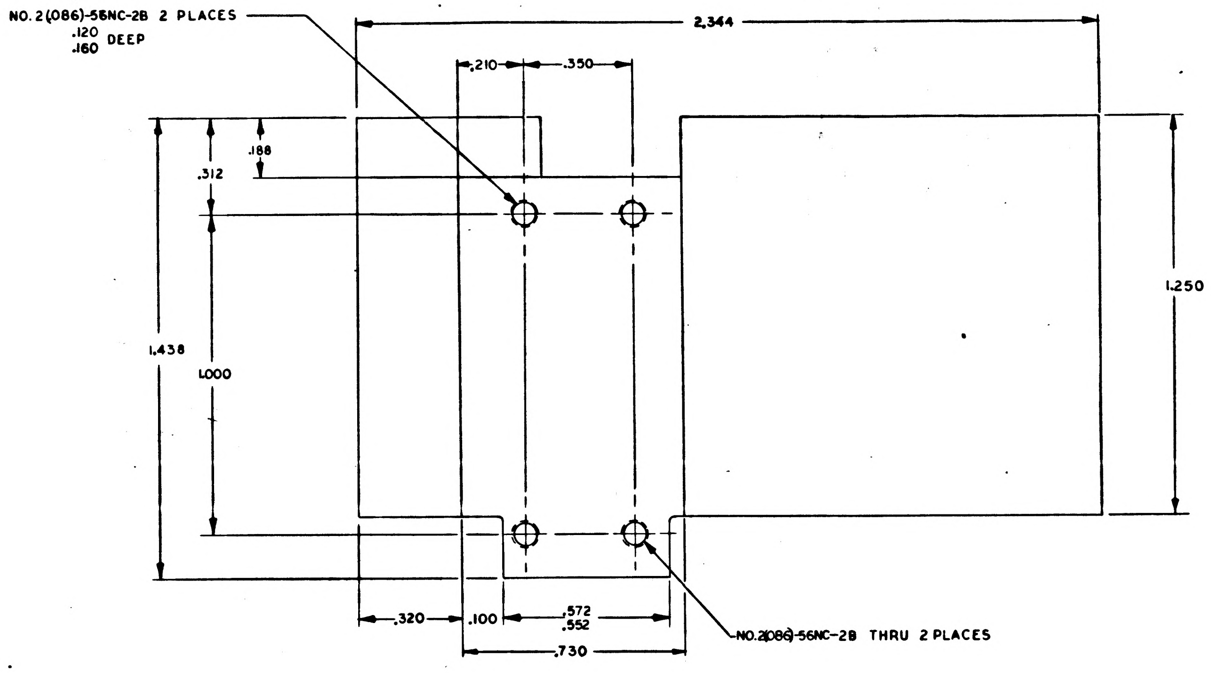
CODE IDENT NO. SIZE J
SCALE 5/1

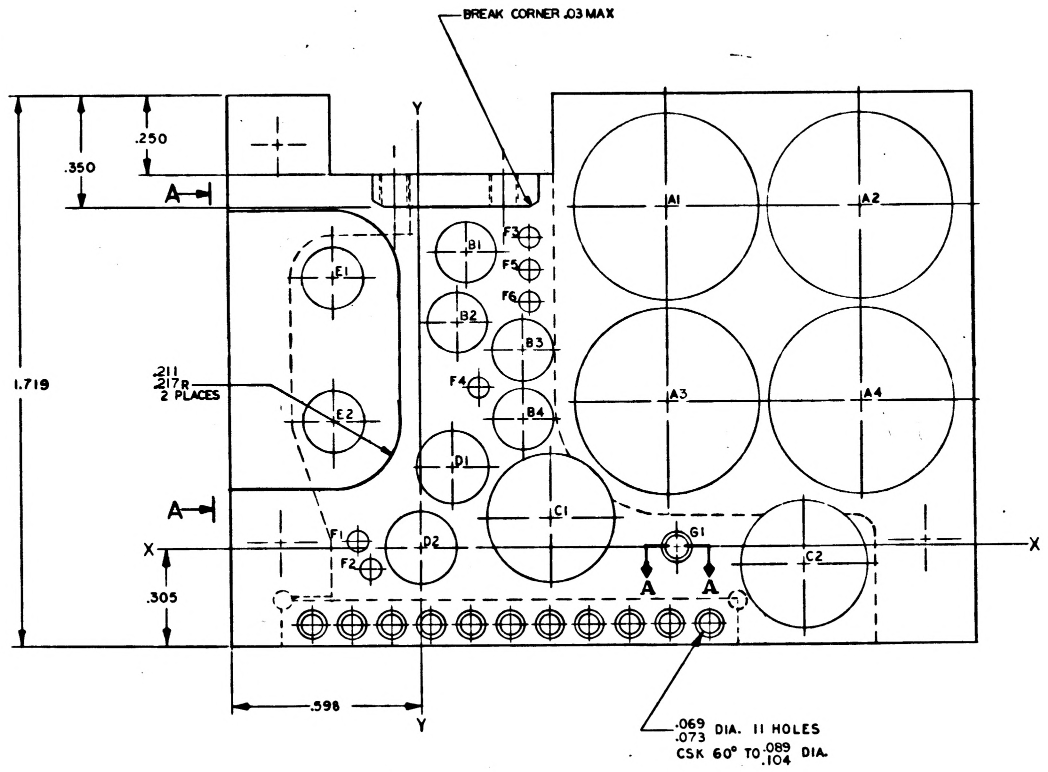
INCHES
PHOTOGRAPHIC SCALE ONLY

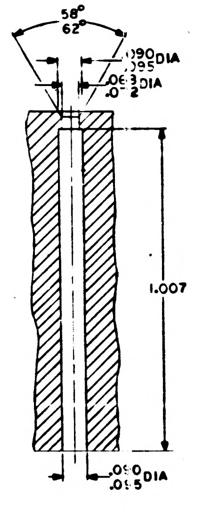
E-2

1007020

HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.780	1.060	.006	.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920	.006	.181 .185	4
B2	.120	.700			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090	.006	.392 .399	2
C2	1.205	−.055			
D1	.100	.250	.006	.227 .231	2
D2	0.000	0.000			
E1	−.272	.842	.006	.188	2
E2	−.272	.394			
F1	−.200	.020	.006	.058 .062	9
F2	−.160	−.065			
F3	.350	.965			
F4	.185	.500			
F5	.350	.865			
F6	.350	.765			
G1	.805	0.000	.006	SEE SECTION A-A	1


NO. 2(.086)-56NC-2B 2 PLACES
.120
.160 DEEP
2.344
.210
.350
.188
.312
1.438
1.000
1.250
.320
.100
.572
.552
.730
NO.2(.086)-56NC-2B THRU 2 PLACES


BREAK CORNER .03 MAX
Y
.250
.350
A
1.719
.211
.217 R
2 PLACES
A
X
.305
.598
Y
X
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
D1
D2
E1
E2
F1
F2
F3
F4
F5
F6
G1
A
A
.069
.073 DIA. 11 HOLES
CSK 60° TO .089
.104 DIA.


58°
62°
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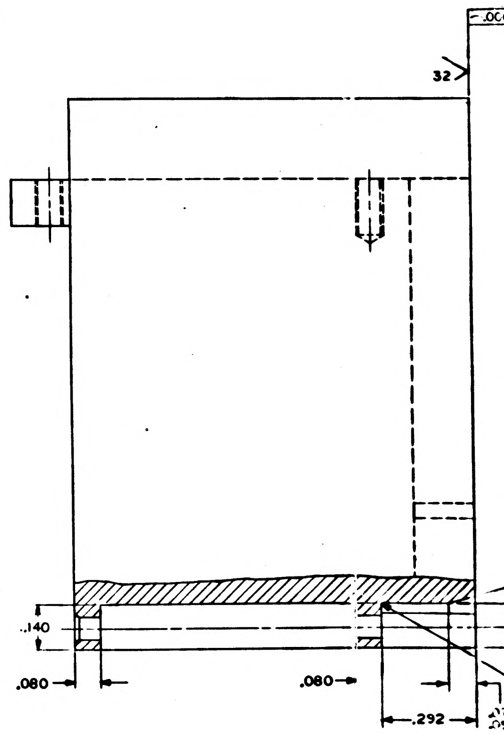
.095 DIA
.063
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


.00
32
.140
.080
.080
.292

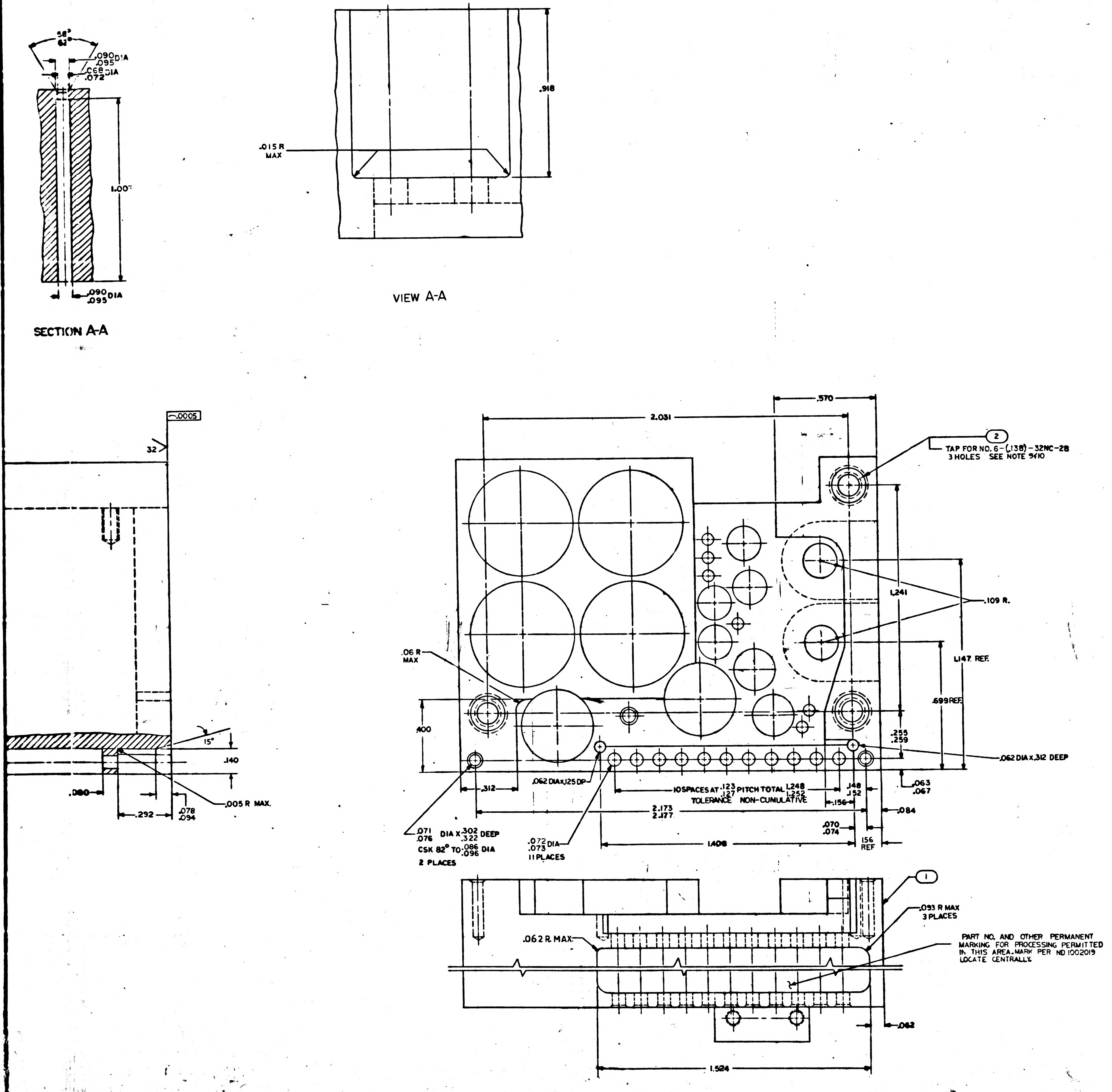
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO2 PER MS 33646 EXCEPT DIM. F TO BE .594 BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

	1007020	H	

REVISIONS TDRR 00693			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00273	4/2/63	J.T. WK
B	REVISED PER TDRR 01176	4-30-63	D.T. WK
C	REVISED PER TDRR 01357	5-22-63	AUV WK
D	REVISED PER TDRR 01864	7-2-63	JJM WK
E	REVISED PER TDRR 01965	7-8-63	CPK JJM WK
F	REVISED PER TDRR 03776.	10-8-63	JJP. WK
G	REVISED PER TDRR 03851		BK
H	REVISED PER TDRR 03853	10/3/63	BK WK


58°
62°
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.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA
SECTION A-A
.015 R
MAX
.918
VIEW A-A
.0005
32
15°
.140
.080
.292
.078
.094
.005 R MAX.
2.031
.570
2
TAP FOR NO. 6-(.138)-32NC-2B
3 HOLES SEE NOTE 9&10
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R
MAX
.400
.255
.259
.062 DIA X .312 DEEP
.063
.067
.312
.062 DIA X .125 DP
10 SPACES AT .123/.127 PITCH TOTAL 1.248/1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.156
.084
2.173
2.177
.070
.074
1.408
156
REF
.071
.076 DIA X .302/.322 DEEP
CSK 82° TO .086/.096 DIA
2 PLACES
.072
.073 DIA
11 PLACES
1
.093 R MAX
3 PLACES
.062 R. MAX.
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND 1002019 LOCATE CENTRALLY.
.062
1.524

3	MS21209 - C0620	INSERT SCREW LOCKING	2
1	1007020 - 1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007021	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE 2/7/63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 3/6/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
PULSE TORQUE
GYRO CALIBRATION

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	J	1007020
SCALE 5/1	WT	SHEET 1 OF 1

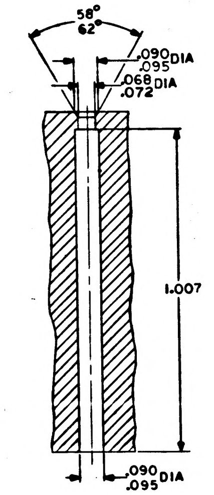
MASTER

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

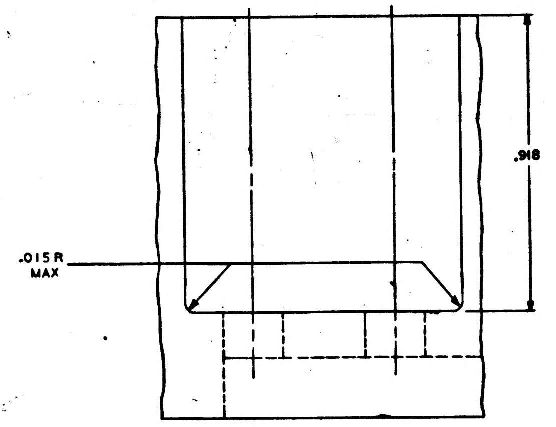
F3 1007020

H 1007020

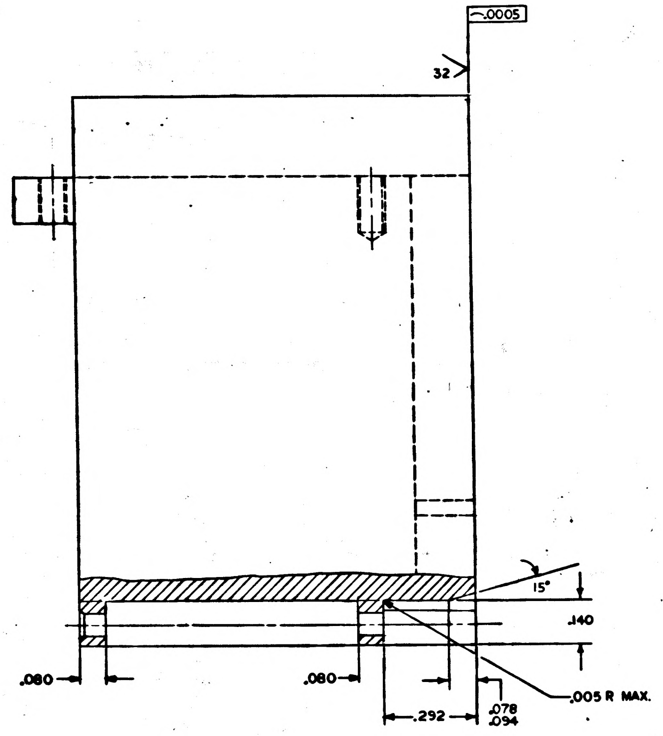
SYM	DESCRIPTION	
A	REVISED PER TDRR 00475	
B	REVISED PER TDRR 01176	
C	REVISED PER TDRR 01357	
D	REVISED PER TDRR 01464	
E	REVISED PER TDRR 01965	
F	REVISED PER TDRR 03776	
G	REVISED PER TDRR 0385	
–	REVISED PER TDRR 03853	

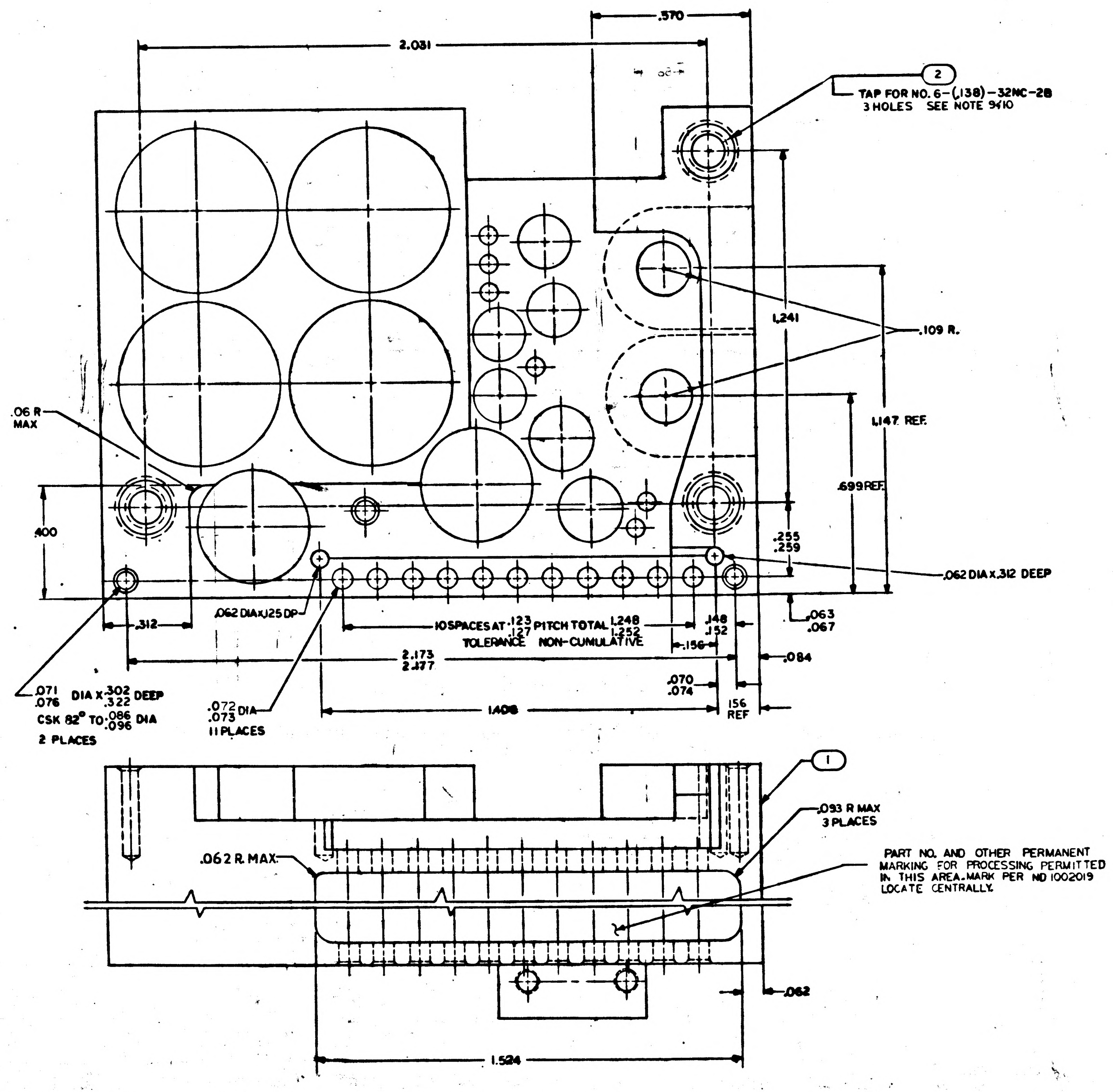

58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


.918
.015 R
MAX

VIEW A-A


.0005
32
15°
.140
.080
.080
.292
.078
.094
.005 R MAX.


.570
2.031
2
TAP FOR NO. 6-(.138)-32NC-2B
3 HOLES SEE NOTE 9&10
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R
MAX
.400
.255
.259
.062 DIA X .312 DEEP
.063
.067
.312
.062 DIA X .125 DP
10 SPACES AT .123
.127 PITCH TOTAL 1.248
1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.156
2.173
2.177
.084
.070
.074
1.408
.156
REF
.071
.076 DIA X .302
.322 DEEP
CSK 82° TO .086
.096 DIA
2 PLACES
.072
.073 DIA
11 PLACES
1
.093 R MAX
3 PLACES
.062 R. MAX.
PART NO. AND OTHER PERMANENT
MARKING FOR PROCESSING PERMITTED
IN THIS AREA. MARK PER ND 1002019
LOCATE CENTRALLY.
.062
1.524

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
3	MS2 209 – C0620	INSERT SCREW LOCKING
1	1007020 - 1	HEATSINK

LIST OF MATERIALS

NEXT ASSY	USED ON
1007021	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN W.F. Toy DATE 2/7/63
CHECKED
APPROVAL
APPROVAL

NASA APPROVAL 3/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
PULSE TORQUE
GYRO CALIBRATION

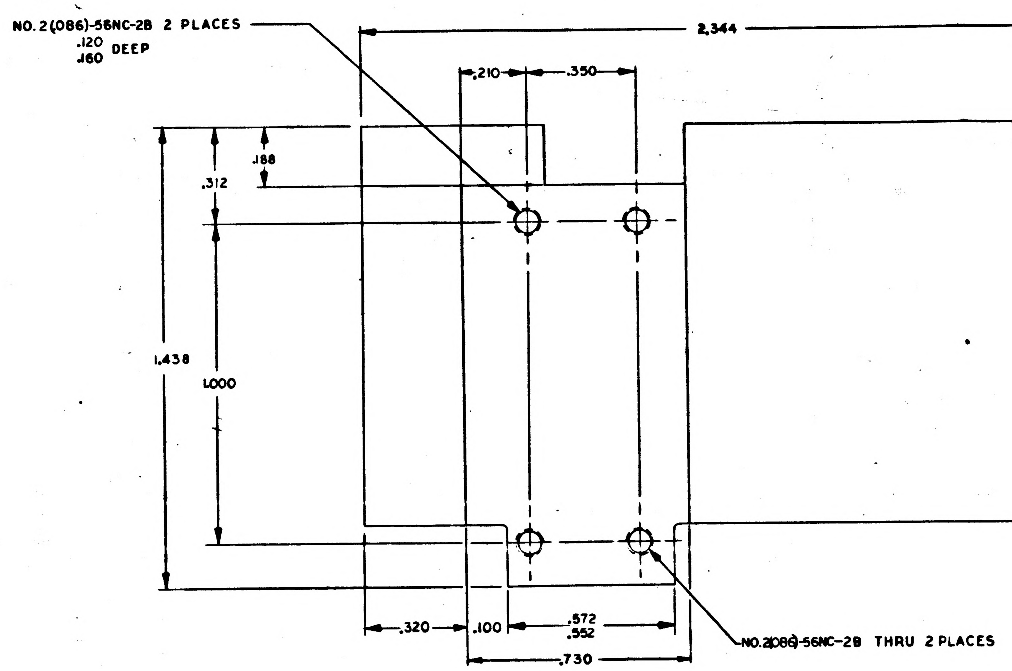
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007020
SCALE 5/1
WT
SHEET

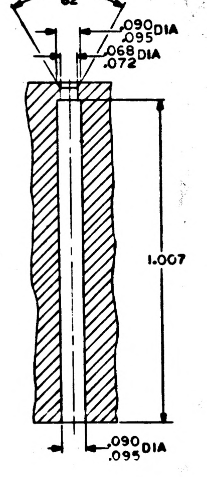
MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

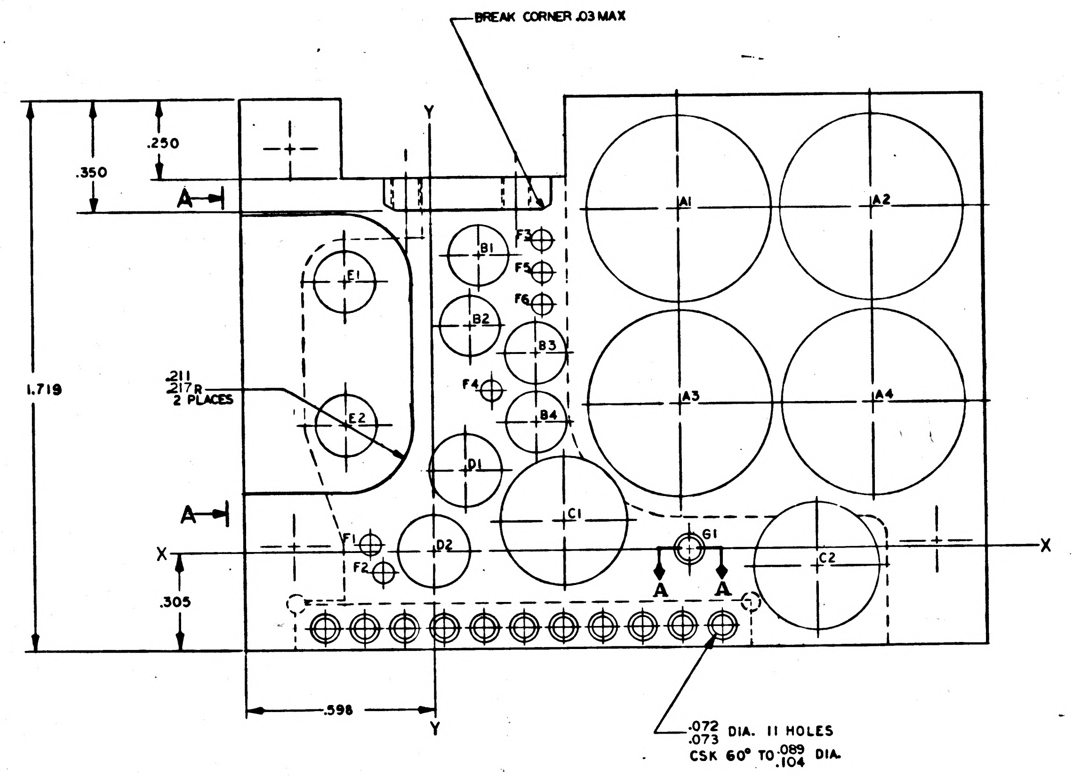
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

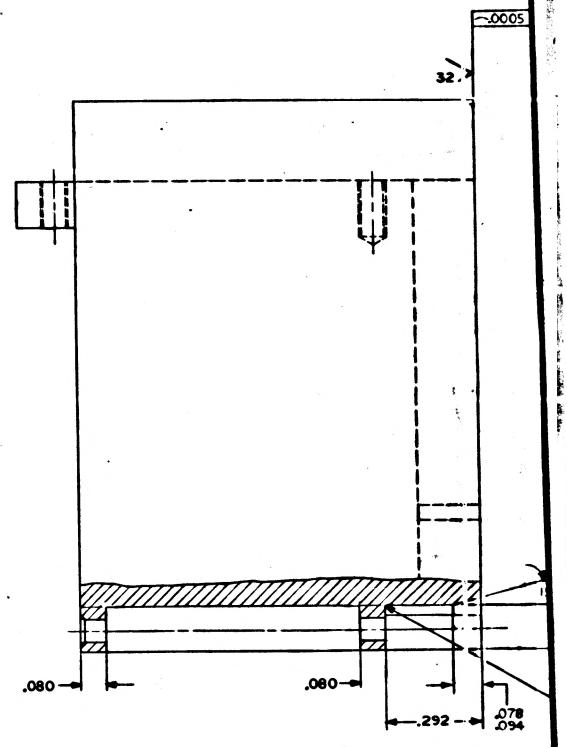
HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A	.780	1.060	.006	.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920	.006	.181 .185	4
B2	.120	.700			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090	.006	.392 .399	2
C2	1.205	−.055			
D1	.100	.250	.006	.227 .231	2
D2	0.000	0.000			
E1	−.272	.842	.006	.188	2
E2	−.272	.394			
F1	−.200	.020	.006	.058 .062	9
F2	−.160	−.065			
F3	.350	.965			
F4	.185	.500			
F5	.350	.865			
F6	.350	.765			
G1	.805	0.000	.006	SEE SECTION A-A	1


NO.2(086)-56NC-2B 2 PLACES
.120
.160 DEEP
2.344
.210
.350
.188
.312
1.438
1.000
1.250
.320
.100
.572
.552
.730
NO.2(086)-56NC-2B THRU 2 PLACES


58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


BREAK CORNER .03 MAX
.250
.350
A
Y
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
D1
D2
E1
E2
F1
F2
F3
F4
F5
F6
G1
1.719
.211
.217 R
2 PLACES
A
X
X
A
A
.305
.598
Y
.072
.073 DIA. 11 HOLES
CSK 60° TO .089
.104 DIA.

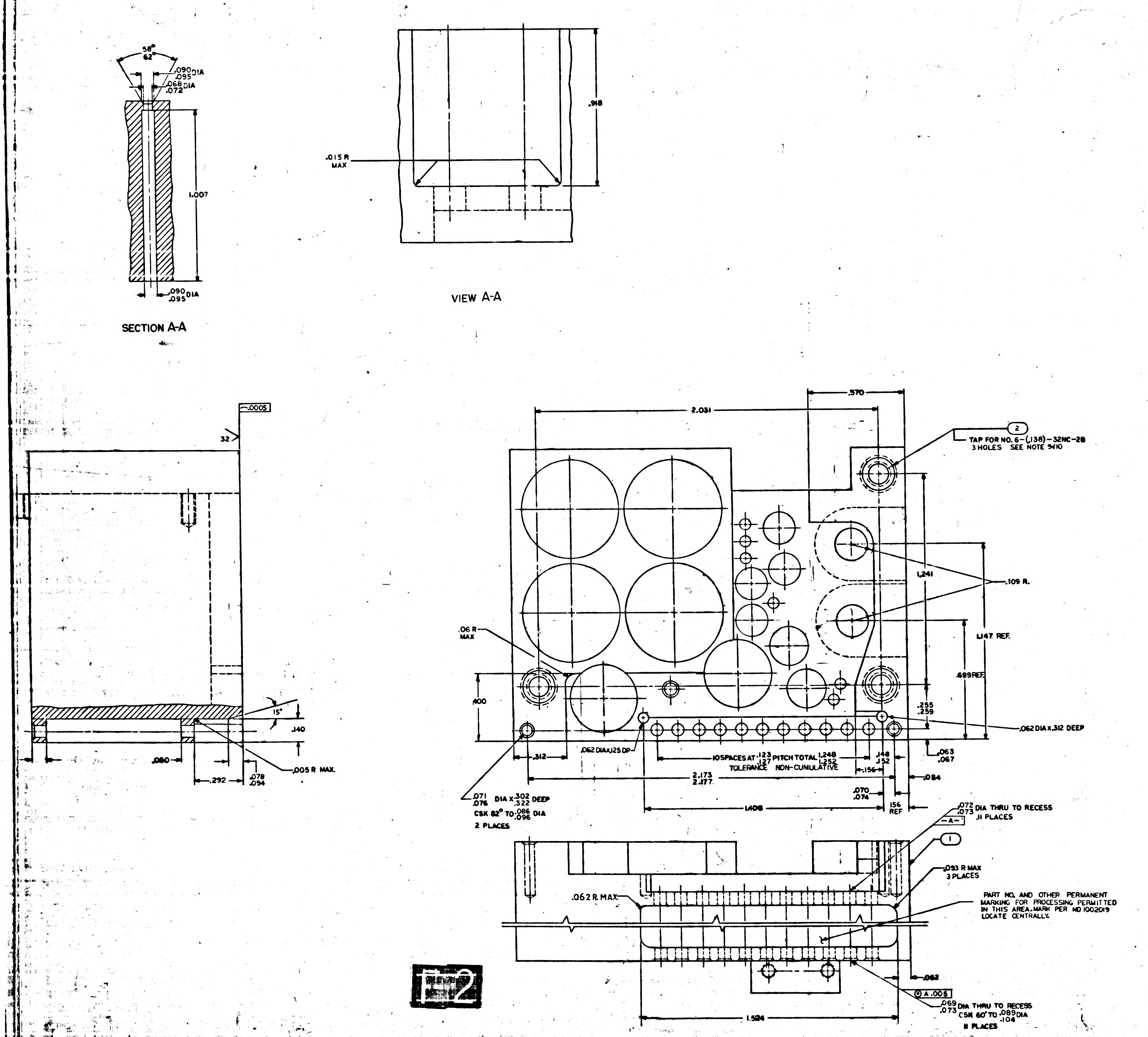

.0005
32
.080
.080
.292
.078
.094

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED $\sqrt{125}$ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO2 PER MS 33646 EXCEPT DIM. F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007020 J

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00873	[illegible]	WK
B	REVISED PER TDRR 01176	4-30-63	WK
C	REVISED PER TDRR 01357	5-22-63	WK
D	REVISED PER TDRR 01864	7-2-63	WK
E	REVISED PER TDRR 01965	7-31-63	WK
F	REVISED PER TDRR 03776	10-8-63	WK
G	REVISED PER TDRR 03851		
H	REVISED PER TDRR 03853	[illegible]	WK
J	REVISED PER TDRR 05439	[illegible]	WK



58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA
SECTION A-A
.918
.015 R MAX
VIEW A-A
.0005
32
15°
.140
.080
.292
.078
.094
.005 R MAX.
.570
2.031
2
TAP FOR NO. 6-(.138)-32NC-2B
3 HOLES SEE NOTE 9&10
1.241
.109 R.
1.147 REF.
.699 REF.
.06 R MAX
.400
.255
.259
.062 DIA X .312 DEEP
.063
.067
.312
.062 DIA X .125 DP
10 SPACES AT .123/.127 PITCH TOTAL 1.248/1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.156
2.173
2.177
.084
.070
.074
1.408
.156 REF
.071
.076 DIA X .302/.322 DEEP
CSK 82° TO .086/.096 DIA
2 PLACES
.072
.073 DIA THRU TO RECESS
11 PLACES
-A-
1
.093 R MAX
3 PLACES
.062 R MAX.
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND 1002019 LOCATE CENTRALLY.
.062
A .005
.069
.073 DIA THRU TO RECESS
CSK 60° TO .089/.104 DIA
11 PLACES
1.524
E-2

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS21209 – C0620	INSERT SCREW LOCKING	2
1	1007020 - 1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007021	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ±.005 XX ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN W. W. Tong DATE 2/9/63
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL
NASA APPROVAL [illegible] 3/63
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

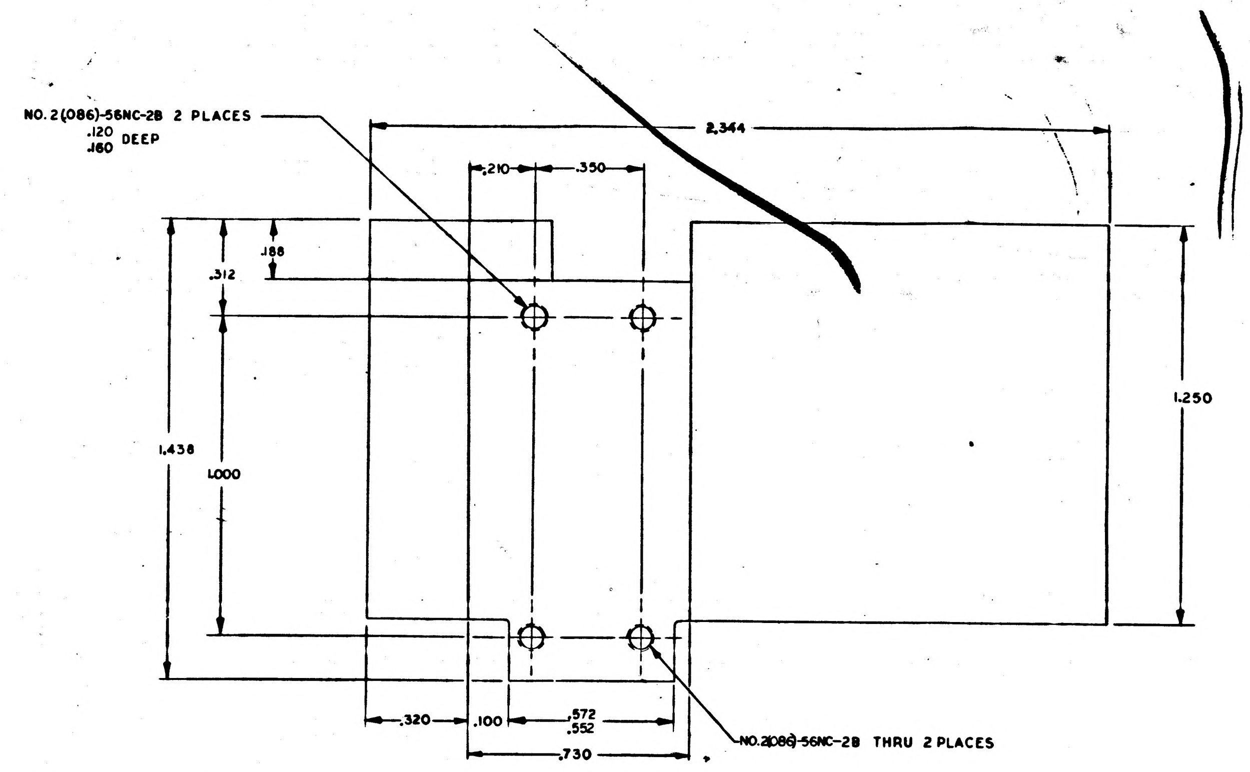
HEATSINK
PULSE TORQUE
GYRO CALIBRATION

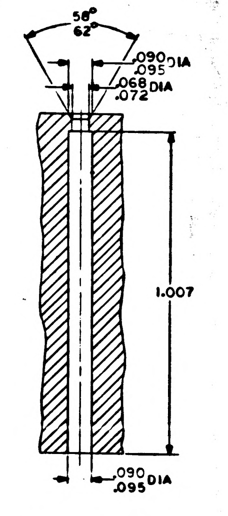
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007020
SCALE 5/1
WT
SHEET 1 OF 1

PHOTOGRAPHIC SCALE ONLY
INCHES

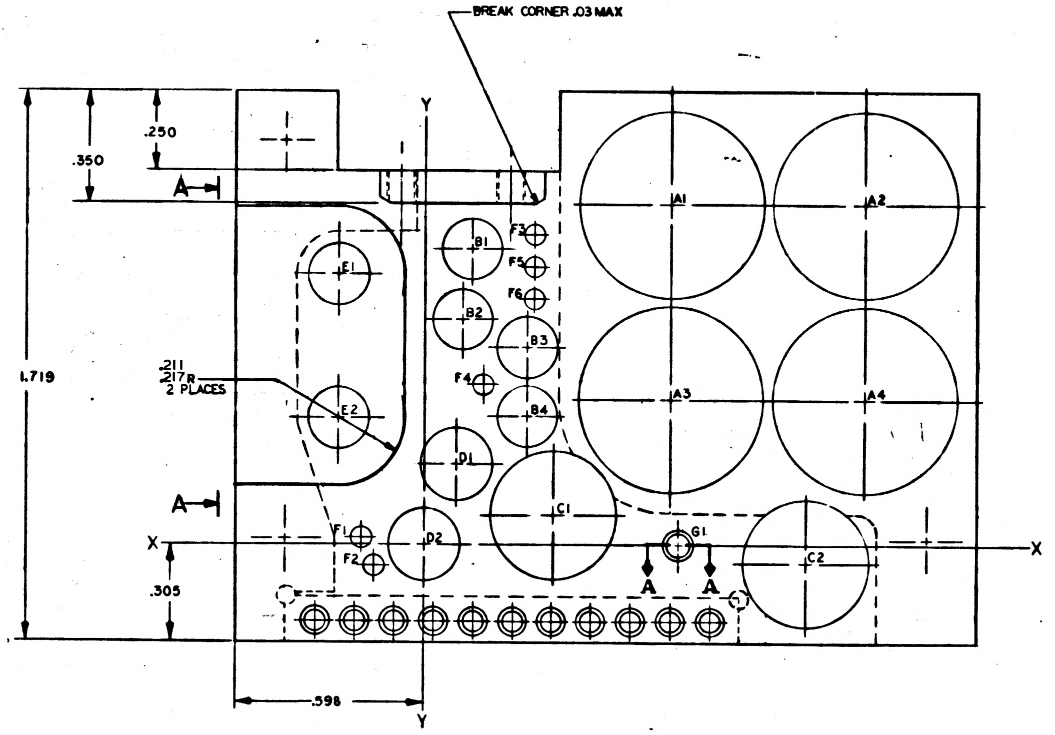
SEE NOTE 12

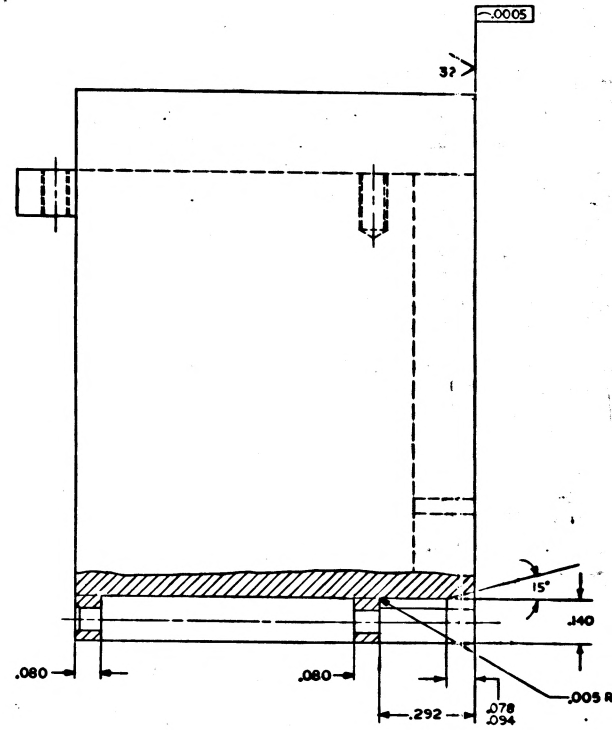
HOLE IDENT	"X" DIM.	"Y" DIM.		HOLE DIA	QTY
A1	.780	1.060		.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920		.181 .185	4
B2	.120	.700			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090		.392 .399	2
C2	1.205	−.055			
D1	.100	.250		.227 .231	2
D2	0.000	0.000			
E1	−.272	.842		.188	2
E2	−.272	.394			
F1	−.200	.020		.058 .062	9
F2	−.160	−.065			
F3	.350	.965			
F4	.185	.500			
F5	.350	.865			
F6	.350	.765			
G1	.805	0.000		SEE SECTION A-A	1


NO. 2(086)-56NC-2B 2 PLACES
.120
.160 DEEP
2.344
.210
.350
.188
.312
1.438
1.000
1.250
.320
.100
.572
.552
.730
NO.2(086)-56NC-2B THRU 2 PLACES


58°
62°
.090
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


BREAK CORNER .03 MAX
.250
.350
A
A
1.719
.211
.217 R
2 PLACES
.305
.598
X
X
Y
Y
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
D1
D2
E1
E2
F1
F2
F3
F4
F5
F6
G1
A
A


.0005
32
15°
.140
.080
.080
.292
.078
.094
.005 R

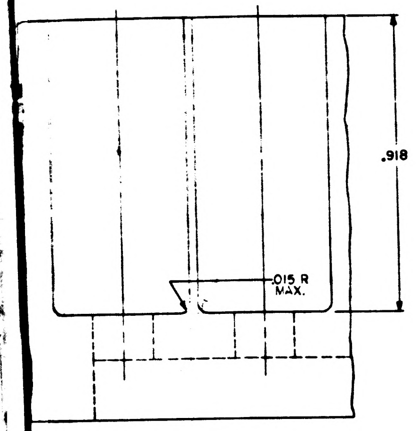
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. ~~TRUE POSITIONING AS SHOWN IN CHART~~
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED 125✓ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO.2 PER MS 33646, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV
12. THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN ANY ADJACENT HOLE OR ON EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART

1007020

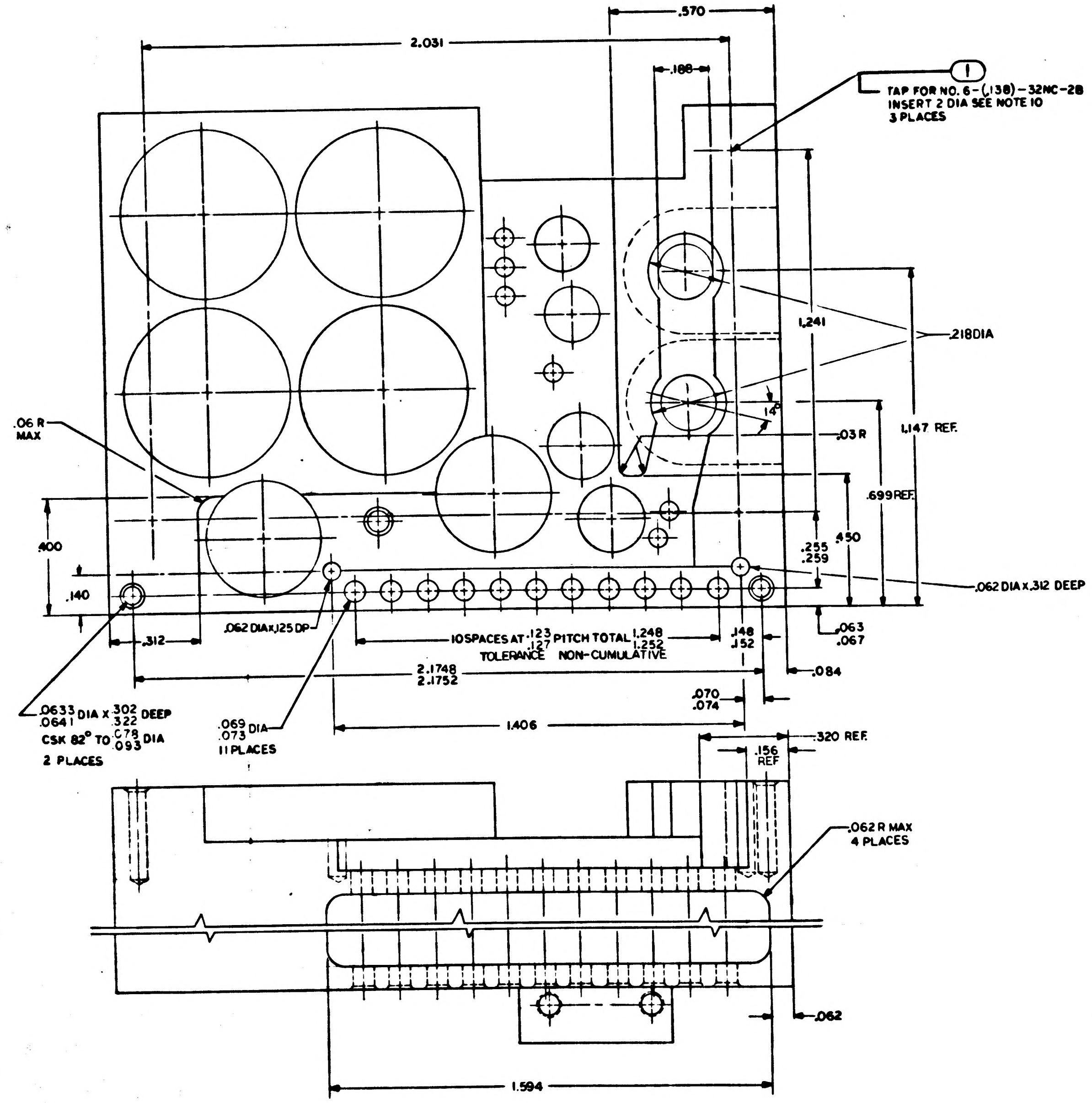
INCHES
PHOTOGRAPHIC SCALE ONLY

1007020	REVISIONS TOEP 00493		
SYM	DESCRIPTION	DATE	APPROVAL



.918
.015 R MAX.

VIEW A-A



2.031
.570
.188
1
TAP FOR NO. 6-(.138)-32NC-2B INSERT 2 DIA SEE NOTE 10 3 PLACES
1.241
.218DIA
14°
.03 R
1.147 REF.
.699 REF.
.450
.255 .259
.062 DIA X .312 DEEP
.06 R MAX
.400
.140
.312
.062 DIA X .125 DP
10 SPACES AT .123 .127 PITCH TOTAL 1.248 1.252 TOLERANCE NON-CUMULATIVE
.148 .152
.063 .067
2.1748 2.1752
.084
.070 .074
.0633 .0641 DIA X .302 .322 DEEP CSK 82° TO .078 .093 DIA 2 PLACES
.069 .073 DIA 11 PLACES
1.406
.320 REF.
.156 REF
.062 R MAX 4 PLACES
.062
1.594

3	NAS-1222-06E	INSERT, SCREW LOCKING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007021	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

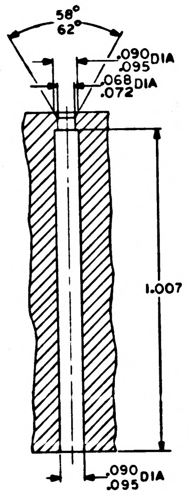
DRAWN W. F. Tracy DATE 2/9/63
CHECKED 14 Feb 63
APPROVAL 1 MAR 63
APPROVAL
NASA APPROVAL 3/6/63
MIT APPROVAL 6 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
PULSE TORQUE
GYRO CALIBRATION

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007020
SCALE 5/1
WT
SHEET 1 OF 1

1007020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62°
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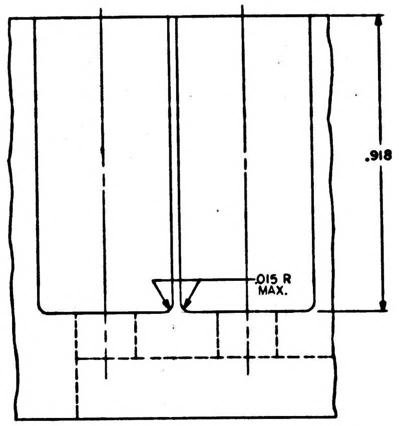
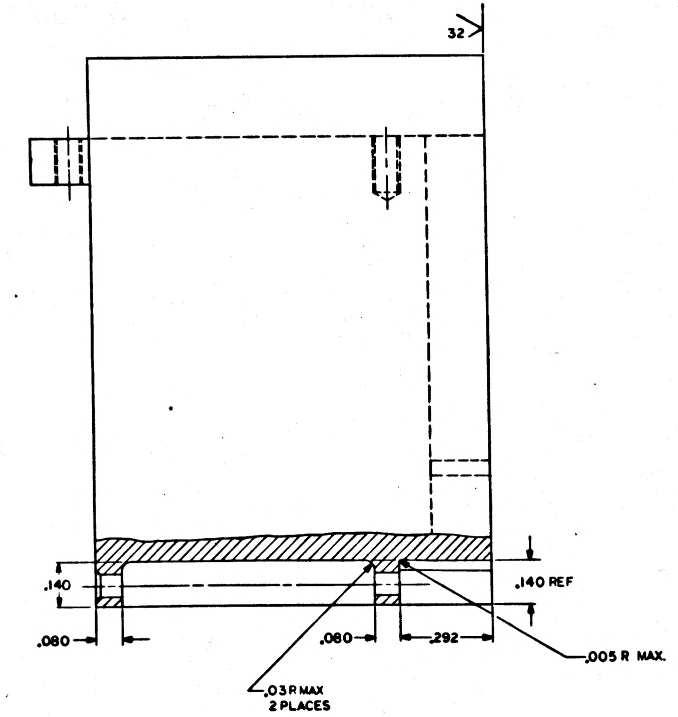
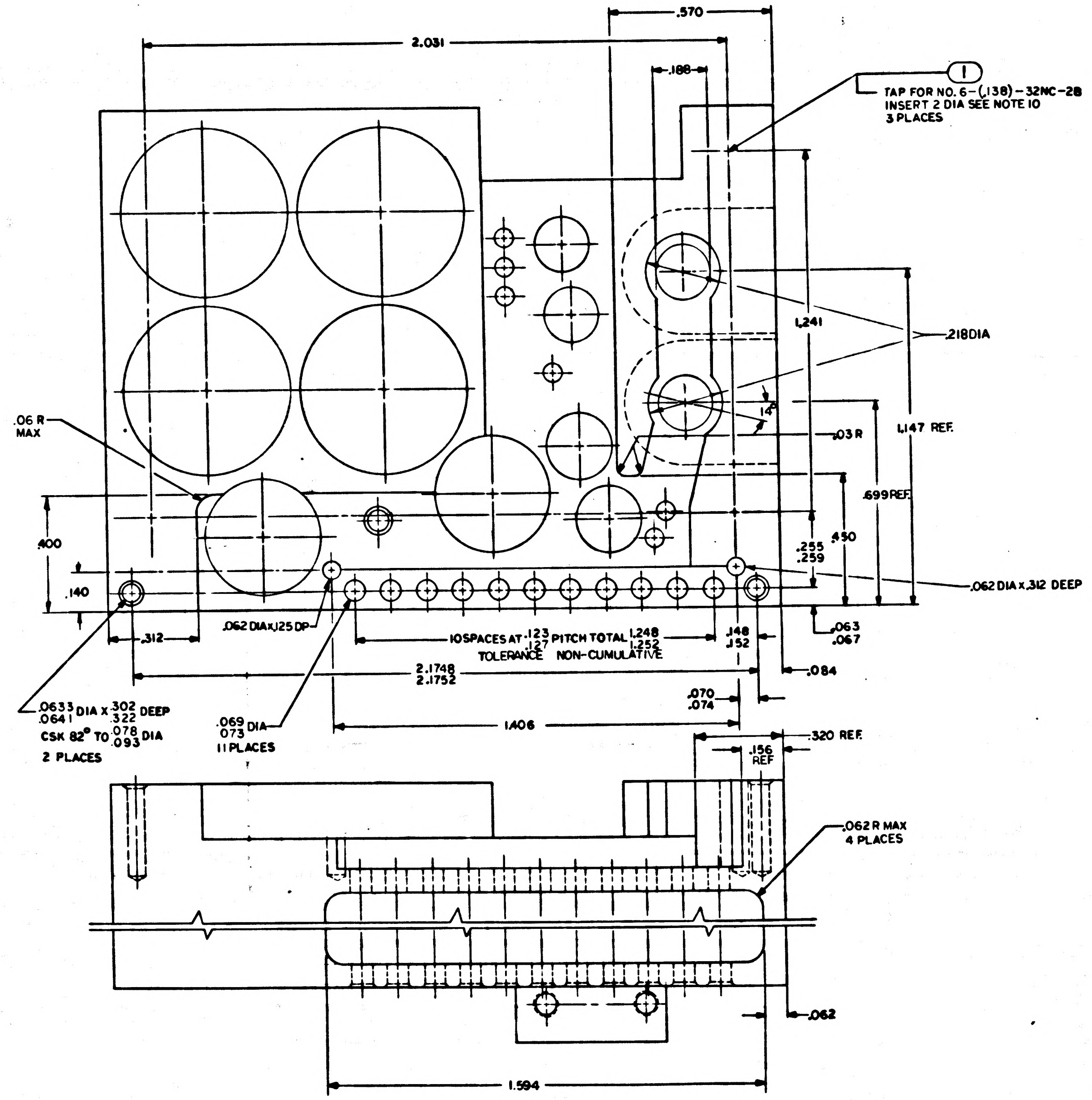
.095 DIA
.068
.072 DIA
1.007
.090
.095 DIA

SECTION A-A


.918
.015 R
MAX.

VIEW A-A


32
.140
.140 REF
.080
.080
.292
.005 R MAX.
.03 R MAX
2 PLACES


.570
2.031
.188
1
TAP FOR NO. 6-(.138)-32NC-2B
INSERT 2 DIA SEE NOTE 10
3 PLACES
1.241
.218 DIA
14°
.03 R
1.147 REF.
.699 REF.
.06 R
MAX
.400
.140
.450
.255
.259
.062 DIA x .312 DEEP
.062 DIA x .125 DP
.312
10 SPACES AT .123/.127 PITCH TOTAL 1.248/1.252
TOLERANCE NON-CUMULATIVE
.148
.152
.063
.067
.084
2.1748
2.1752
.0633/.0641 DIA x .302/.322 DEEP
CSK 82° TO .078/.093 DIA
2 PLACES
.069/.073 DIA
11 PLACES
.070
.074
1.406
.320 REF.
.156
REF
.062 R MAX
4 PLACES
.062
1.594

MASTER

3	NAS-222-06E
QTY REQD	PART OR IDENTIFYING NO.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 11

NEXT ASSY	USED ON
1007021	

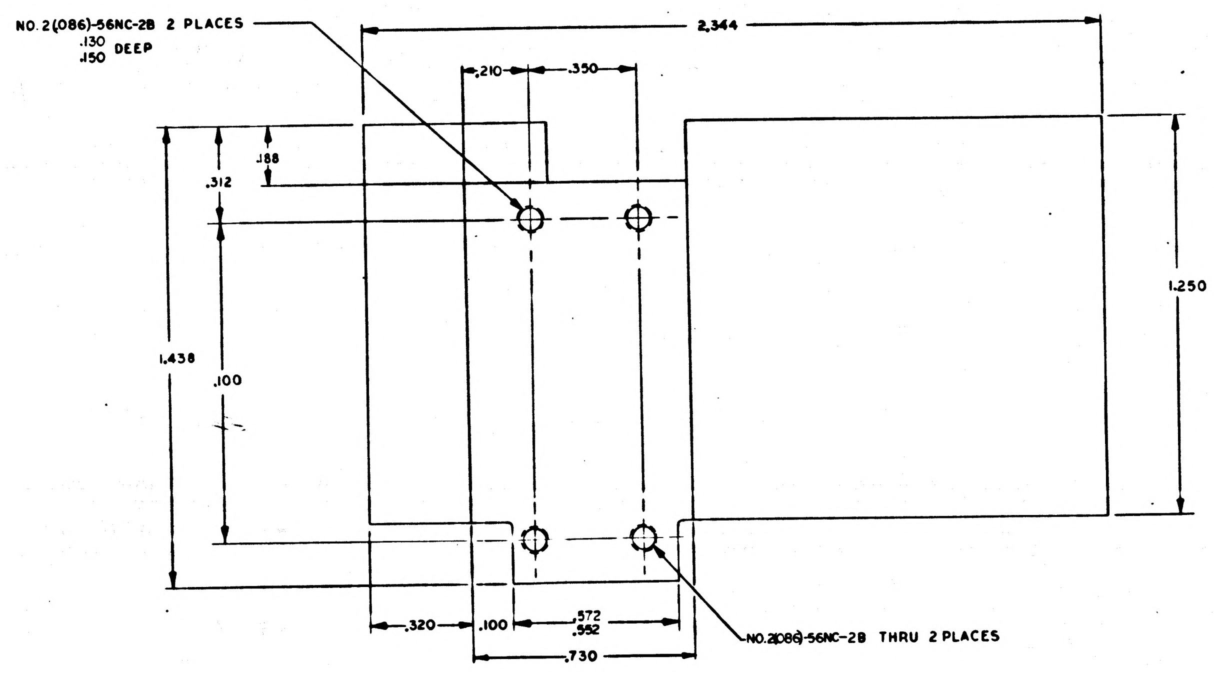
APPLICATION

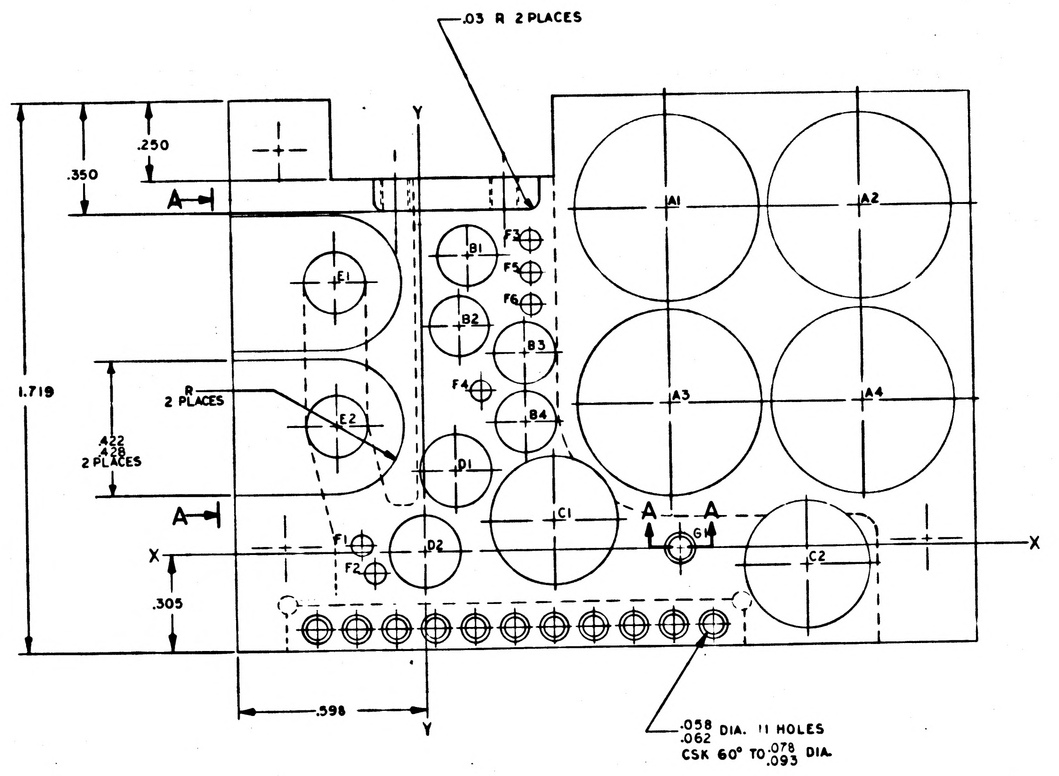
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

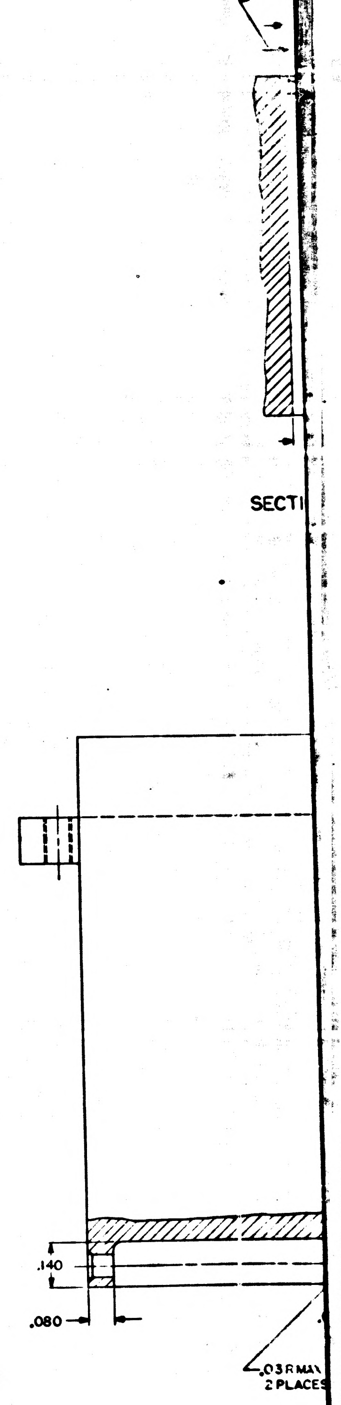
DRAWN
DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.780	1.060	.006	.578 .585	4
A2	1.390	1.060			
A3	.780	.450			
A4	1.390	.450			
B1	.150	.920	.006	.181 .185	4
B2	.120	.700			
B3	.325	.615			
B4	.325	.400			
C1	.408	.090	.006	.392 .399	2
C2	1.205	−.055			
D1	.100	.250	.006	.227 .231	2
D2	0.000	0.000			
E1	−.272	.842	.006	.188	2
E2	−.272	.394			
F1	−.200	.020	.006	.058 .062	9
F2	−.160	−.065			
F3	.350	.965			
F4	.185	.500			
F5	.350	.865			
F6	.350	.765			
G1	.805	0.000	.006	SEE SECTION A-A	1


NO. 2(086)-56NC-2B 2 PLACES
.130
.150 DEEP
2.344
.210
.350
.188
.312
1.438
.100
1.250
.320
.100
.572
.552
.730
NO. 2(086)-56NC-2B THRU 2 PLACES


.03 R 2 PLACES
.250
.350
A
A
Y
Y
X
X
A1
A2
A3
A4
B1
B2
B3
B4
C1
C2
D1
D2
E1
E2
F1
F2
F3
F4
F5
F6
G1
1.719
R
2 PLACES
.422
.428
2 PLACES
.305
.598
.058
.062 DIA. 11 HOLES
CSK 60° TO .078
.093 DIA.


SECTI
.140
.080
.03R MAX
2 PLACES

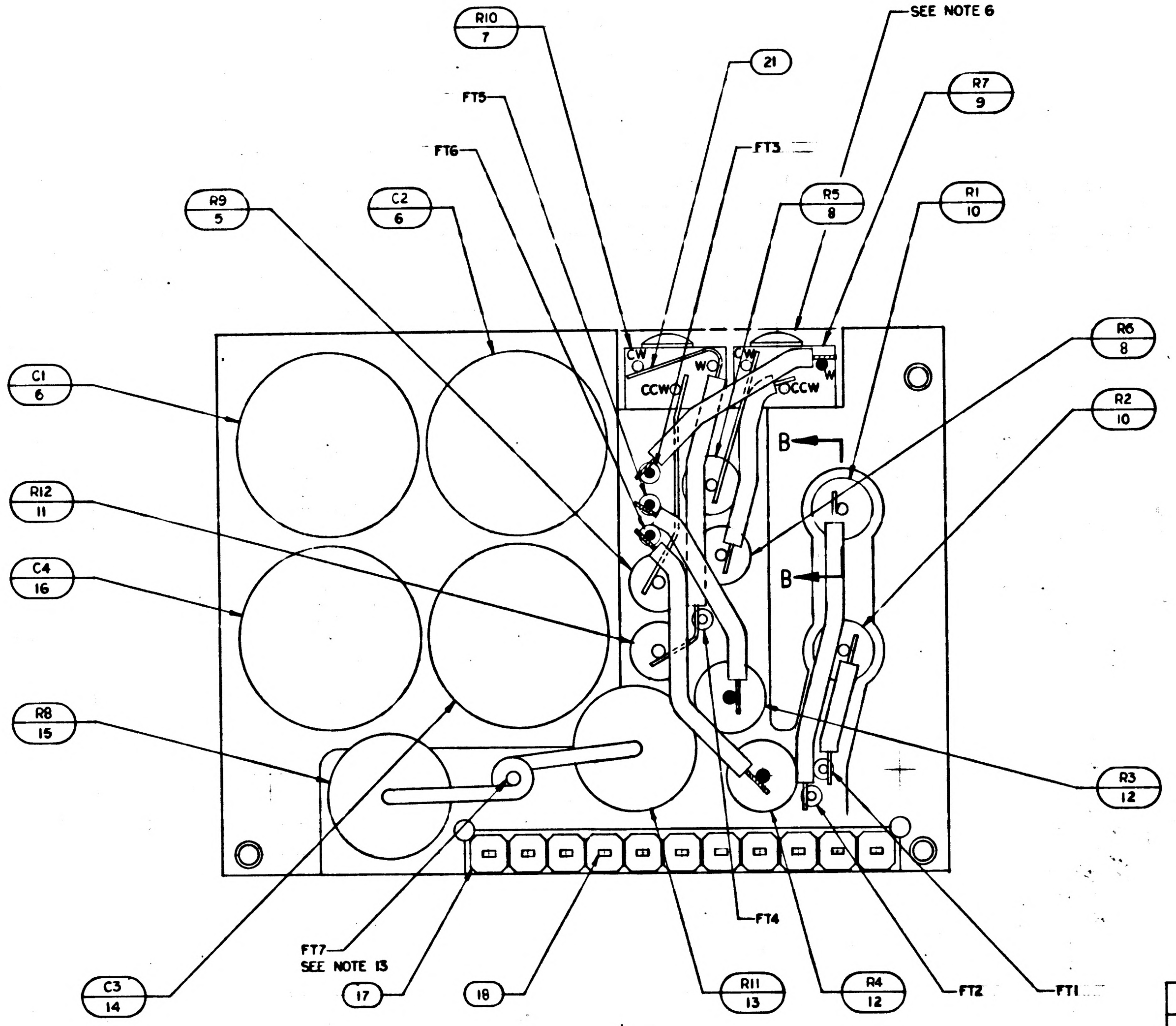
NOTES

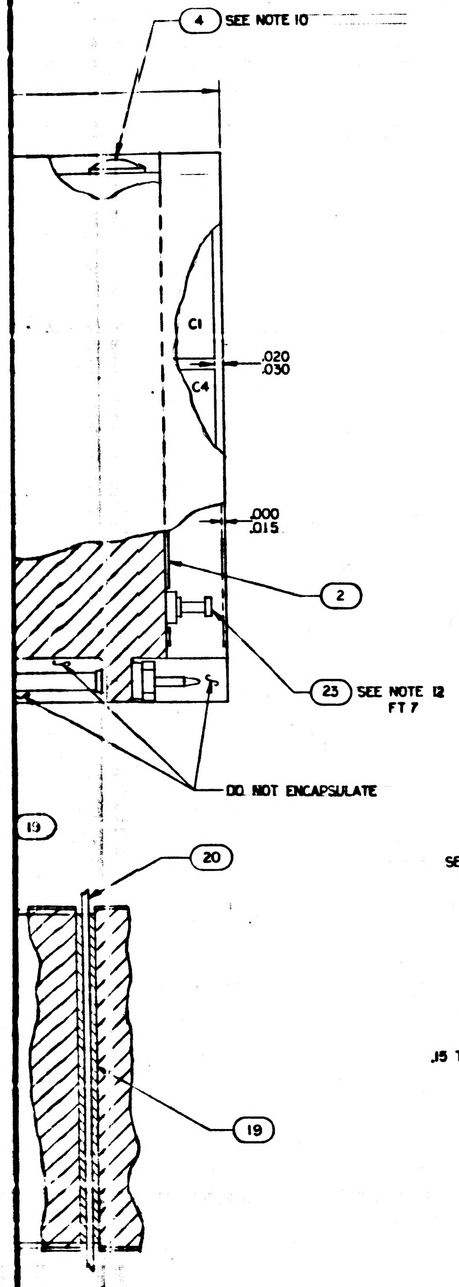
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PERSCRIBED BY MIL-D-70327
2. MATERIAL: ALUMINUM 6061-T6 PER QQ-A-325
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS & RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED 125✓ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS & BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO1 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO1 PER MS 33537 EXCEPT DIM. F TO BE .594, BREAK OFF DRIVING TANG
11. PLUG INSERT HOLES: FINISH: ANODIZE PER MIL-A-8625 DYED BLACK.

1007021 A

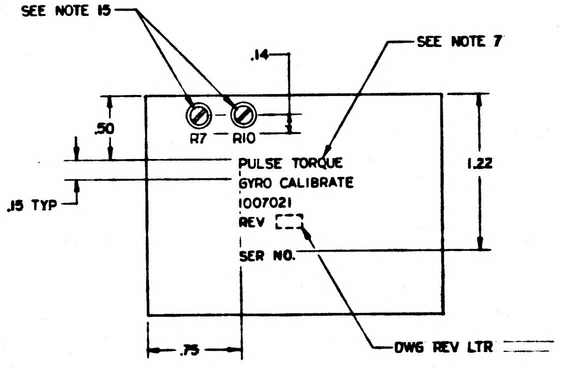
REVISIONS TO ~~ee~~ 00 493

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	4-25-63	WR.

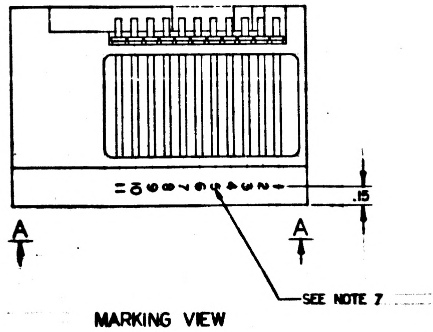

R10 7
21
SEE NOTE 6
FT5
R7 9
FT6
FT3
R9 5
C2 6
R5 8
R1 10
CW
CCW
W
C1 6
R6 8
R2 10
B
R12 11
C4 16
R8 15
R3 12
C3 14
FT7
SEE NOTE 13
17
18
FT4
R11 13
R4 12
FT2
FT1


4 SEE NOTE 10
C1
C4
.020
.030
.000
.015
2
23 SEE NOTE 12 FT 7
DO NOT ENCAPSULATE
19
20
19

SECTION A-A


SEE NOTE 15
.14
SEE NOTE 7
.50
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO.
1.22
.15 TYP
.75
DWG REV LTR

VIEW A-A


A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART B

PART NO	VALUE Ω
1010377-76	82.5K
-77	83.75K
-78	85.0K
-79	86.25K
-80	87.5K
-81	88.75K
-82	90.0K
-83	91.25K
-84	92.5K
-85	93.75K
-86	95.0K
-87	96.25K
-88	97.5K
-89	98.75K
-90	100.0K
-91	101.25K
-92	102.5K
-93	103.75K
-94	105.0K
-95	106.25K
-96	107.5K
-97	108.75K
-98	101.0K
-99	111.25K
-100	112.5K
-101	113.75K
-102	115.0K
-103	116.25K
-104	117.5K

CHART A

PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C

PART NO	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D

PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006787-2	WIRE, ELEC .020 DIA	20
A/R	1006776-21	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	1010373-9	RESISTOR, VAR. 5K 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

1007021 A

1007102	
1007101	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.05 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Machado DATE Feb 1963
CHECKED R.P. Kingsbury 18 Feb 63
APPROVAL 17 Mar 63
APPROVAL A.R. Test 1 Mar 63
NASA APPROVAL 3/4/63
MIT APPROVAL 6 March 63

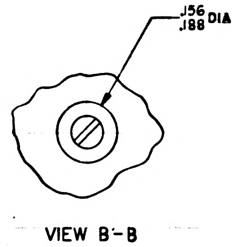
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

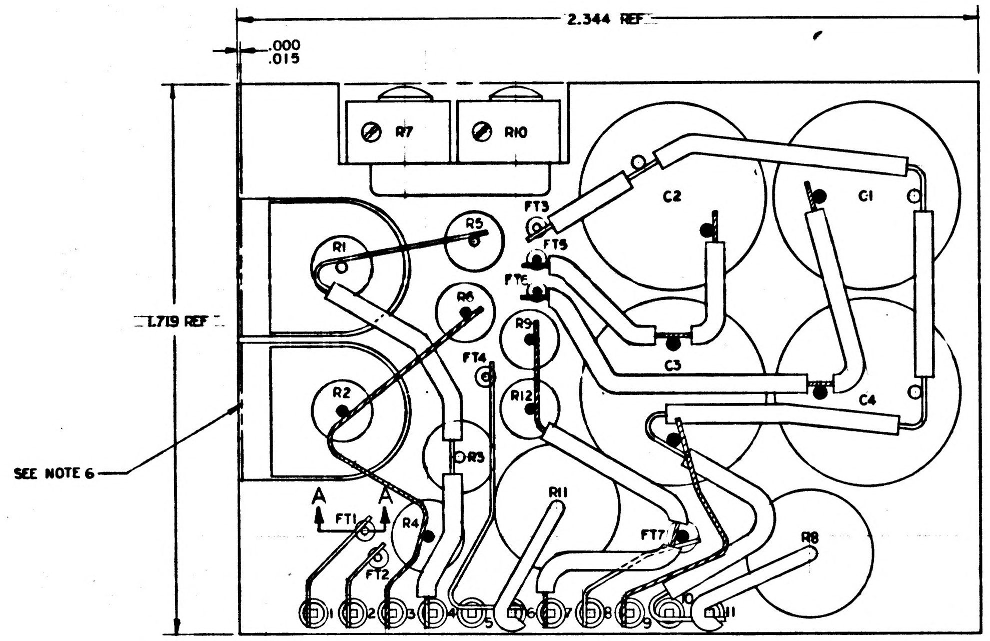
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1

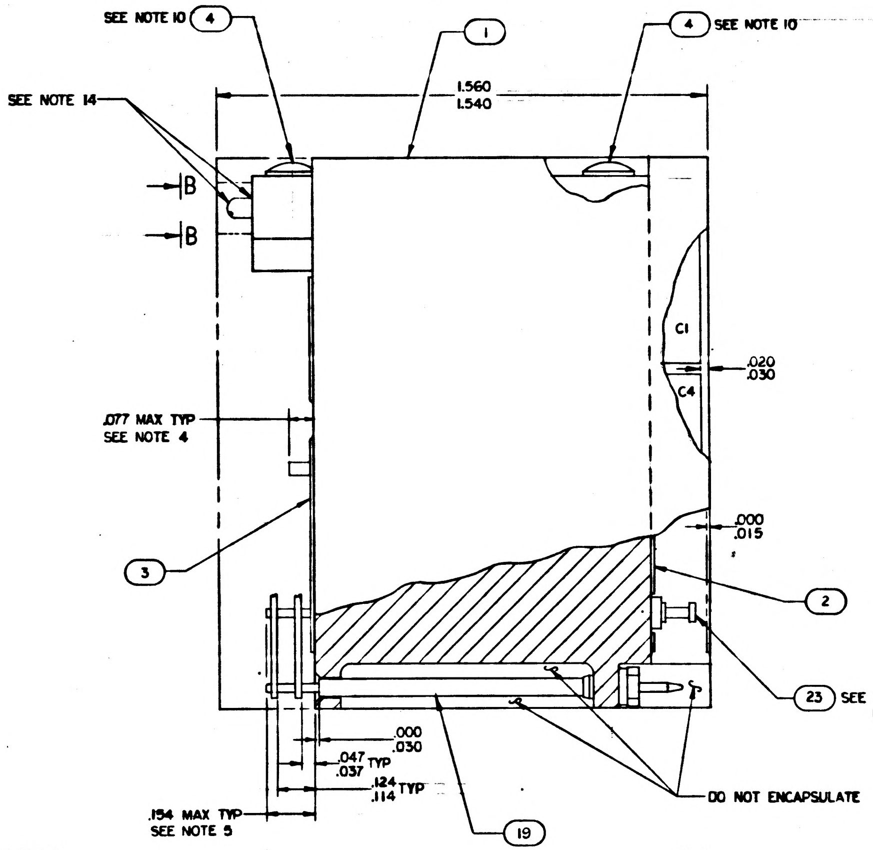
MASTER

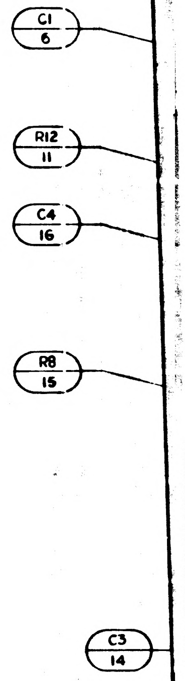
INCHES
PHOTOGRAPHIC SCALE ONLY

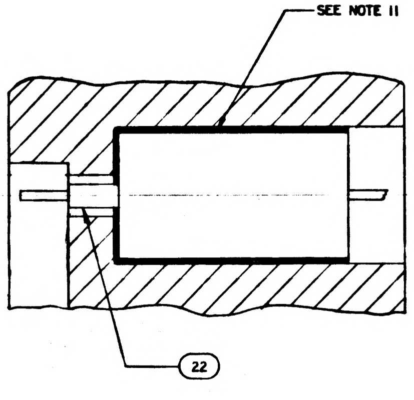


VIEW B-B
2 PLACES

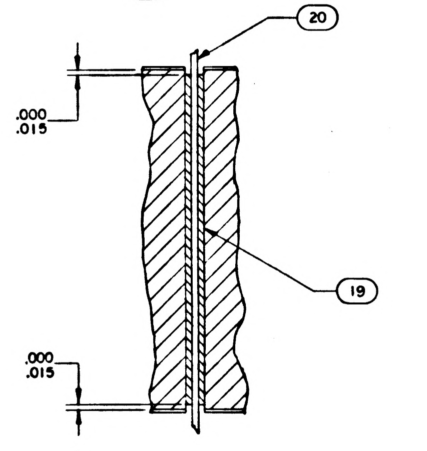

2.344 REF
.000
.015
1.719 REF
SEE NOTE 6
R7
R10
R1
R5
R6
R2
R3
R4
R9
R12
R11
R8
C1
C2
C3
C4
FT1
FT2
FT3
FT4
FT5
FT6
FT7
A
A
1
2
3
4
5
6
7
8
9
10
11


SEE NOTE 10
4
1
4
SEE NOTE 10
SEE NOTE 14
1.560
1.540
B
B
C1
C4
.020
.030
.077 MAX TYP
SEE NOTE 4
3
.000
.015
2
23
SEE NOTE 12
FT 7
.000
.030
.047
.037 TYP
.124
.114 TYP
.154 MAX TYP
SEE NOTE 5
19
DO NOT ENCAPSULATE

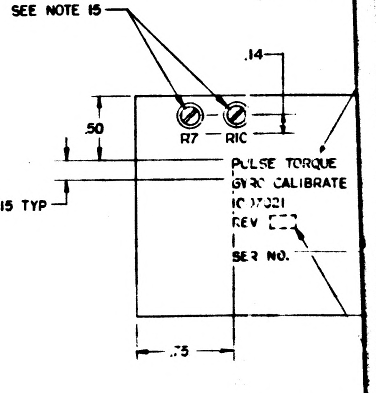

C1
6
R12
11
C4
16
R8
15
C3
14


SEE NOTE 11
22

SECTION B-B


20
.000
.015
19
.000
.015

SECTION A-A


SEE NOTE 15
.14
.50
R7
R1C
PULSE TORQUE
GYRO CALIBRATE
1C 07021
REV
SER NO.
.15 TYP
.75

VIEW A-A

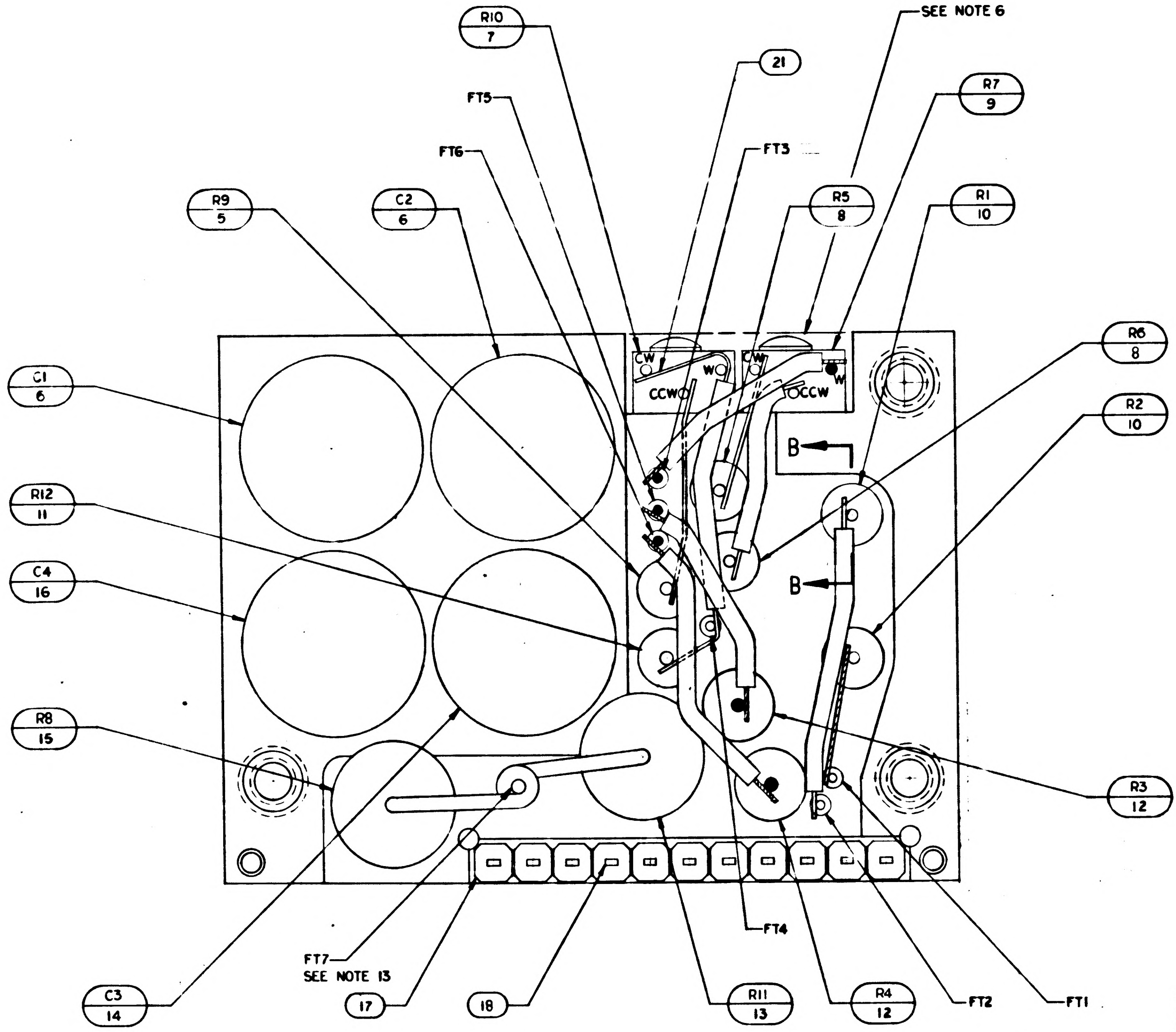
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM)
7. MARK .100/.060 HIGH WHITE CHARACTERS PER ND1002019
8. STAKE FIND NO.5 THRU FIND NO. 8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002019
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO. 4
11. BOND FIND NO.10 PER ND1002041
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D

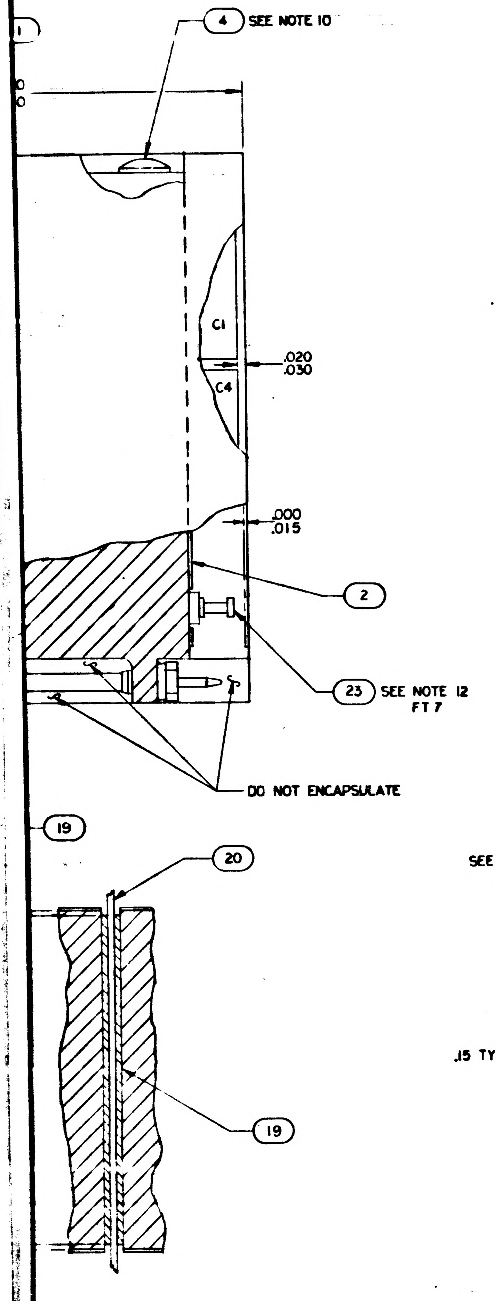
1007021 B

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	4-25-63	WR.
B	REVISED PER TDRR 01176	4-30-63	D.T. WR

REVISIONS TDRR 00 693

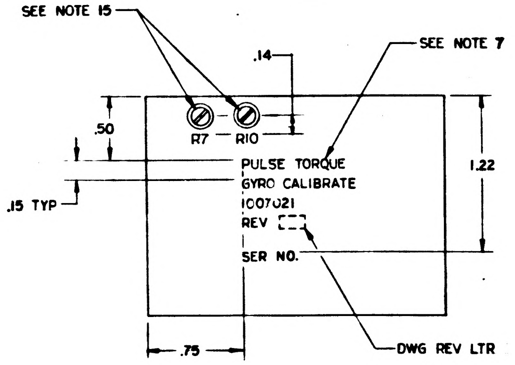


R10 7
21
SEE NOTE 6
R7 9
FT5
FT6
FT3
R9 5
C2 6
R5 8
R1 10
C1 6
R6 8
R2 10
R12 11
C4 16
CW
CCW
W
B
R8 15
R3 12
FT7 SEE NOTE 13
17
18
R11 13
R4 12
FT4
FT2
FT1
C3 14



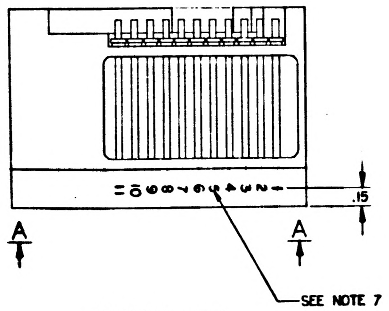
4 SEE NOTE 10
C1
C4
.020
.030
.000
.015
2
23 SEE NOTE 12 FT 7
DO NOT ENCAPSULATE
19
20
19

SECTION A-A



SEE NOTE 15
SEE NOTE 7
.14
.50
1.22
.15 TYP
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO.
DWG REV LTR
.75

VIEW A-A



.15
A
A
SEE NOTE 7

MARKING VIEW

SCALE 2/1

CHART B	
PART NO	VALUE Ω
1010377-76	82.5K
-77	83.75K
-78	85.0K
-79	86.25K
-80	87.5K
-81	88.75K
-82	90.0K
-83	91.25K
-84	92.5K
-85	93.75K
-86	95.0K
-87	96.25K
-88	97.5K
-89	98.75K
-90	100.0K
-91	101.25K
-92	102.5K
-93	103.75K
-94	105.0K
-95	106.25K
-96	107.5K
-97	108.75K
-98	101.0K
-99	111.25K
-100	112.5K
-101	113.75K
-102	115.0K
-103	116.25K
-104	117.5K

CHART A	
PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO	VALUE Ω
1010283-12	25.13 K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010011	SCHEMATIC	REF
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006787-2	WIRE, ELEC .020 DIA	20
A/R	1006776-21	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	1010373-9	RESISTOR, VAR, 5K 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD. WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Machado DATE 3-1-63
CHECKED R.P. Kingsbury 1-18-63
APPROVAL 1-18-63
APPROVAL A.R. Test 1-18-63
NASA APPROVAL 3/6/63
MIT APPROVAL 6 March 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

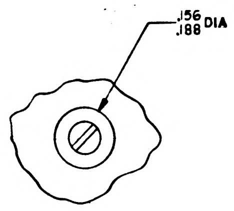
PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO 1007021
SCALE 5/1
WT
SHEET 1 OF 1

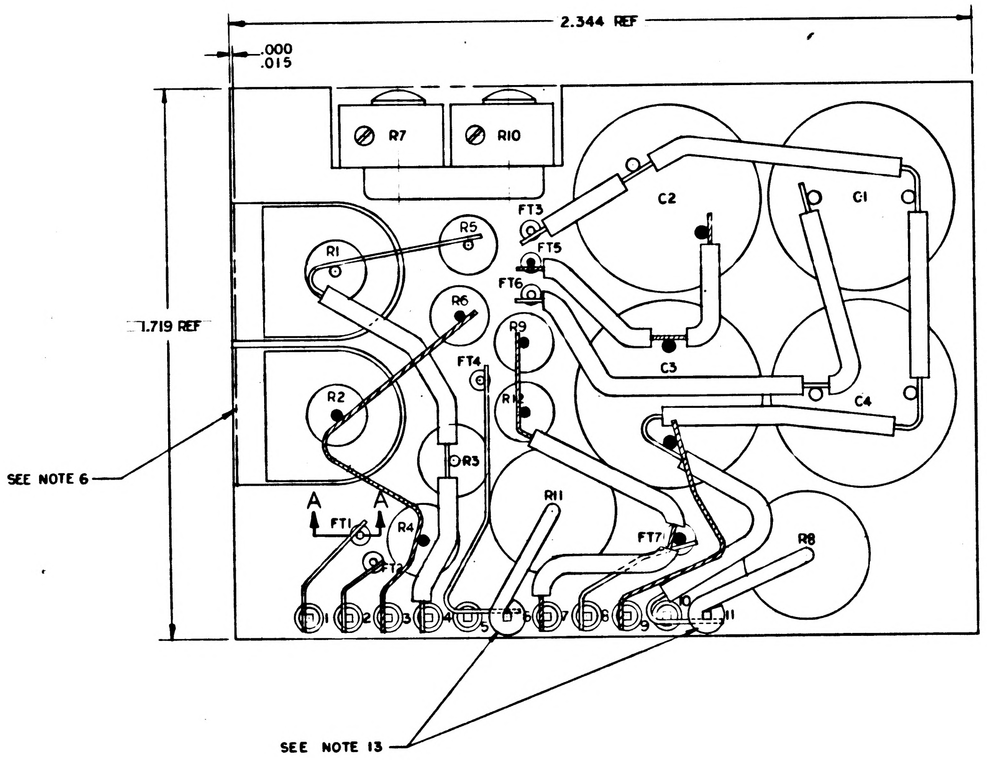
1007021 B

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



VIEW B-B
2 PLACES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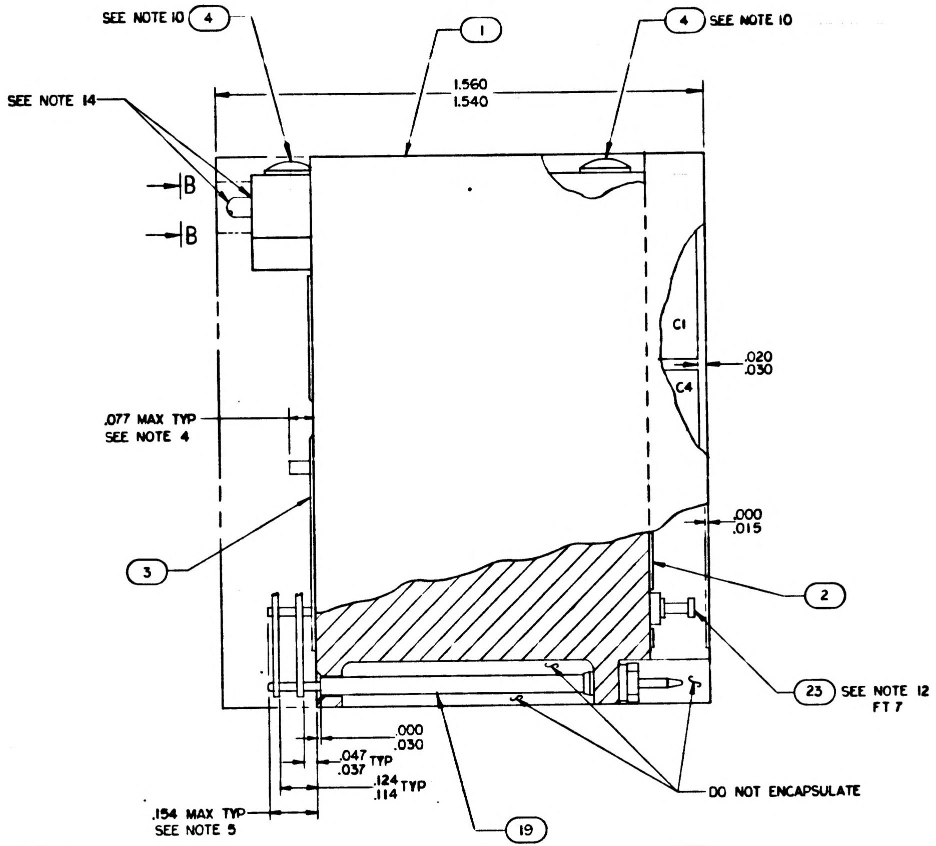
.015
1.719 REF
R7
R10
R1
R5
R6
R9
R12
R2
R3
R4
R8
R11
C1
C2
C3
C4
FT1
FT2
FT3
FT4
FT5
FT6
FT7
A
A
1
2
3
4
5
6
7
8
9
10
11
SEE NOTE 6
SEE NOTE 13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SEE NOTE 10
SEE NOTE 14
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1.540
B
B
C1
C4
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.030
.077 MAX TYP
SEE NOTE 4
3
.000
.015
2
23
SEE NOTE 12
FT 7
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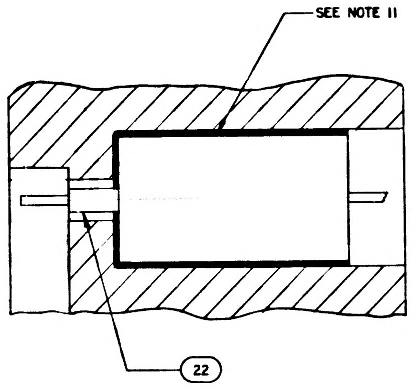
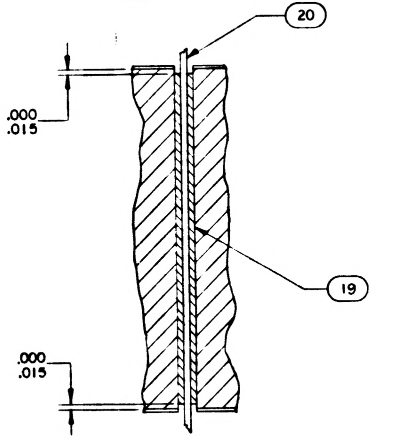
.030
.047
.037 TYP
.124
.114 TYP
DO NOT ENCAPSULATE
.154 MAX TYP
SEE NOTE 5
19


SEE NOTE 11
22

SECTION B-B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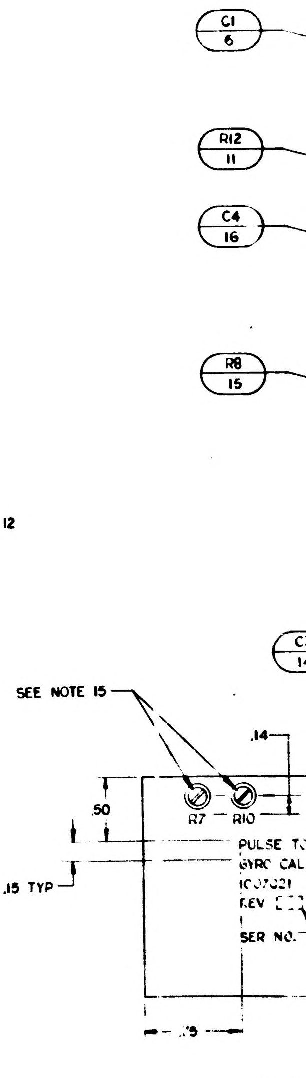
.015
19
.000
.015

SECTION A-A


C1
6
R12
11
C4
16
R8
15
SEE NOTE 15
.14
.50
R7
R10
PULSE T
GYRO CAL
10?021
REV
SER NO.
.15 TYP
.75

NOTES

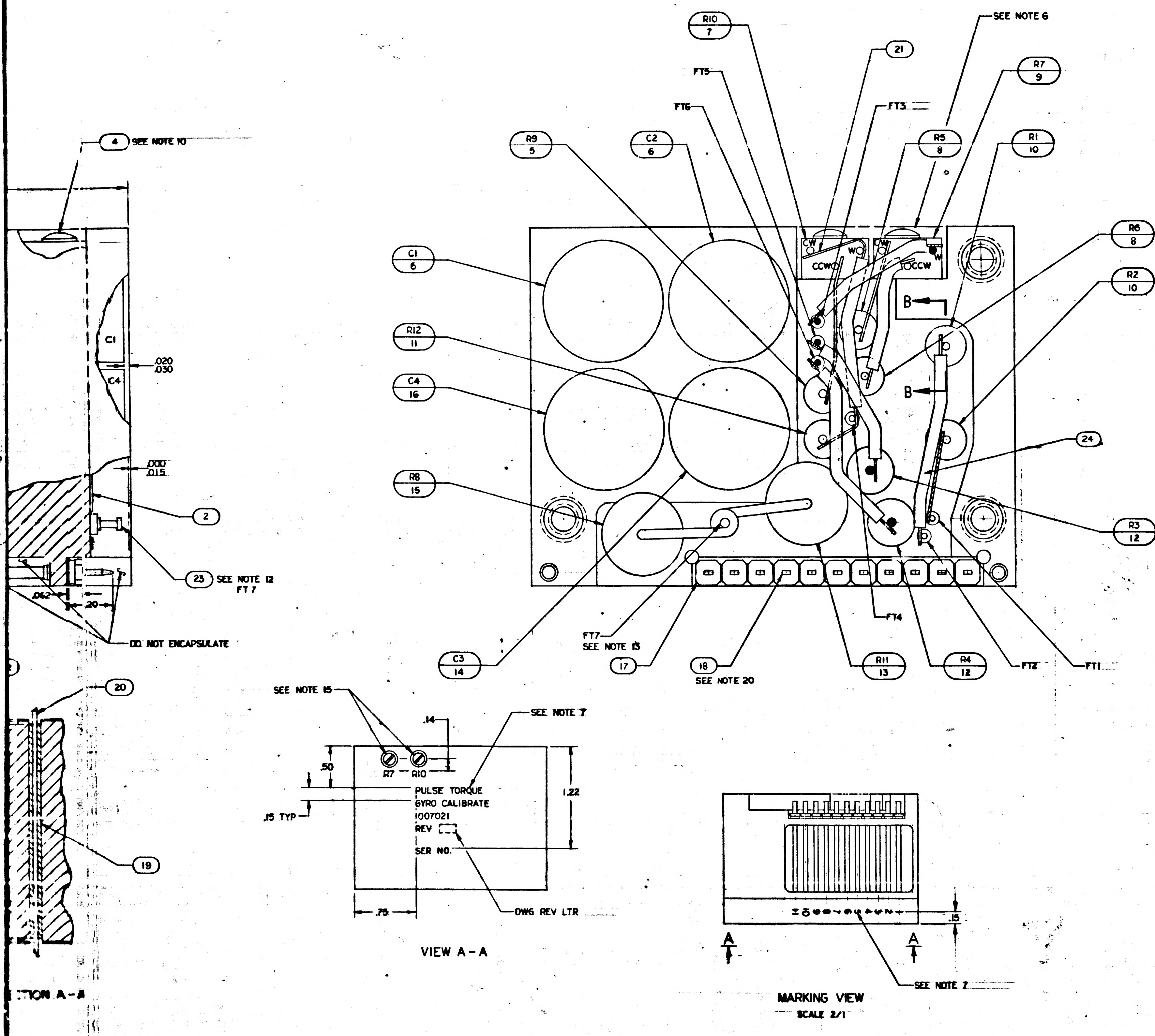
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM)
7. MARK .100/.060 HIGH WHITE CHARACTERS PER ND1002019
8. STAKE FIND NO. 5 THRU FIND NO. 8 AND FIND NO. 10 THRU FIND NO. 16 PER ND 1002019
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808
    (ASG) TO THREADS OF FIND NO. 4
11. BOND FIND NO. 10 PER ND 002041
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ________
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D

INCHES
PHOTOGRAPHIC SCALE ONLY

1007021 C

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	4-25-63	WK.
B	REVISED PER TDRR 01176	4-30-63	D.T. WK
C	REVISED PER TDRR 01713	6-18-63	EPK WK

REVISIONS TO EE 00 693



R10 7
SEE NOTE 6
21
R7 9
FT5
FT6
FT3
R9 5
C2 6
R5 8
R1 10
R6 8
C1 6
R2 10
CW
CCW
W
B
R12 11
C4 16
24
R8 15
R3 12
FT4
FT7 SEE NOTE 13
17
18 SEE NOTE 20
R11 13
R4 12
FT2
FT1
C3 14
4 SEE NOTE 10
C1
C4
.020 .030
.000 .015
2
23 SEE NOTE 12 FT 7
.062
.20
DO NOT ENCAPSULATE
20
19
.55 .88 DIA
TION A-A
SEE NOTE 15
SEE NOTE 7
.14
.50
.15 TYP
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO.
1.22
.75
DWG REV LTR
VIEW A-A
A
A
.15
SEE NOTE 7
MARKING VIEW
SCALE 2/1

CHART B	
PART NO	VALUE Ω
1010377-76	82.5K
-77	83.75K
-78	85.0K
-79	86.25K
-80	87.5K
-81	88.75K
-82	90.0K
-83	91.25K
-84	92.5K
-85	93.75K
-86	95.0K
-87	96.25K
-88	97.5K
-89	98.75K
-90	100.0K
-91	101.25K
-92	102.5K
-93	103.75K
-94	105.0K
-95	106.25K
-96	107.5K
-97	108.75K
-98	101.0K
-99	111.25K
-100	112.5K
-101	113.75K
-102	115.0K
-103	116.25K
-104	117.5K

CHART A	
PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	1010373-9	RESISTOR, VAR, 5K 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN R. Machado DATE 7 Jan 63
CHECKED R.P. Kuykendall 18 Jan 63
APPROVAL 1 Mar 63
APPROVAL 1 Mar 63
NASA APPROVAL 3/4/63
MIT APPROVAL 6 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PULSE TORQUE GYRO CALIBRATE ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007021
SCALE 5/1 WT SHEET 1 OF 1

MASTER

1007021 C

PHOTOGRAPHIC SCALE ONLY INCHES

E-2 1007021

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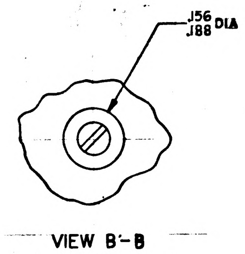
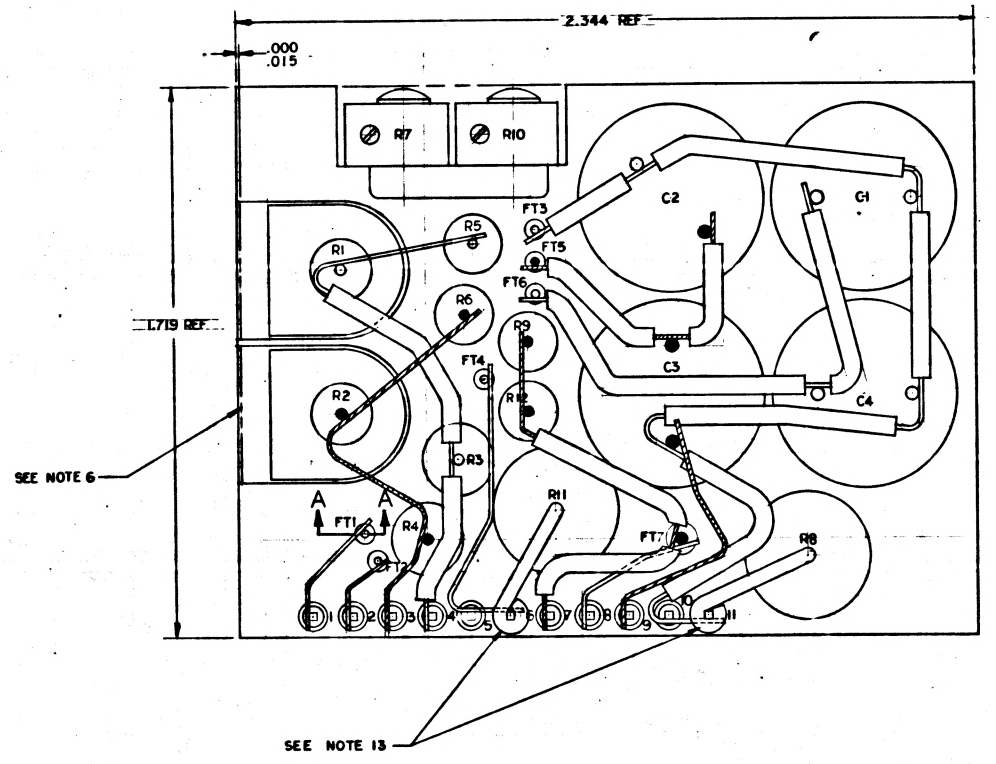


VIEW B-B
2 PLACES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.015
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R7
R10
R1
R5
R6
R2
R3
R4
R9
R12
R11
R8
C1
C2
C3
C4
FT1
FT2
FT3
FT4
FT5
FT6
FT7
A
A
SEE NOTE 6
SEE NOTE 13
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2
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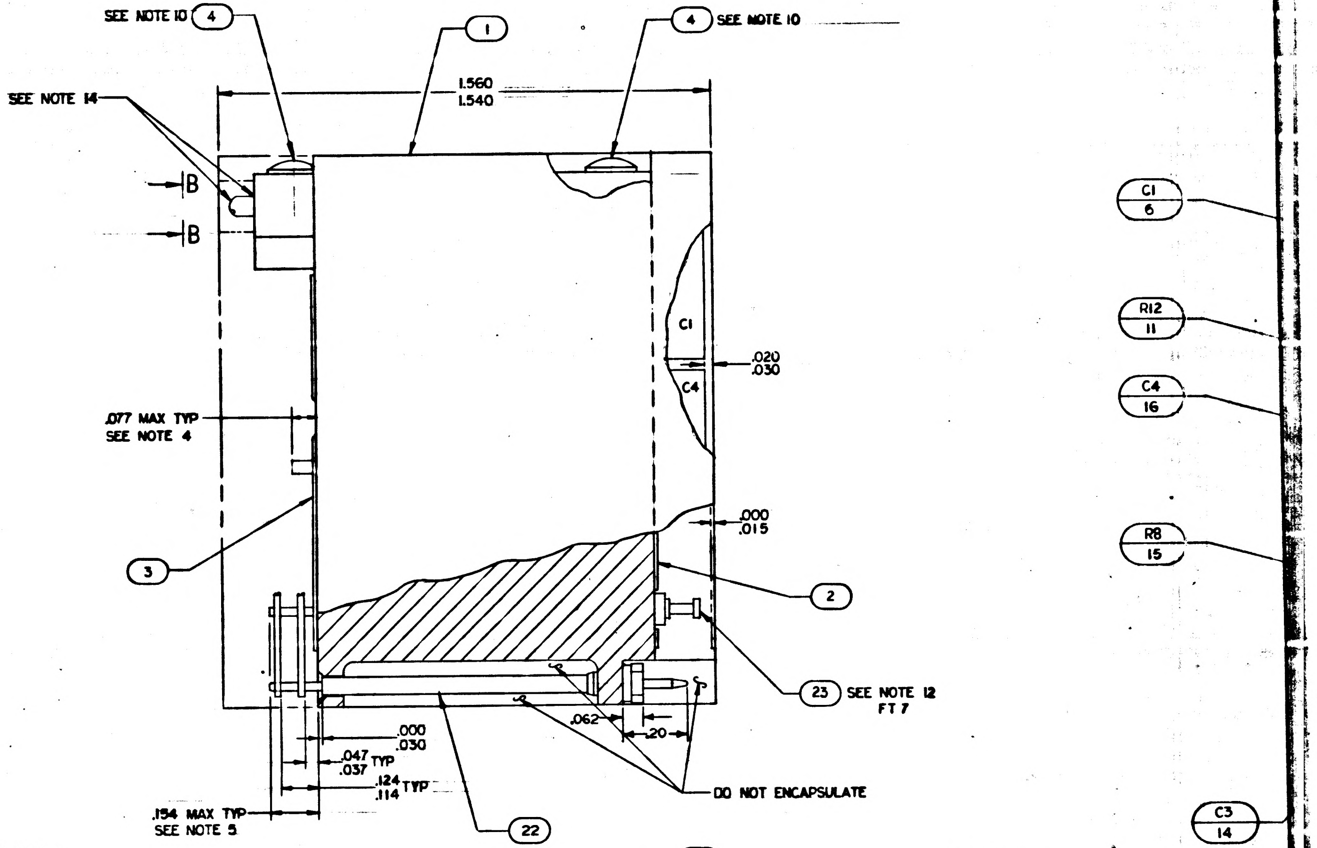
4
5
6
7
8
9
10
11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4
SEE NOTE 10
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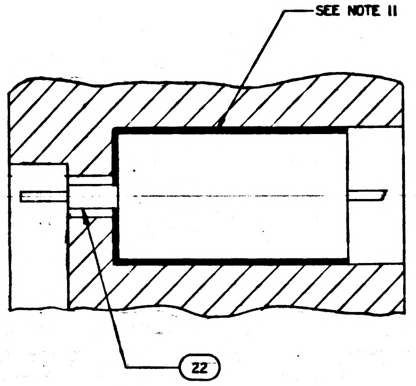
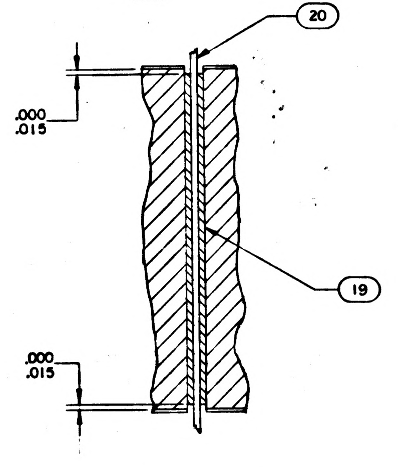
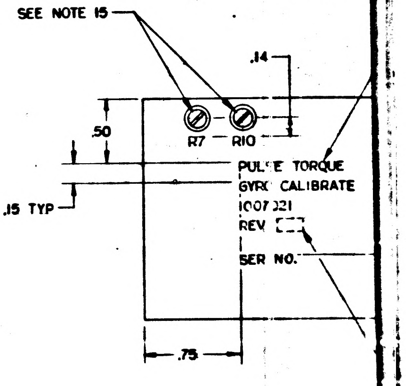
1.540
SEE NOTE 14
B
B
C1
C4
.020
.030
.077 MAX TYP
SEE NOTE 4
.000
.015
3
2
23
SEE NOTE 12
FT 7
.000
.030
.047
.037 TYP
.124
.114 TYP
.062
.20
DO NOT ENCAPSULATE
.154 MAX TYP
SEE NOTE 5
22
C1
6
R12
11
C4
16
R8
15
C3
14


SEE NOTE 11
22

SECTION B-B


20
.000
.015
19
.000
.015

SECTION A-A


SEE NOTE 15
.14
.50
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO.
.15 TYP
.75

VIEW A

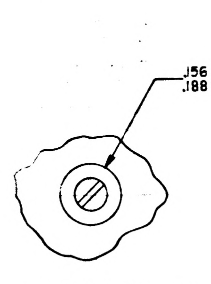
NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM)
7. MARK .100/.060 HIGH WHITE CHARACTERS PER ND1002019
8. STAKE FIND NO.5 THRU FIND NO.8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002019
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER. MIL-P-8585 PER MIL-P-6808
(ASG) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO.23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ____________
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D
20. MUST MEET REQUIREMENTS OF ND1002136

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

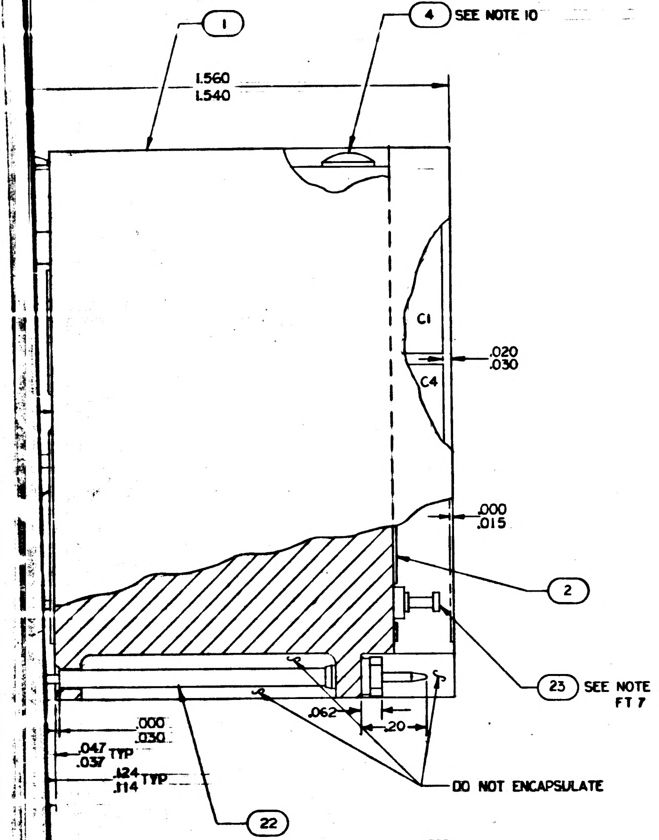
F1 1007021

1007021 D

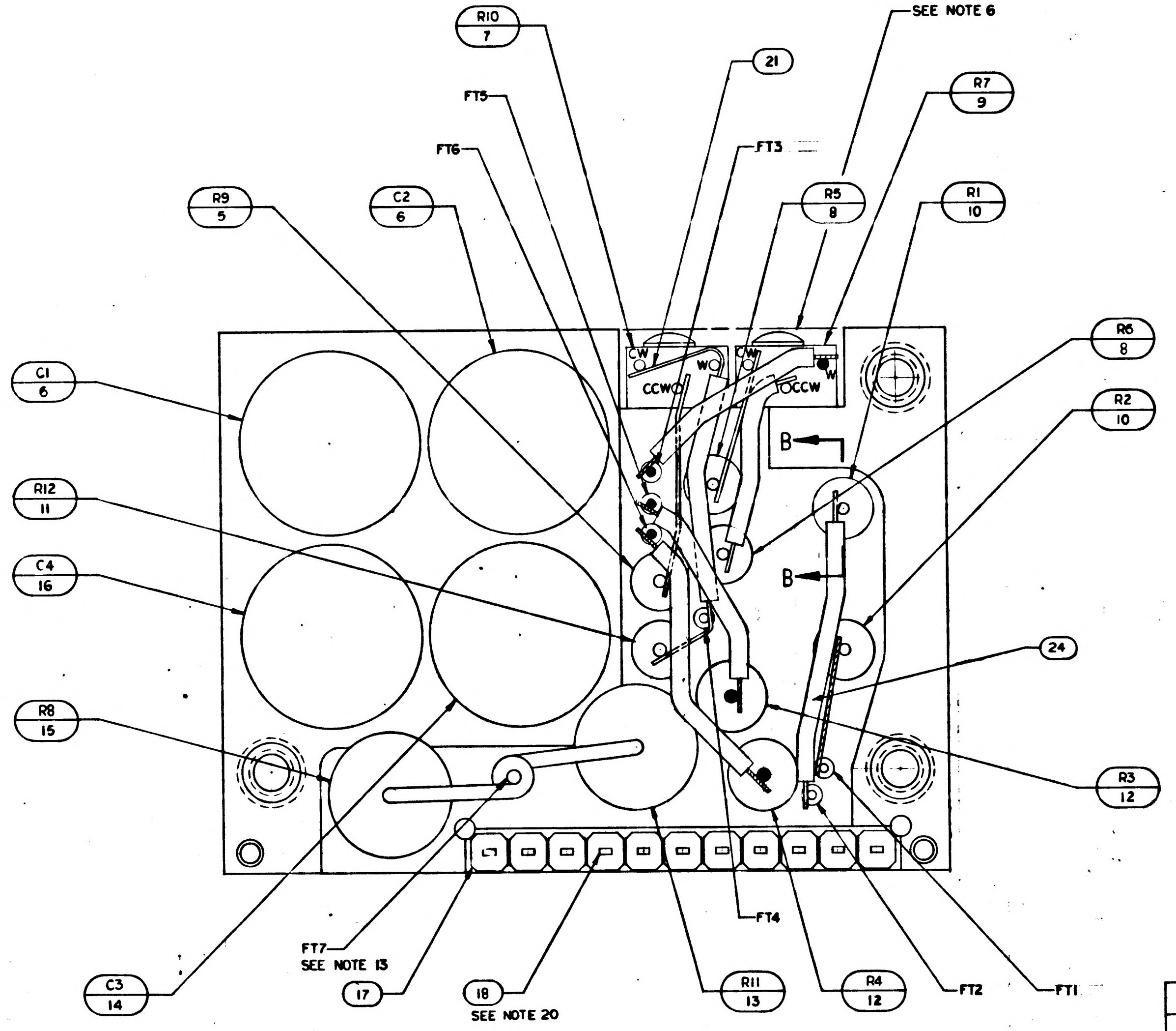
SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TO EC 00 893		
A	REVISED PER TDRR 01000	4-25-63	WR.
B	REVISED PER TDRR 01176	4-30-63	D.T. WR
C	REVISED PER TDRR 01713	6-26-63	RPK WR
D	REVISED PER TDRR 01965	7-20-63	RPK WR



VIEW B-B
2 PLACES



1
4 SEE NOTE 10
1.560
1.540
C1
C4
.020
.030
.000
.015
2
23 SEE NOTE 12 FT 7
.000
.030
.047
.037 TYP
.124
.114 TYP
.062
.20
DO NOT ENCAPSULATE
22



R10
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SEE NOTE 6
21
R7
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FT5
FT3
FT6
R9
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C2
6
R5
8
R1
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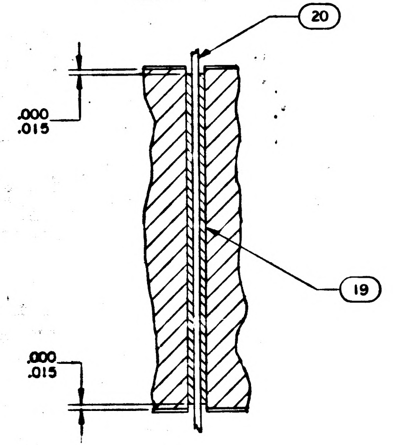
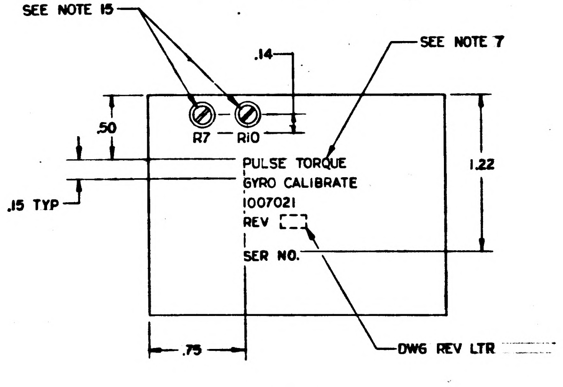
R6
8
C1
6
R2
10
CW
CCW
W
B
R12
11
C4
16
24
R8
15
R3
12
FT7
SEE NOTE 13
17
18
SEE NOTE 20
C3
14
R11
13
R4
12
FT4
FT2
FT1

CHART B	
PART NO	VALUE Ω
1010377-76	82.5K
-77	83.75K
-78	85.0K
-79	86.25K
-80	87.5K
-81	88.75K
-82	90.0K
-83	91.25K
-84	92.5K
-85	93.75K
-86	95.0K
-87	96.25K
-88	97.5K
-89	98.75K
-90	100.0K
-91	101.25K
-92	102.5K
-93	103.75K
-94	105.0K
-95	106.25K
-96	107.5K
-97	108.75K
-98	101.0K
-99	111.25K
-100	112.5K
-101	113.75K
-102	115.0K
-103	116.25K
-104	117.5K



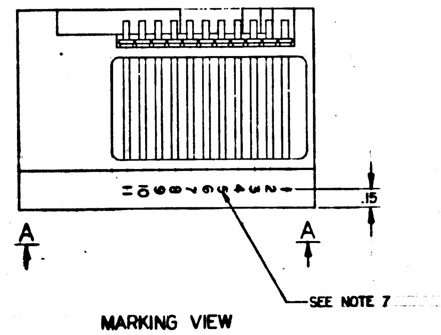
20
.000
.015
19
.000
.015

SECTION A-A



SEE NOTE 15
SEE NOTE 7
.14
.50
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO.
1.22
.15 TYP
.75
DWG REV LTR

VIEW A-A



.15
A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART A	
PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO	VALUE Ω
1010283-12	25.13 K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	1010373-9	RESISTOR, VAR, 5K 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN R. Machado DATE 3-1-63
CHECKED R.P. Kangas 1-6-63
APPROVAL 1-6-63
APPROVAL A.R. 1-6-63
NASA APPROVAL 3-6-63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1

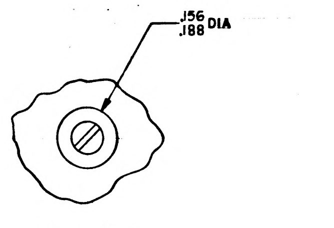
1007021 D

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

F2 1007021

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



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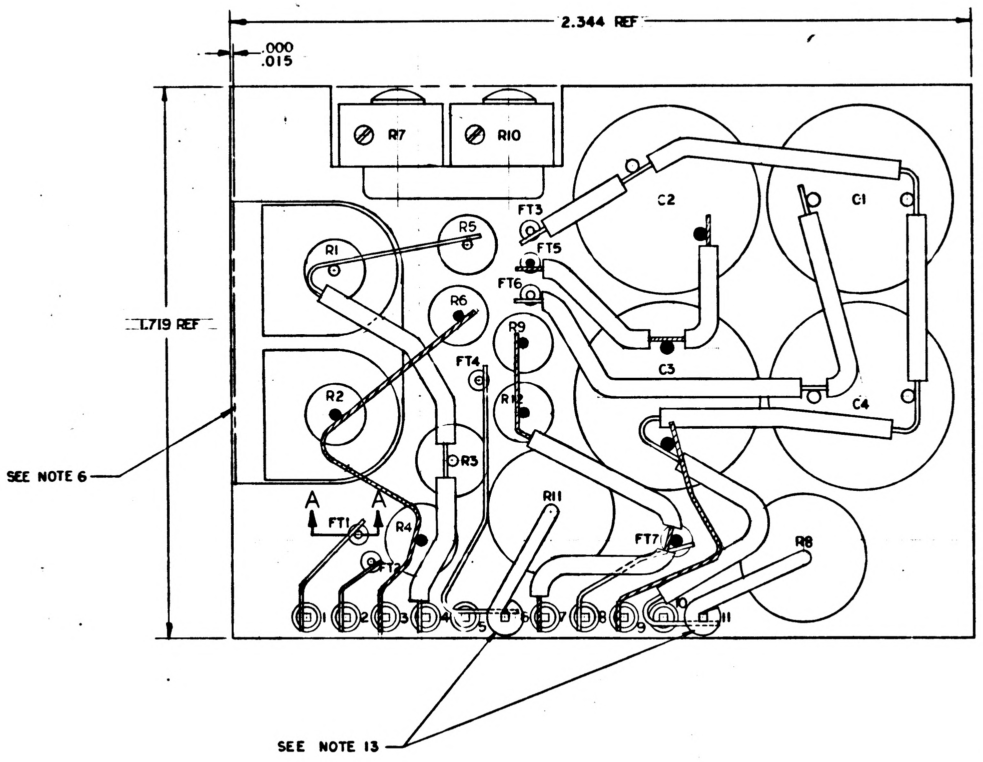
2 PLACES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R7
R10
R1
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R9
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R11
R8
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C3
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FT1
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FT3
FT4
FT5
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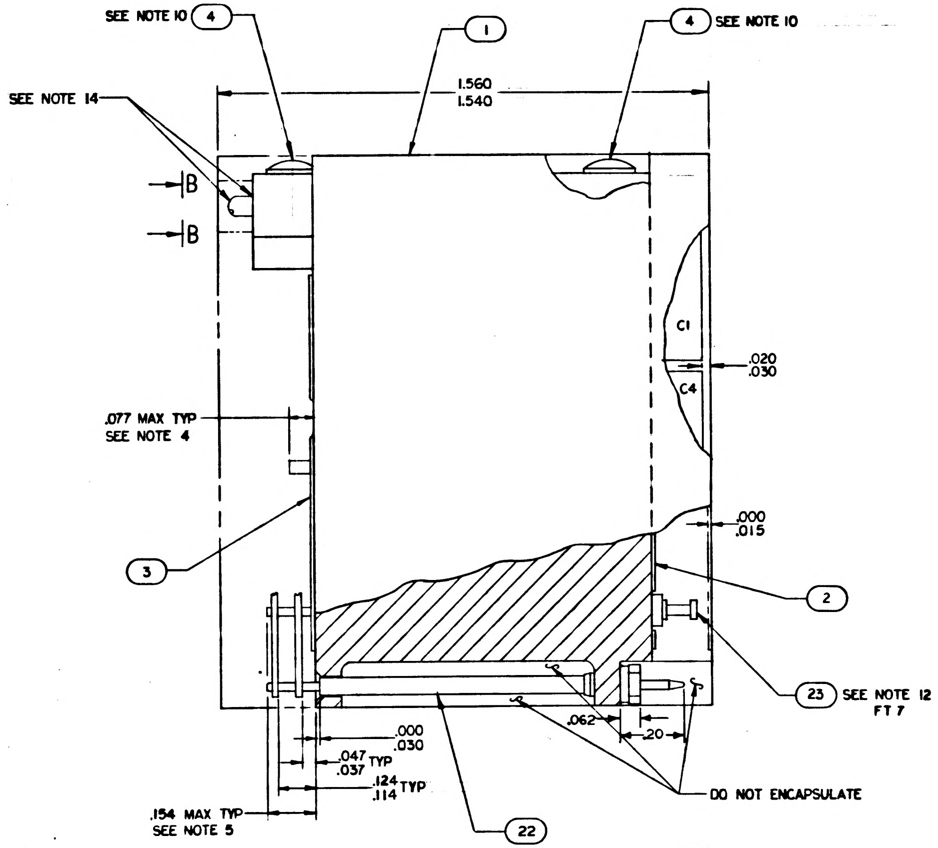
SEE NOTE 6
SEE NOTE 13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4
SEE NOTE 10
SEE NOTE 14
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B
B
C1
C4
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SEE NOTE 4
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.015
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SEE NOTE 12
FT 7
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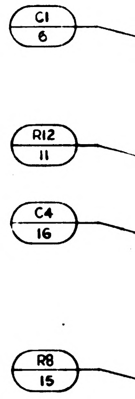
DO NOT ENCAPSULATE
.154 MAX TYP
SEE NOTE 5
22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C4
16
R8
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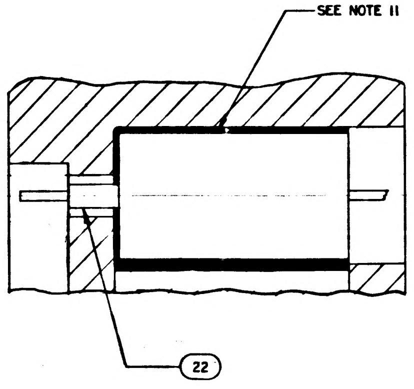
SEE NOTE 11
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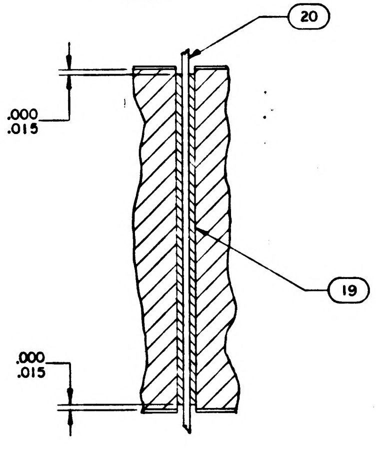
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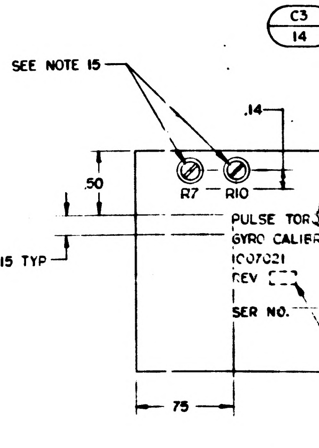
SECTION A-A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SEE NOTE 15
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R10
PULSE TOR
GYRO CALIBR
1007021
REV
SER NO.
.15 TYP
.75

VIEW A

NOTES

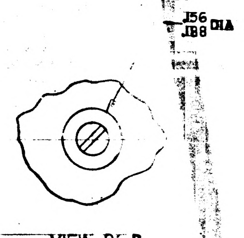
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER N[illegible] 002005 EXCEPT WHERE SHOWN
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM)
7. MARK .100/.060 HIGH WHITE CHARACTERS PER ND1002019
8. STAKE FIND NO. 5 THRU FIND NO. 8 AND FIND NO. 10 THRU FIND NO. 16 PER ND 1002019
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808
(AS6) TO THREADS OF FIND NO. 4
11. BOND FIND NO. 10 PER ND1002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ________
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D
20. MUST MEET REQUIREMENTS OF ND1002136

INCHES
PHOTOGRAPHIC SCALE ONLY

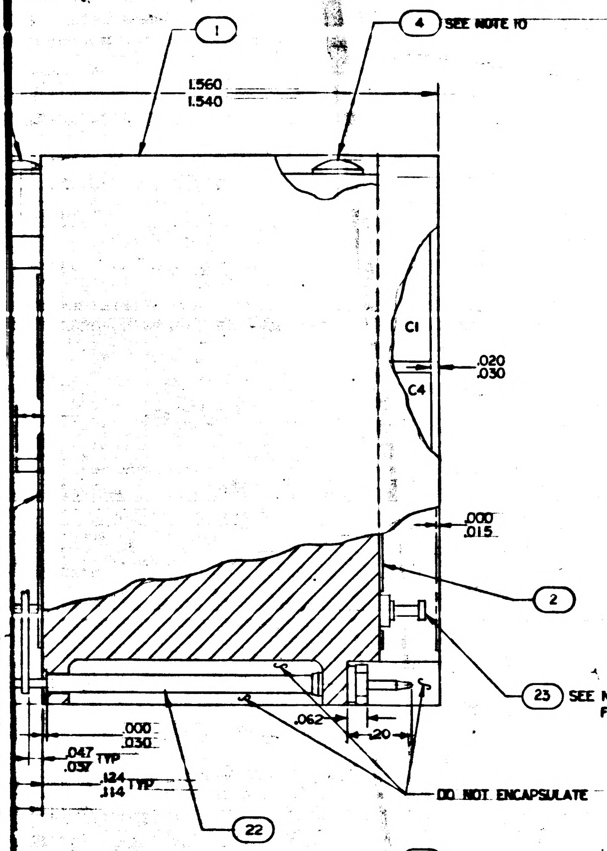
1007021 E

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	4-25-63	WK.
B	REVISED PER TDRR 01176	4-30-63	D.T. WK
C	REVISED PER TDRR 01913	6-26-63	EPR WK
D	REVISED PER TDRR 01965	7-20-63	RPC WK
E	REVISED PER TDRR 03782	10-14-63	

REVISIONS TDRR 00 493



VIEW B-B
2 PLACES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DO NOT ENCAPSULATE
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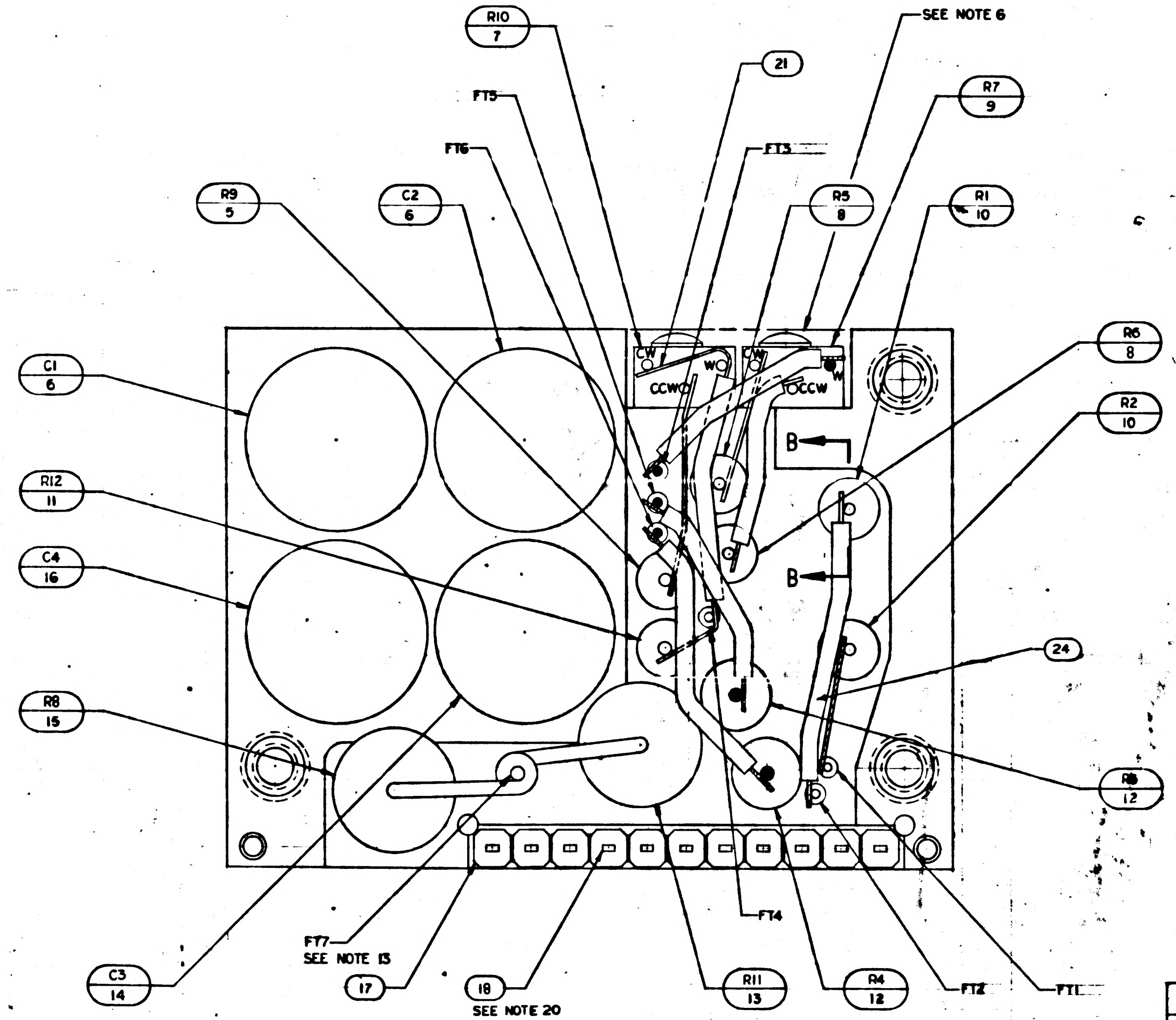
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CCW
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R6
8
C1
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R2
10
B
R12
11
C4
16
24
R8
15
R3
12
FT7
SEE NOTE 13
17
18
SEE NOTE 20
R11
13
R4
12
FT4
FT2
FT1
C3
14

CHART B			
PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	55K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
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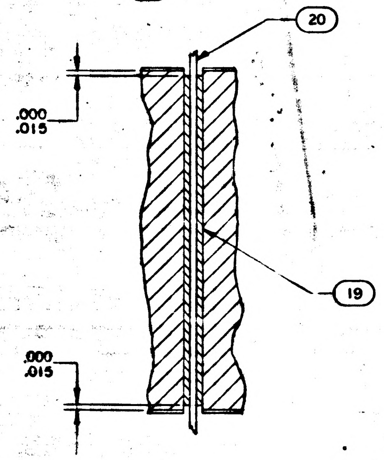
-102	115.0K		
-103	116.25K		
-104	117.5K		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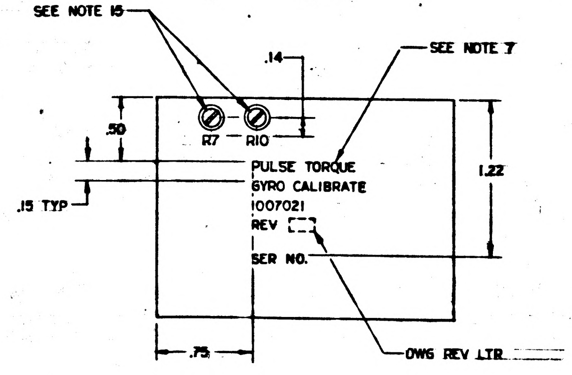
SECTION A-A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R7
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REV
SER NO.
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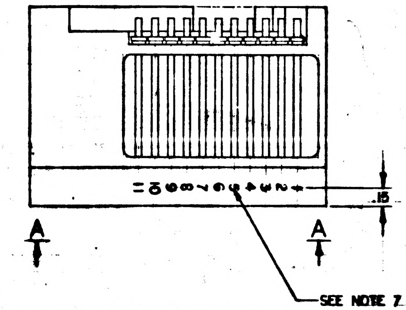
DWG REV LTR

VIEW A-A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SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART E	
PART NO	VALUE
1010373-9	5K
1010373-10	10K

CHART A	
PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253-13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
╳	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF - .0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF - .0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN R. Machado DATE Feb 63
CHECKED R.P. Kaynbury 18 Feb 63
APPROVAL 1 Mar 63
APPROVAL 1 Mar 63
NASA APPROVAL 3/4/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1

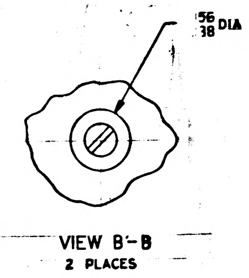
1007021 E

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

E2 1007021

[illegible]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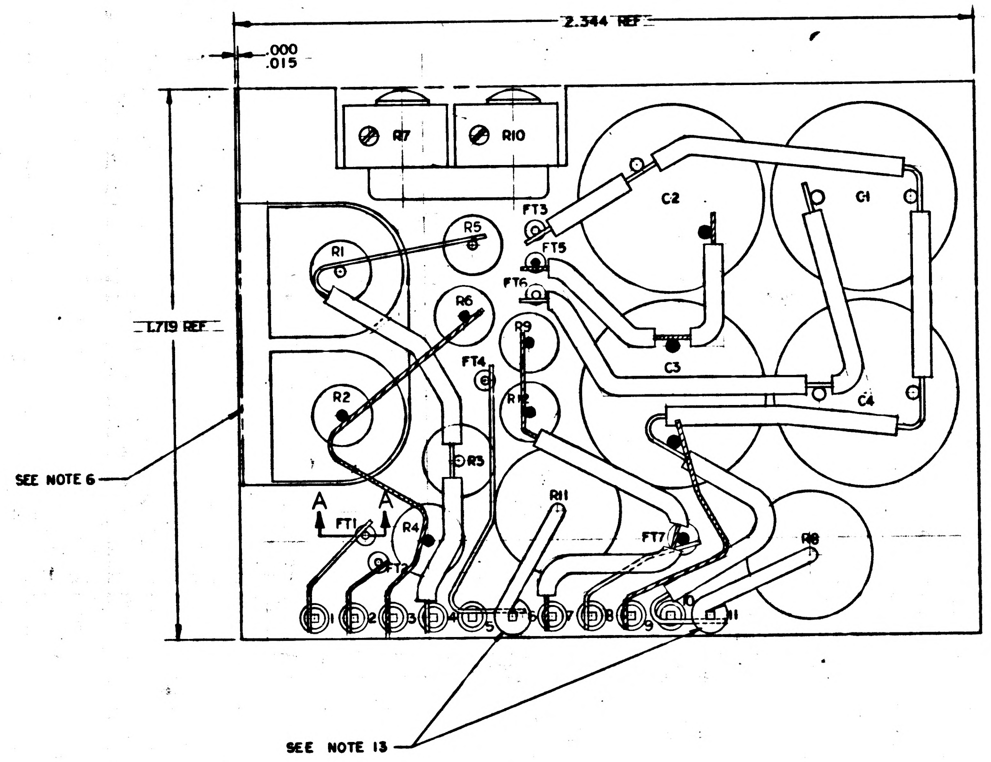
2 PLACES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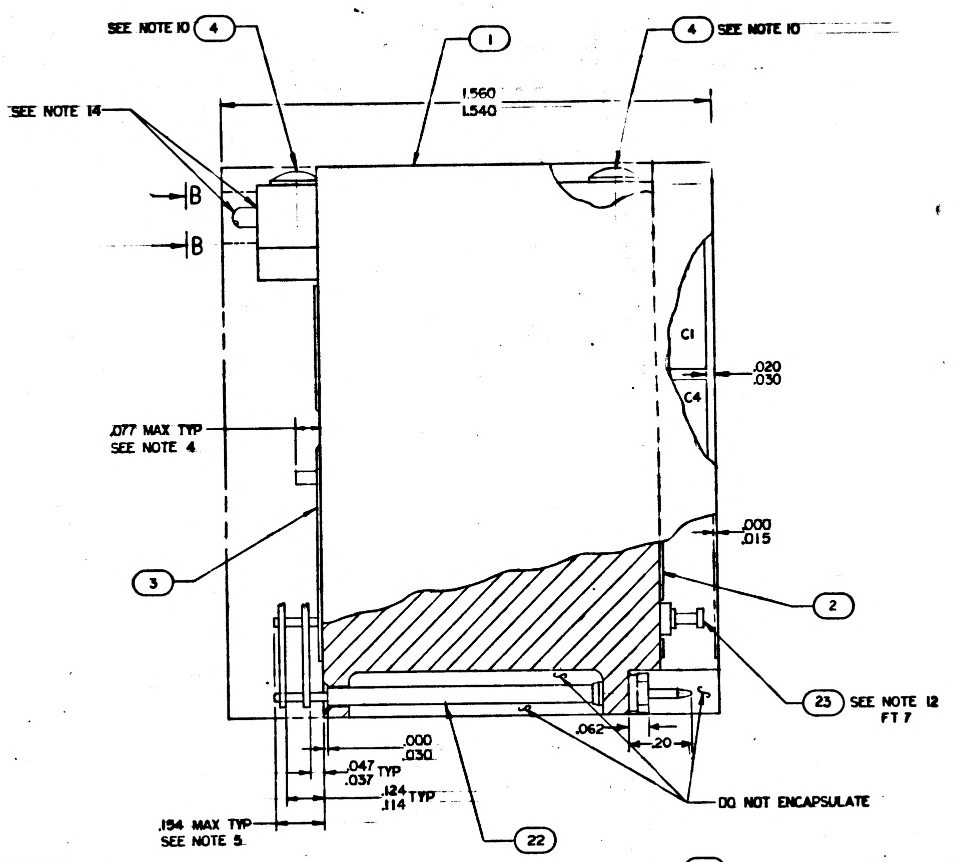
SEE NOTE 6
SEE NOTE 13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SEE NOTE 4
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SEE NOTE 12
FT 7
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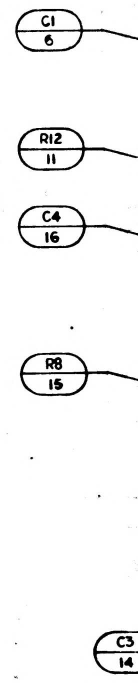
SEE NOTE 5
DO NOT ENCAPSULATE
22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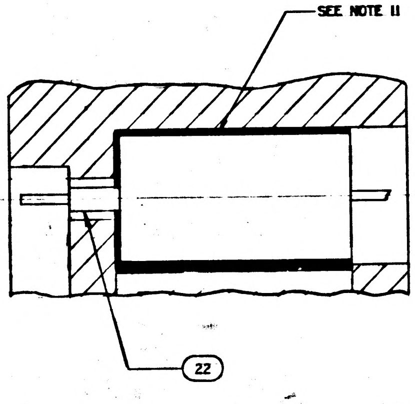
SEE NOTE 11
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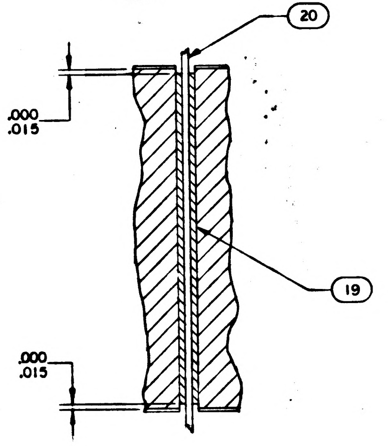
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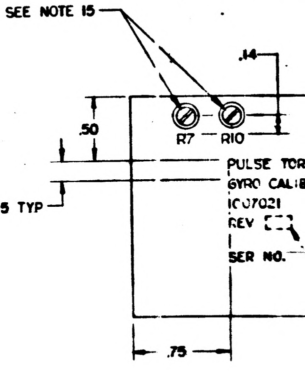
SEE NOTE 15
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R10
.15 TYP
PULSE TOR
GYRO CALIB
1007021
REV
SER NO.
.75

VIEW

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM)
7. MARK .100/.060 HIGH WHITE CHARACTERS PER ND1002019
8. STAKE FIND NO.5 THRU FIND NO. 8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002019
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO.23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ______
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D
20. MUST MEET REQUIREMENTS OF ND1002136
21. AT FINAL TEST, R7 IS TO BE SELECTED FROM CHART E

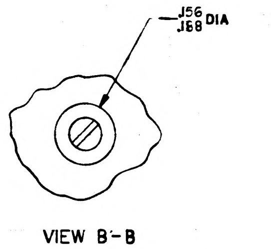
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1

1007021

1007021 F

		REVISIONS TO ~~EE~~ 00 ~~693~~	
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	11-25-63	WR.
B	REVISED PER TDRR 01176	4-30-63	D.T. WR
C	REVISED PER TDRR 01913	6-26-63	EAK WR.
D	REVISED PER TDRR 01965	7-20-63	[illegible] WR.
E	REVISED PER TDRR 03782	10-14-63	[illegible]
F	REVISED PER TDRR 04794	23 NOV 63	[illegible]



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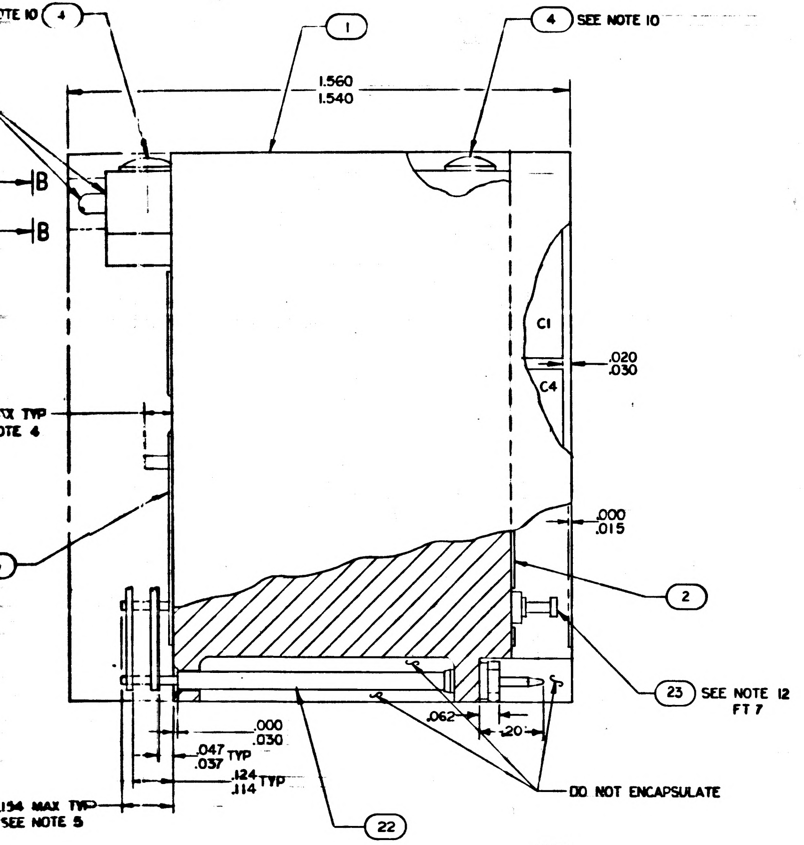
2 PLACES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C1
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MAX TYP
NOTE 4
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(23) SEE NOTE 12
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SEE NOTE 5
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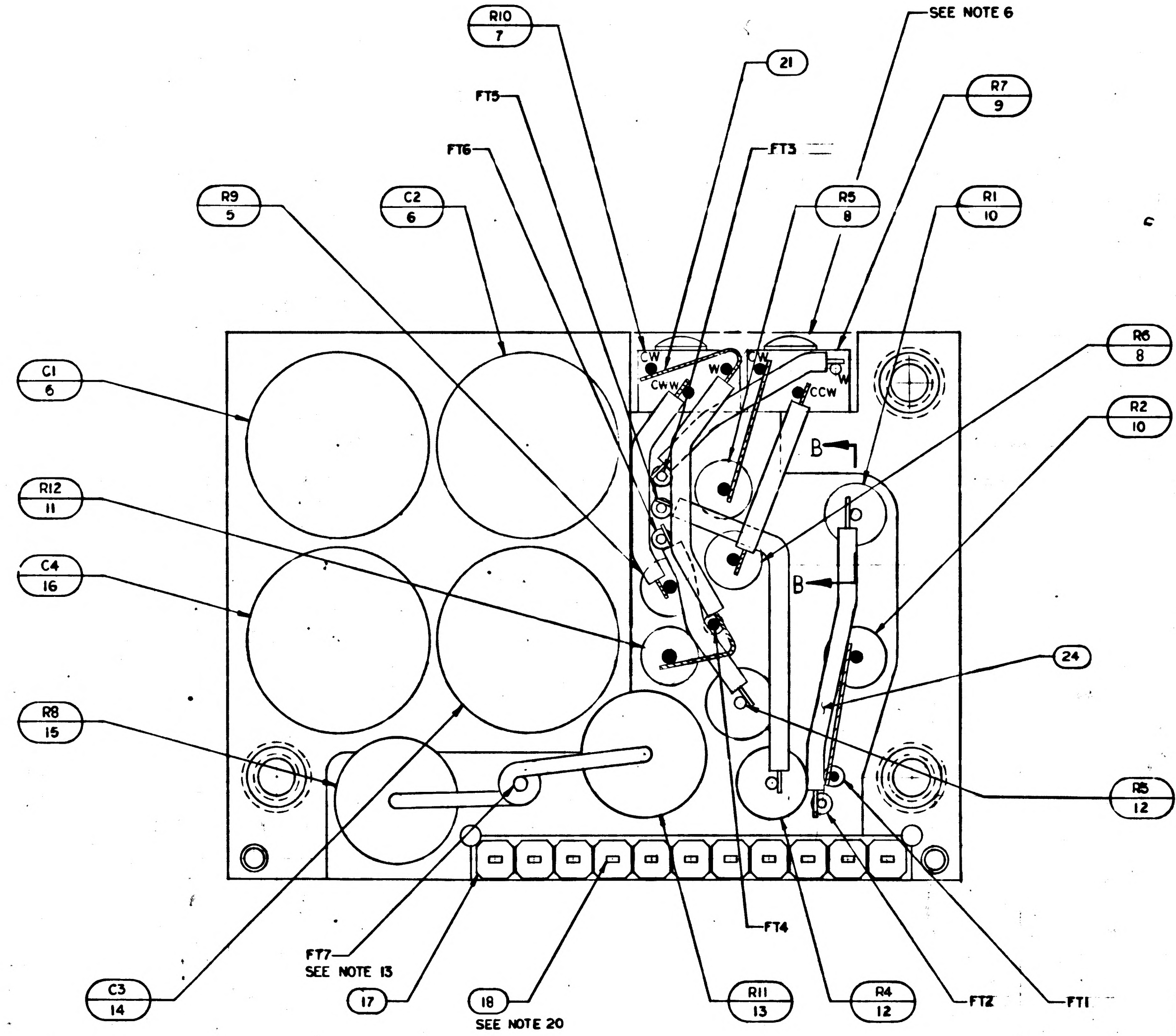
(22)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SEE NOTE 13
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CHART B			
PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
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-82	90.0K	-287	154K
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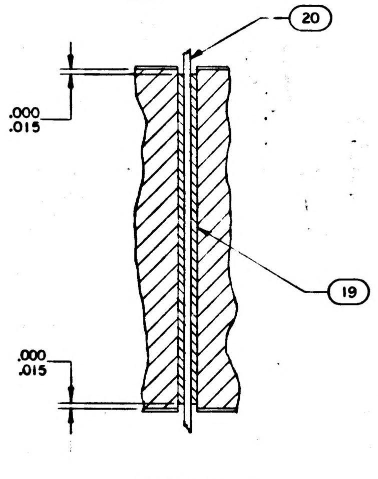
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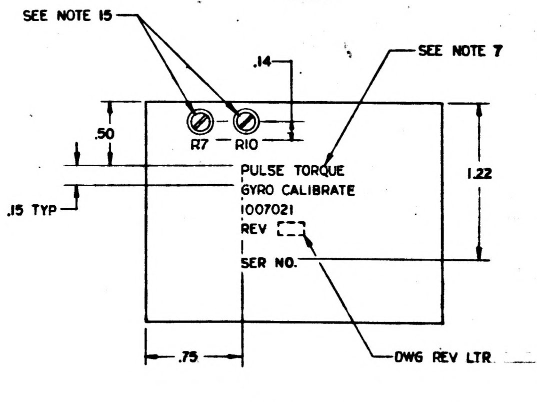
SECTION A-A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DWG REV LTR

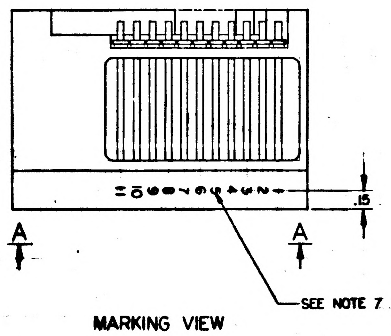
VIEW A-A

CHART E	
PART NO	VALUE
1010373-9	5K
1010373-10	10K

CHART A	
PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772


A
A
.15
SEE NOTE 7

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10 Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600 Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525 Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

1007102	
1007101	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.05 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN R. Machado DATE Feb 1963
CHECKED [illegible] 18 Feb 63
APPROVAL [illegible] 1 Mar 63
APPROVAL [illegible] 1 Mar 63
NASA APPROVAL [illegible] 3/4/63
MIT APPROVAL [illegible] 6 March 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

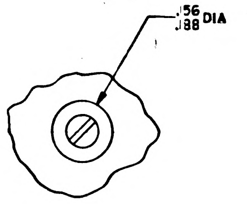
PULSE TORQUE GYRO CALIBRATE ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1 WT SHEET 1 OF 1

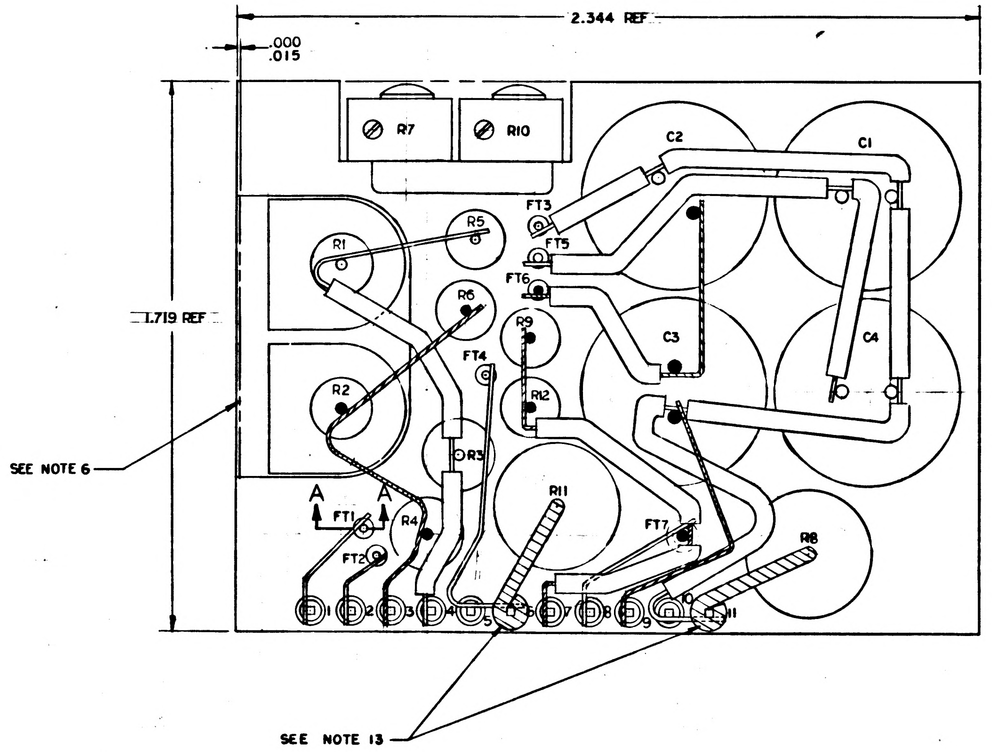
MASTER

F2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



VIEW B-B
2 PLACES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.015
1.719 REF
R7
R10
C2
C1
R5
R1
FT3
FT5
FT6
R6
R9
C3
C4
FT4
R12
R2
R3
A
A
FT1
FT2
R4
R11
FT7
R8
1
2
3
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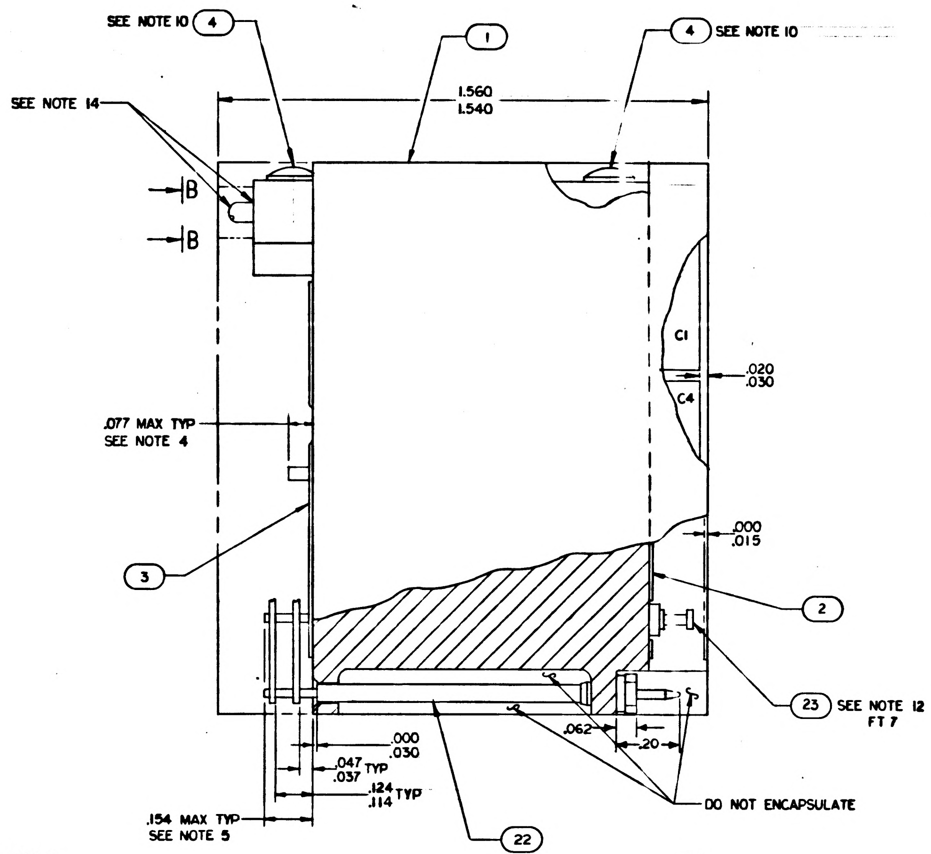
5
6
7
8
9
10
11
SEE NOTE 6
SEE NOTE 13


SEE NOTE 10
4
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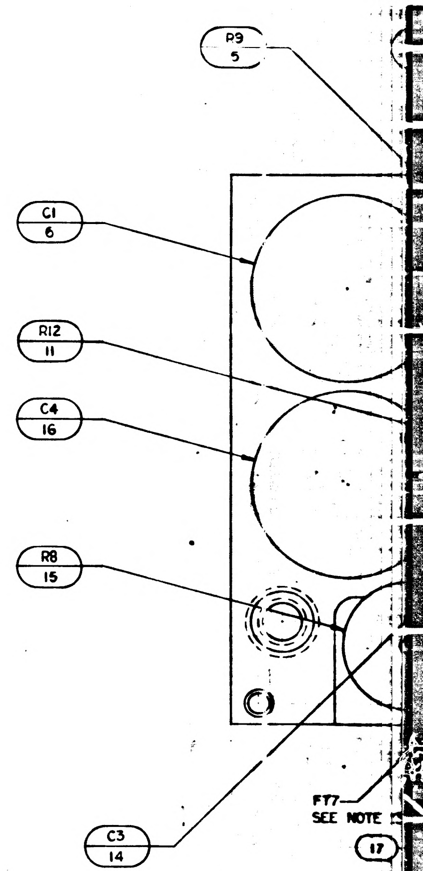
4
SEE NOTE 10
SEE NOTE 14
1.560
1.540
B
B
C1
C4
.020
.030
.077 MAX TYP
SEE NOTE 4
3
.000
.015
2
23
SEE NOTE 12
FT 7
.062
.20
.000
.030
.047
.037 TYP
.124
.114 TYP
.154 MAX TYP
SEE NOTE 5
22
DO NOT ENCAPSULATE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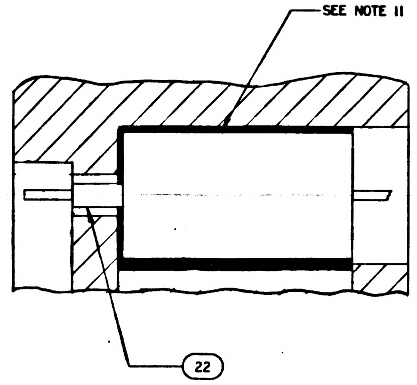
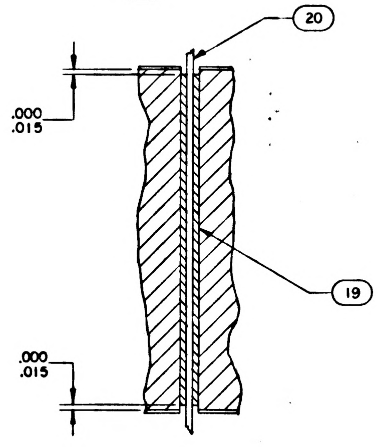
5
C1
6
R12
11
C4
16
R8
15
C3
14
FT7
SEE NOTE
17


SEE NOTE 11
22

SECTION B-B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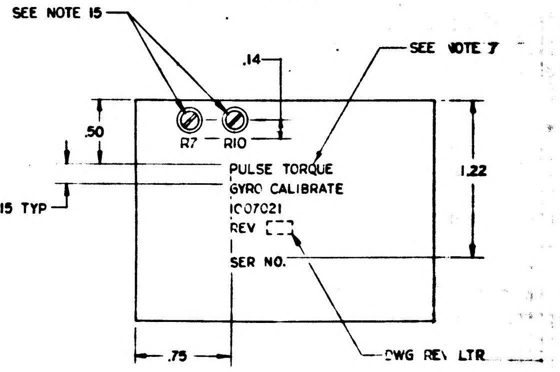
.015
19
.000
.015

SECTION A-A


SEE NOTE 15
.14
SEE NOTE 7
.50
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO.
1.22
.15 TYP
.75
DWG REV LTR

VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM)
7. MARK .100/.060 HIGH WHITE CHARACTERS PER ND1002019
8. STAKE FIND NO.5 THRU FIND NO. 8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002019
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808
    (ASG) TO THREADS OF FIND NO. 4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ________
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D
20. MUST MEET REQUIREMENTS OF ND1002136
21. AT FINAL TEST, R7 IS TO BE SELECTED FROM CHART E

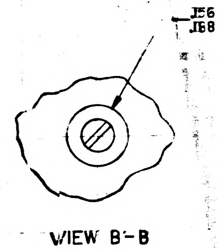
E1

1007021

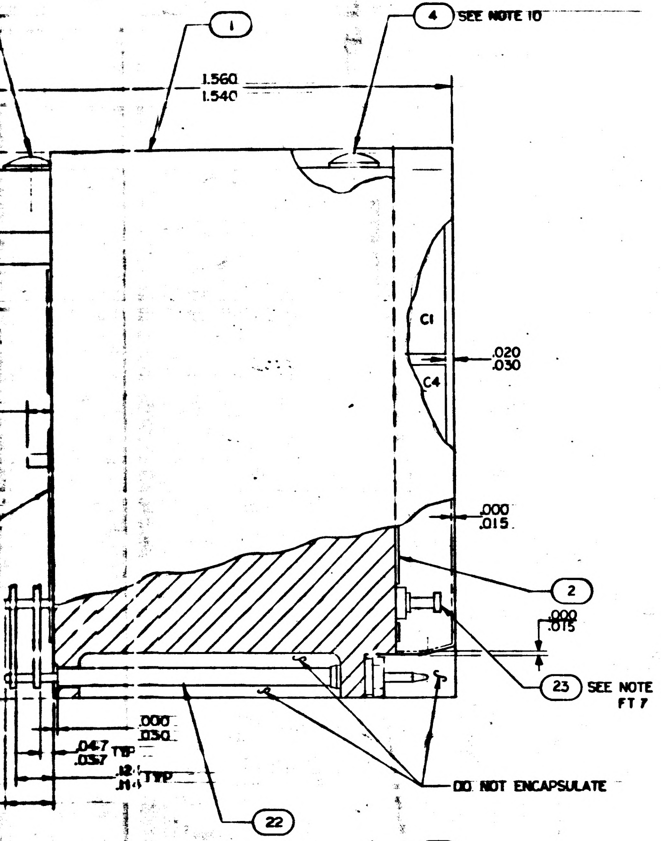
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007021 G

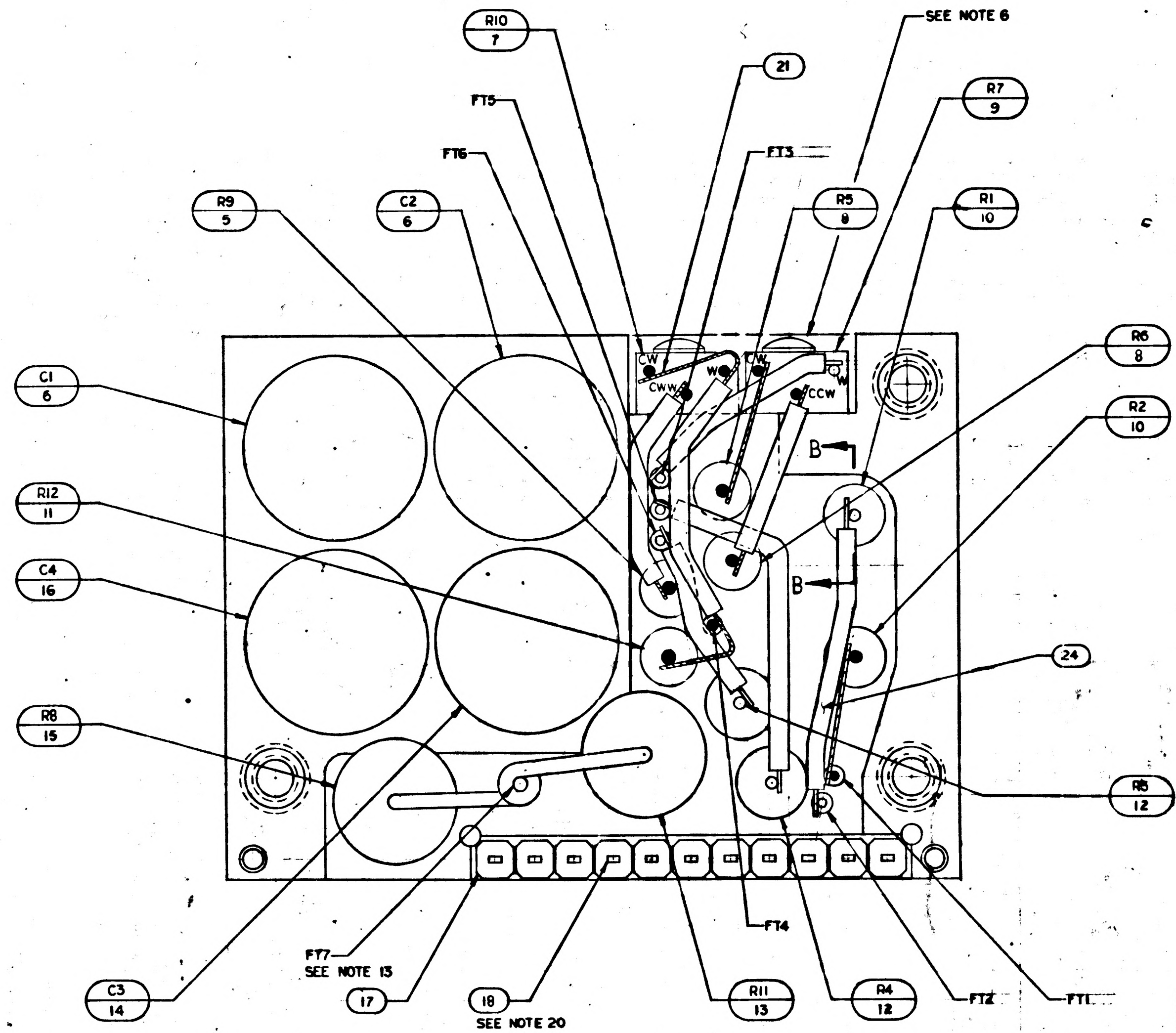
SYM	REVISIONS TO EE 00 893 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	[illegible]	WR.
B	REVISED PER TDRR 01176	4-30-63	D.T. WR
C	REVISED PER TDRR 01913	6-26-63	[illegible] WR
D	REVISED PER TDRR 01965	7-20-63	RPK WR.
E	REVISED PER TDRR 03782	[illegible]	[illegible]
F	REVISED PER TDRR 04794	20 NOV 63	[illegible]
G	REVISED PER TDRR 05456	[illegible] 63	[illegible]



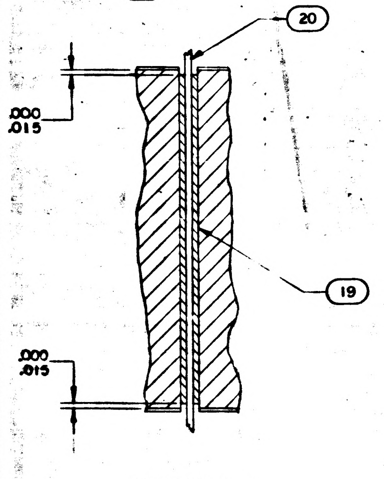
VIEW B-B
2 PLACES



1
4 SEE NOTE 10
1.560
1.540
C1
C4
.020
.030
.000
.015
2
.000
.015
23 SEE NOTE 12 FT 7
.000
.030
.047
.037 TYP
.12
.14 TYP
22
DO NOT ENCAPSULATE



R10 7
21
SEE NOTE 6
R7 9
FT5
FT3
FT6
R9 5
C2 6
R5 8
R1 10
R6 8
C1 6
R2 10
R12 11
CW
CWW
W
CCW
B
B
C4 16
24
R8 15
R3 12
FT7
SEE NOTE 13
FT4
C3 14
17
18
SEE NOTE 20
R11 13
R4 12
FT2
FT1



20
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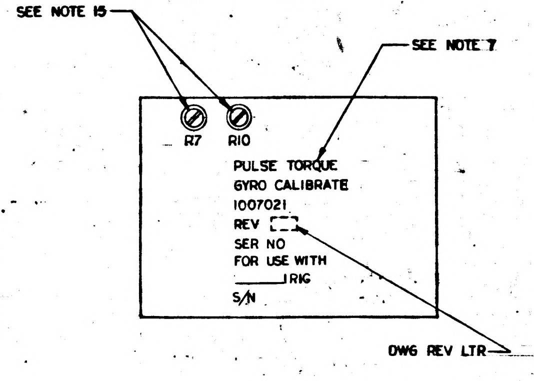
19
.000
.015

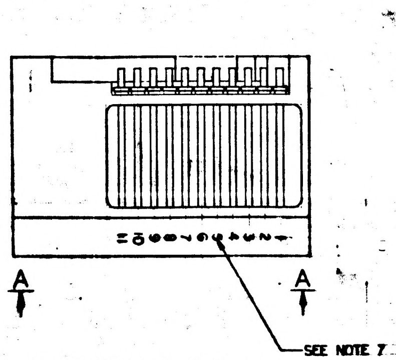
SECTION A-A



SEE NOTE 15
SEE NOTE 7
R7
R10
DWG REV LTR

PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO
FOR USE WITH
______IRIG
S/N

VIEW A-A



A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART B			
PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	55K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		

CHART E	
PART NO	VALUE
1010373-9	5K
1010373-10	10K

CHART A	
PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD. WW 1/10W ±1%	8
1	1010373-6	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD. WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN R. Machado DATE [illegible]
CHECKED R.P. Kingsbury [illegible]
APPROVAL [illegible] 1 [illegible] 63
APPROVAL A.R. Test [illegible]
NASA APPROVAL [illegible] 3/4/63
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007021
SCALE 8/1 | WT | SHEET 1 OF 1

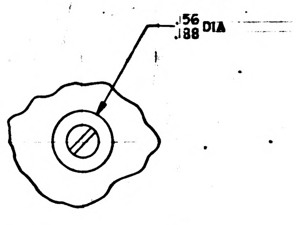
1007021 G

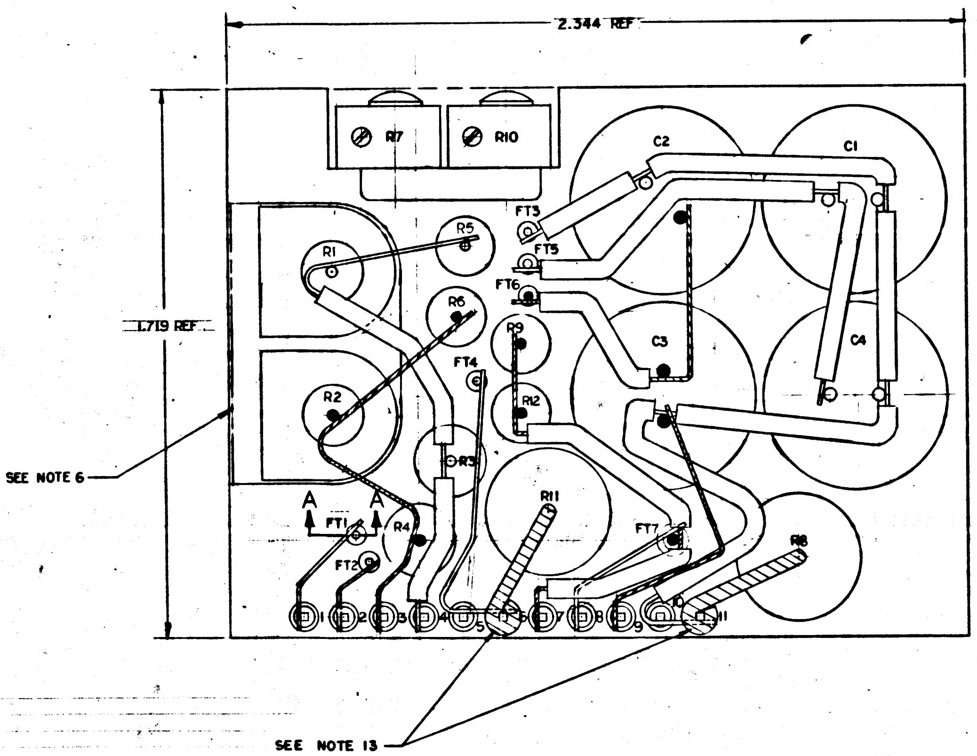
MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

F-2

[illegible] OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.


VIEW B-B
2 PLACES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C4
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FT4
R12
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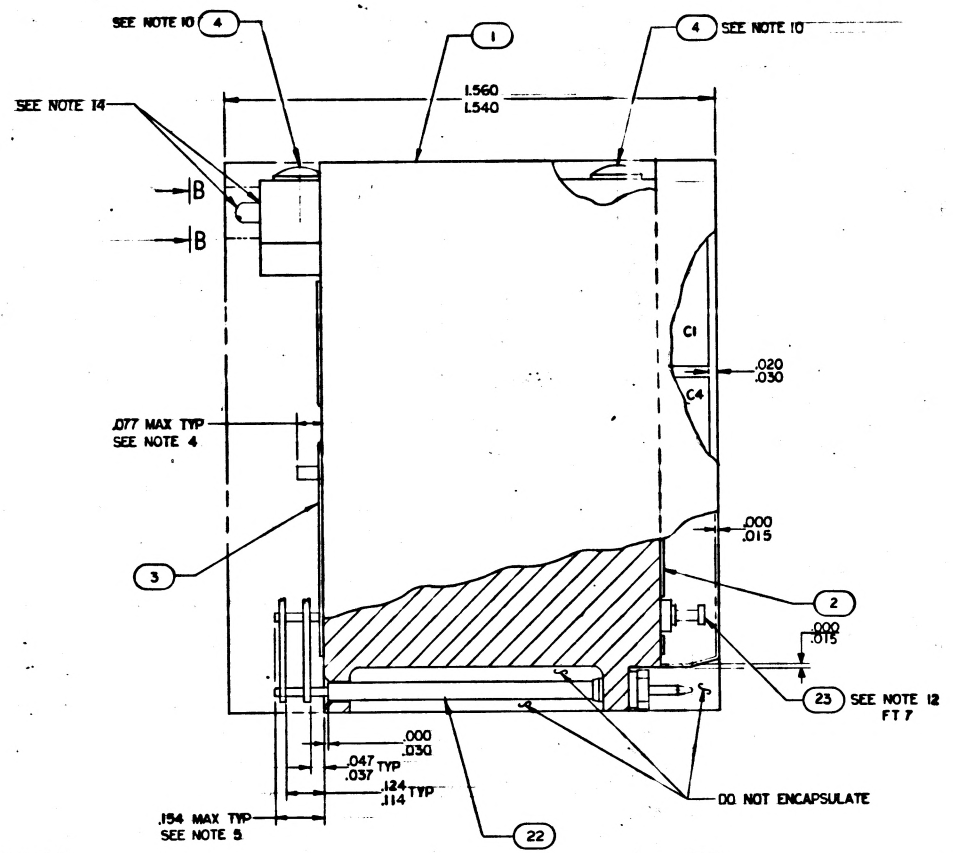
SEE NOTE 6
SEE NOTE 13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SEE NOTE 10
SEE NOTE 14
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1.540
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B
C1
C4
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SEE NOTE 4
.000
.015
3
2
.000
.015
23
SEE NOTE 12
FT 7
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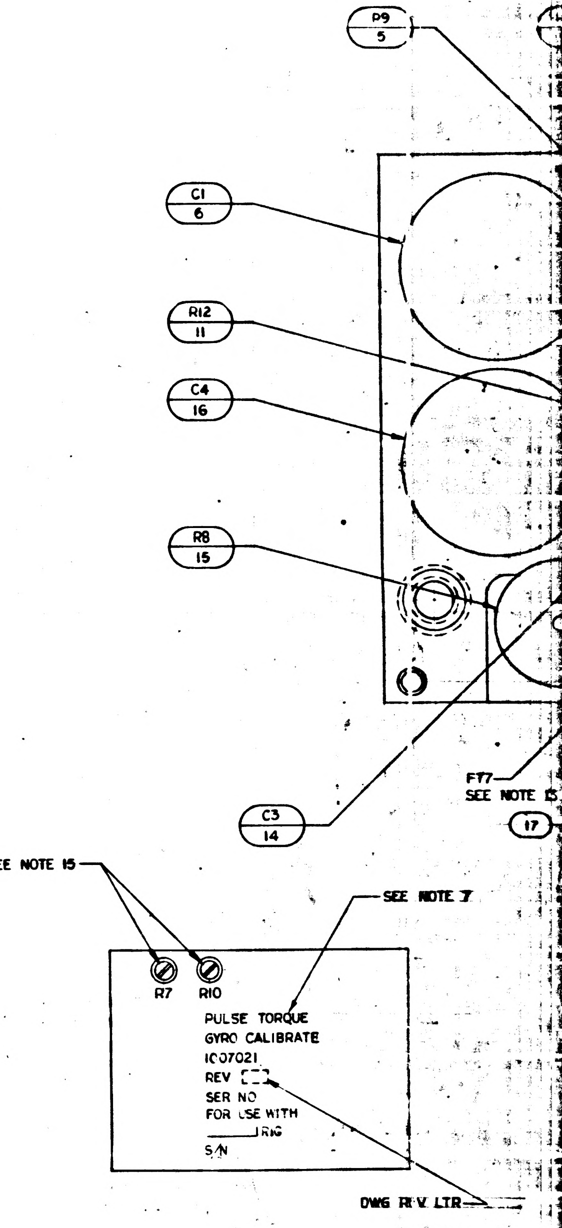
SEE NOTE 5
22
DO NOT ENCAPSULATE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C4
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R8
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C3
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SEE NOTE 15
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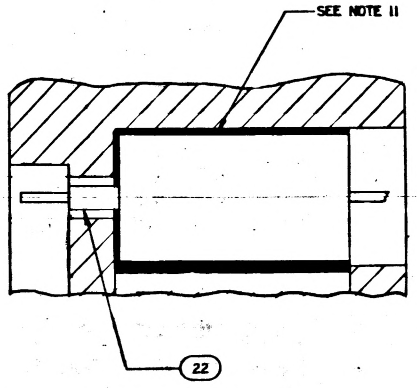
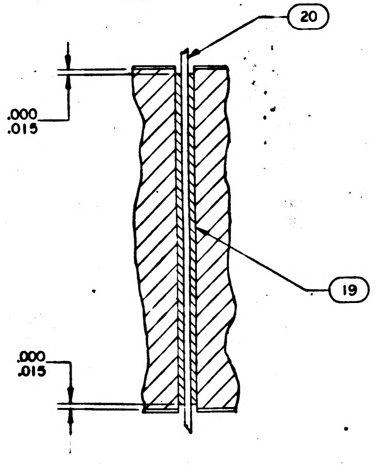
SEE NOTE 15
R7
R10
SEE NOTE 7
PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO
FOR USE WITH
RIG
S/N
DWG REV LTR
VIEW A-A


SEE NOTE 11
22
SECTION B-B


20
.000
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19
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SECTION A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002005~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM).
   UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO. 5 THRU FIND NO. 8 AND FIND NO. 10 THRU FIND NO. 16 PER ND 1002019
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 4
11. BOND FIND NO. 10 PER ND 002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ______
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D
20. MUST MEET REQUIREMENTS OF ND1002136
21. AT FINAL TEST, R7 IS TO BE SELECTED FROM CHART E

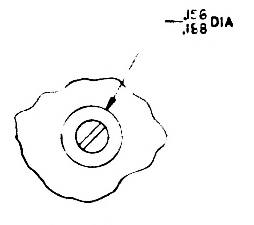
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

F-1

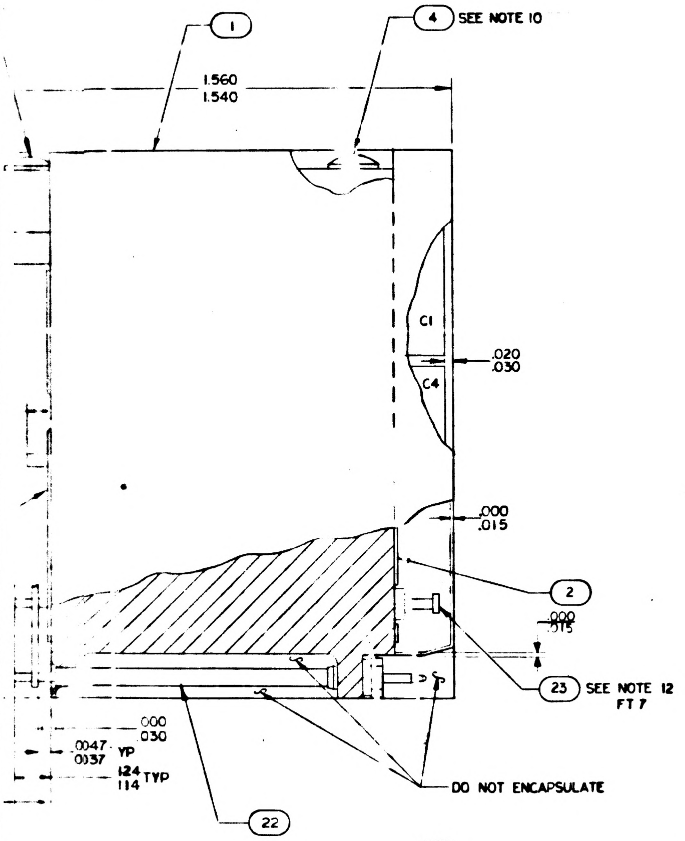
H 1007021

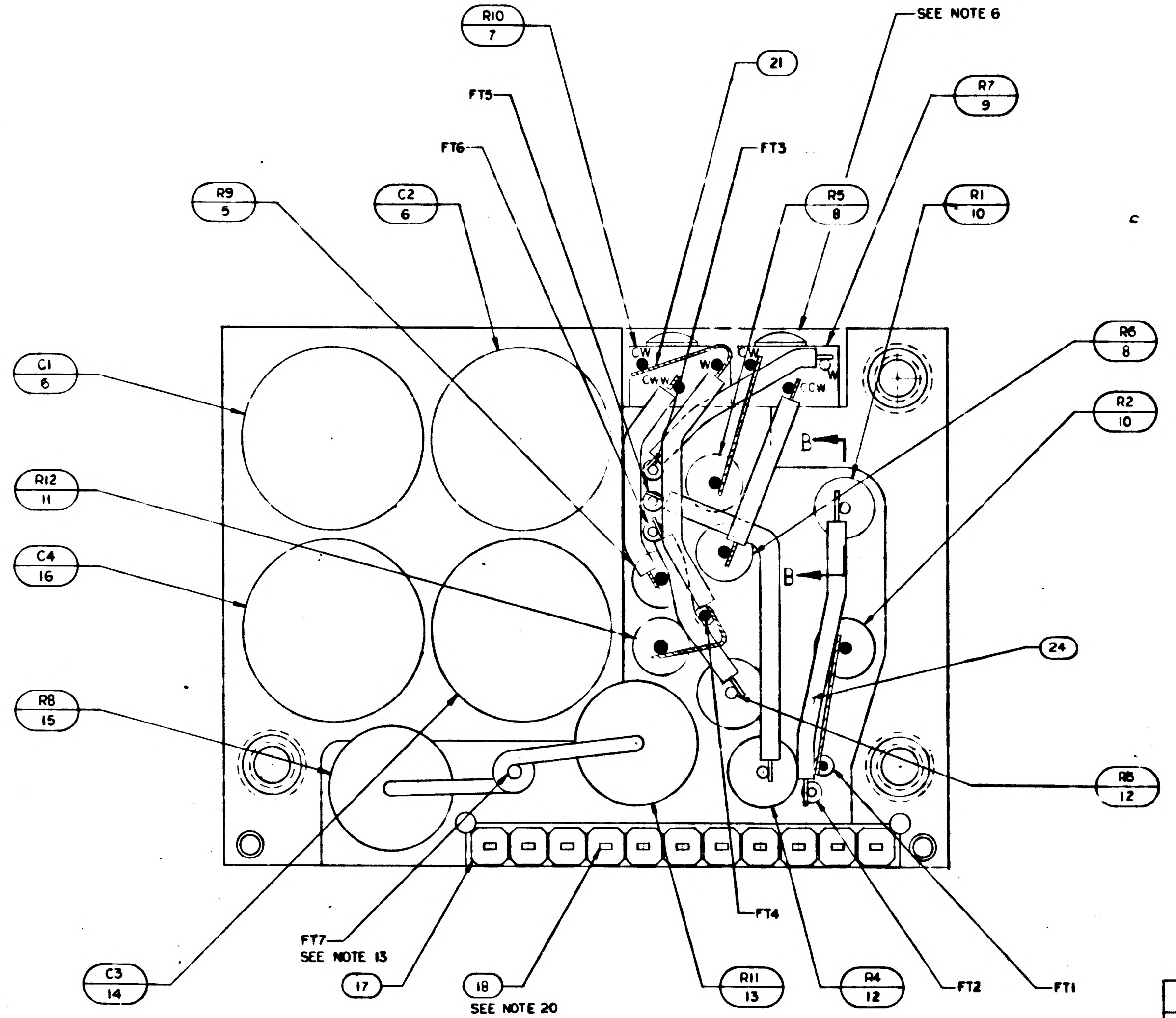
REVISIONS TDRR 00 893

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	[illegible]	WR
B	REVISED PER TDRR 01176	4-30-63	D.T. WR
C	REVISED PER TDRR 01713	[illegible]	WR
D	REVISED PER TDRR 01965	[illegible]	WR
E	REVISED PER TDRR 03782	[illegible]	[illegible]
F	REVISED PER TDRR 04794	63	[illegible]
G	REVISED PER TDRR 05456	63	WR
H	REVISED PER TDRR 07006	27 MAR 64	JJJ C7P



VIEW B-B
2 PLACES


1
4 SEE NOTE 10
1.560
1.540
C1
C4
.020
.030
.000
.015
2
.000
.015
23 SEE NOTE 12
FT 7
.000
.030
.0047
.0037 YP
.124
.114 TYP
DO NOT ENCAPSULATE
22


R10
7
SEE NOTE 6
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R7
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FT5
FT3
FT6
R9
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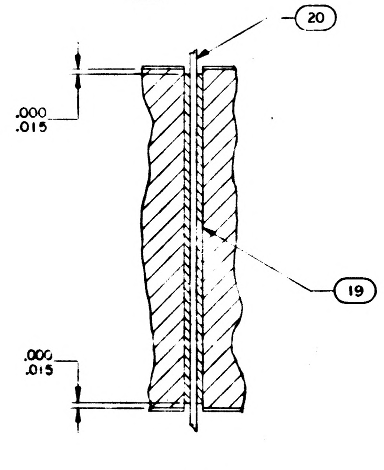
C2
6
R5
8
R1
10
C1
6
R6
8
R2
10
R12
11
C4
16
B
B
24
R8
15
R3
12
C3
14
FT7
SEE NOTE 13
17
18
SEE NOTE 20
R11
13
R4
12
FT4
FT2
FT1
CW
CCW
W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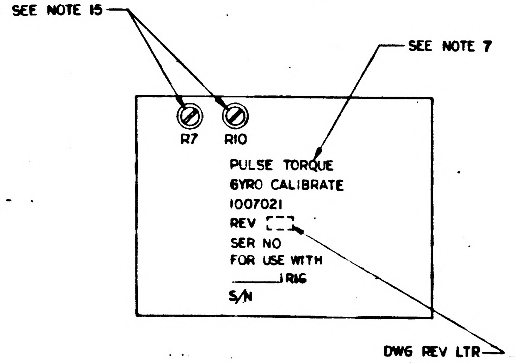
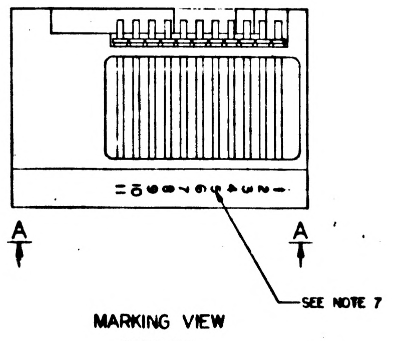
.015
19
.000
.015

SECTION A-A


SEE NOTE 15
SEE NOTE 7
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO
FOR USE WITH
IRIG
S/N
DWG REV LTR

VIEW A-A


A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART B			
PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		

CHART A	
PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

CHART E	
PART NO	VALUE
1010373-9	5K
1010373-10	10K

LIST OF MATERIALS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST. MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

H 1007021

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN R. Machado DATE
CHECKED
APPROVAL
APPROVAL A.R. Tait
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1

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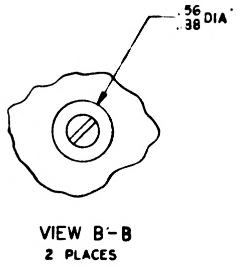
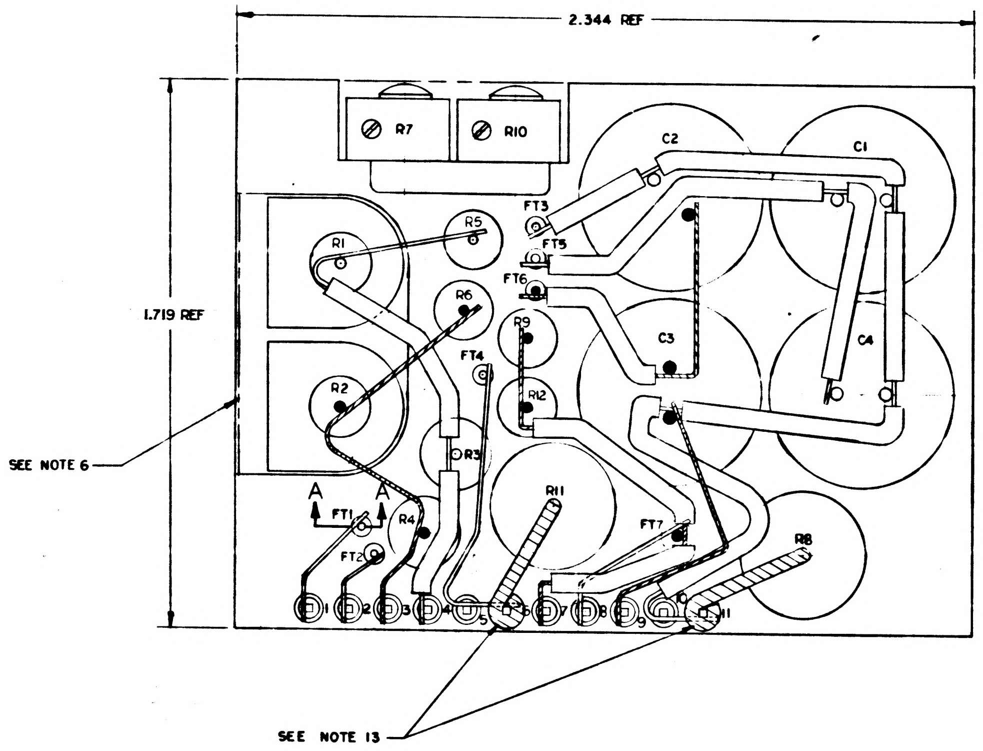


VIEW B-B
2 PLACES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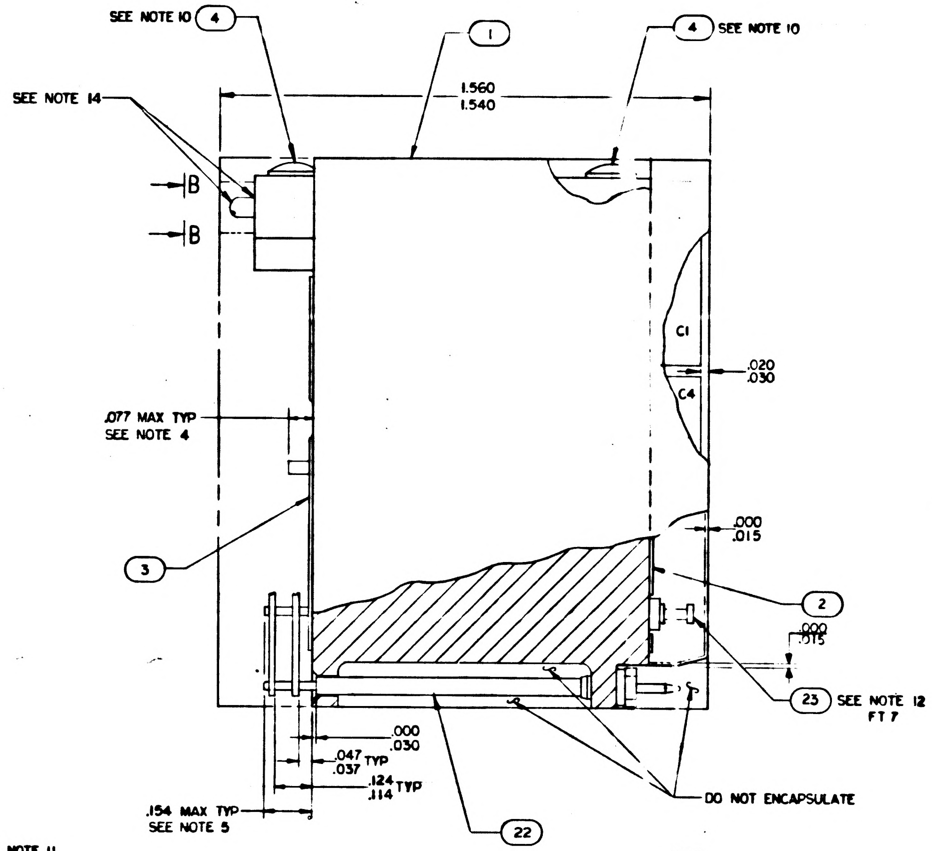
1.719 REF
R7
R10
C2
C1
R1
R5
FT3
FT5
FT6
R6
R9
C3
C4
FT4
R12
R2
R3
SEE NOTE 6
A
A
FT1
R4
FT2
R11
FT7
R8
1
2
3
4
5
6
7
8
9
10
11
SEE NOTE 13


SEE NOTE 10
4
1
4
SEE NOTE 10
SEE NOTE 14
1.560
1.540
B
B
C1
.020
.030
C4
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SEE NOTE 4
3
.000
.015
2
.000
.015
23
SEE NOTE 12
FT 7
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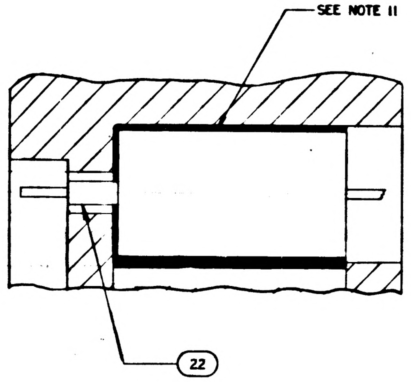
.030
.047
.037 TYP
.124
.114 TYP
.154 MAX TYP
SEE NOTE 5
22
DO NOT ENCAPSULATE


SEE NOTE 11
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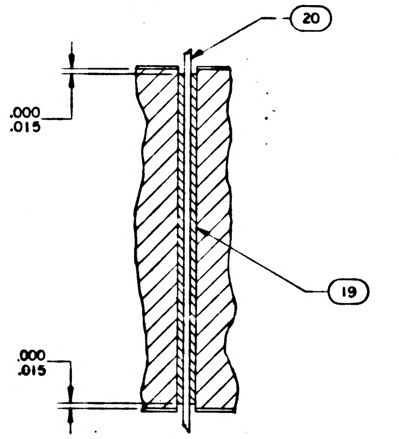
SECTION B-B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19
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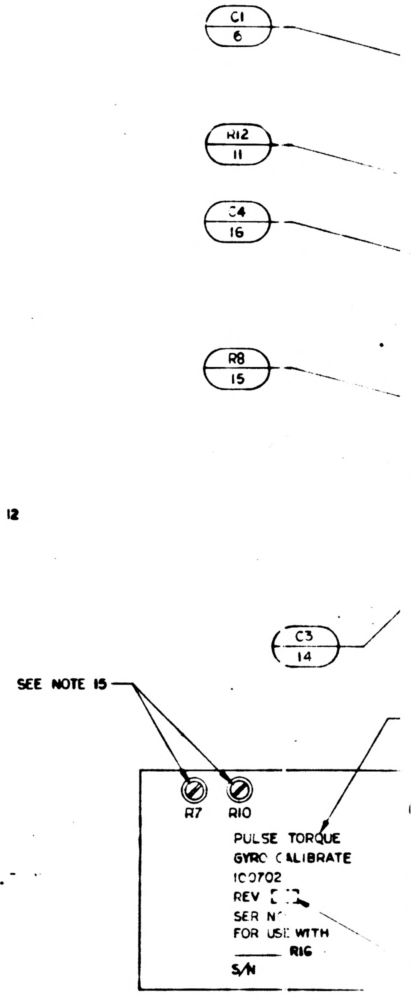
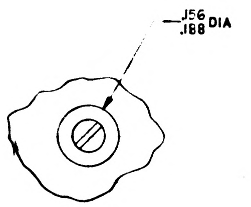
SECTION A-A


C1
6
R12
11
C4
16
R8
15
C3
14
SEE NOTE 15
R7
R10
PULSE TORQUE
GYRO CALIBRATE
100702
REV
SER NO
FOR USE WITH
RIG
S/N

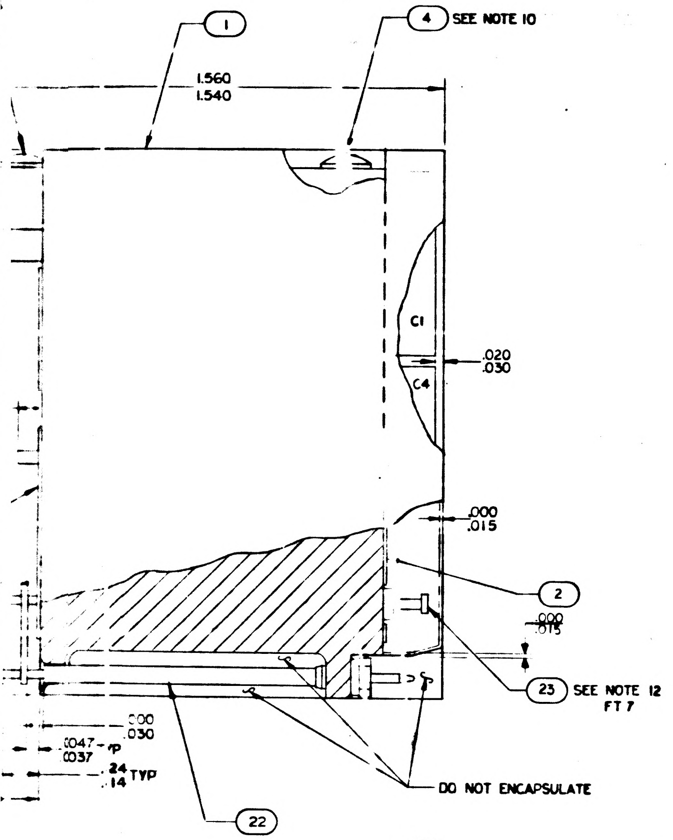
VIEW A-A

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO. 5 THRU FIND NO. 8 AND FIND NO. 10 THRU FIND NO. 16 PER ND 1002009
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER. MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO. 4
11. BOND FIND NO. 10 PER ND1002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ________
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D
20. MUST MEET REQUIREMENTS OF ND1002136
21. AT FINAL TEST, R7 IS TO BE SELECTED FROM CHART E

REVISIONS TDRR 00893			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	[illegible] 63	WR.
B	REVISED PER TDRR 01176	4-30-63	D.T. WR
C	REVISED PER TDRR 01713	[illegible] 63	RPK WR
D	REVISED PER TDRR 01965	7 20 63	RPK WR
E	REVISED PER TDRR 03782	[illegible] 63	[illegible]
F	REVISED PER TDRR 04794	[illegible] 63	[illegible]
G	REVISED PER TDRR 05456	[illegible] 63	RPK WR
H	REVISED PER TDRR 07006	27 MAR 64	JJJ CJP
J	REVISED PER TDRR 07.24	2 APR 64	JHR WR



VIEW B-B
2 PLACES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1.540
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C4
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.030
.000
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2
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.015
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.030
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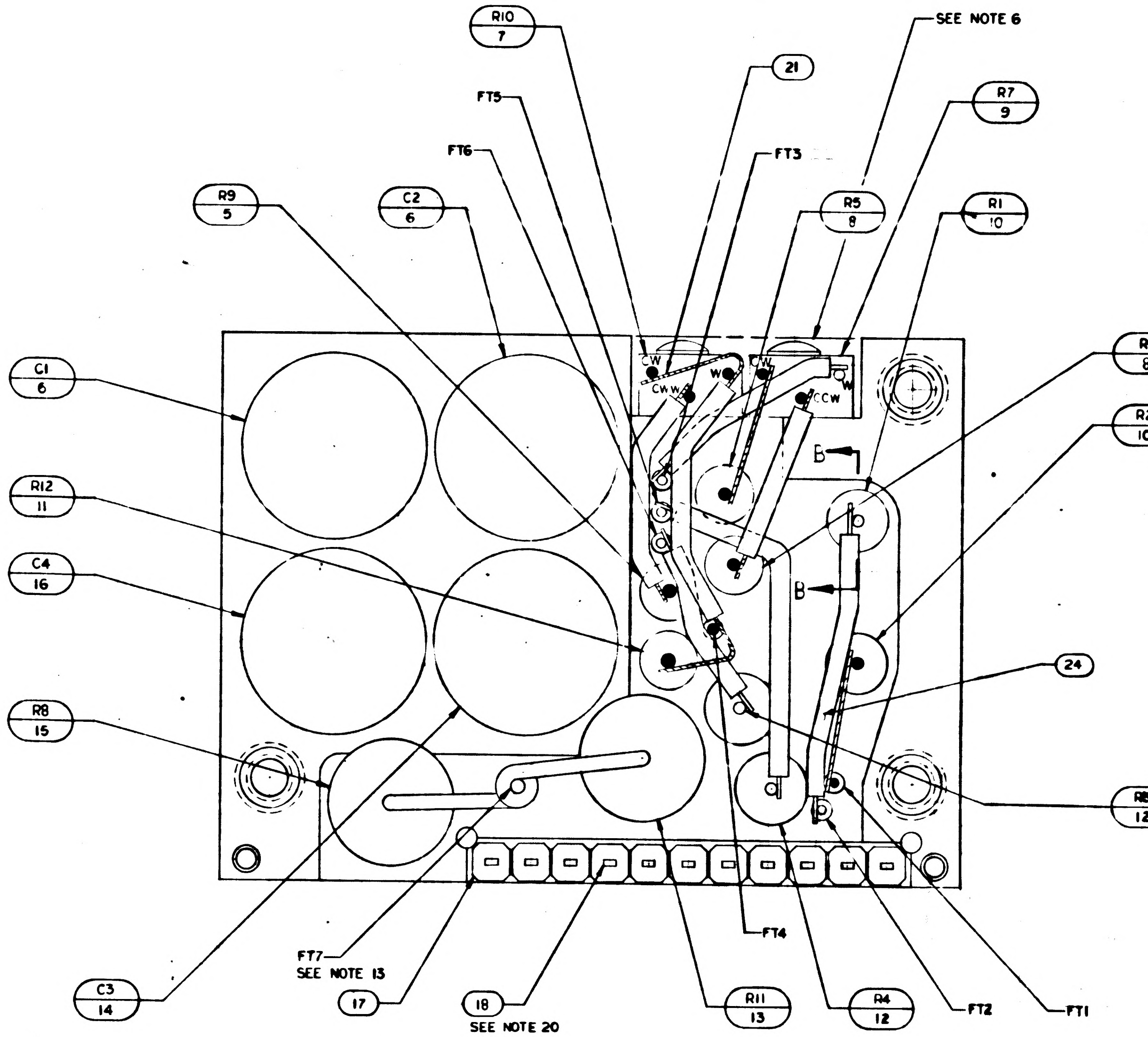
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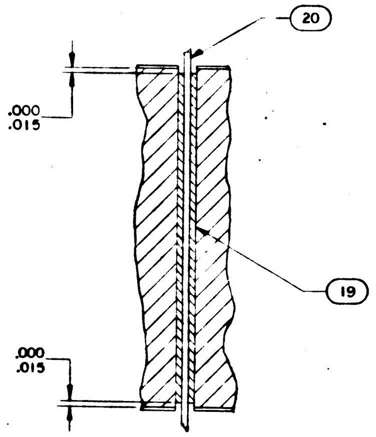
SEE NOTE 6
FT5
FT3
R7 9
FT6
R9 5
C2 6
R5 8
R1 10
CW
CCW
W
B
R6 8
R2 10
C1 6
R12 11
C4 16
24
R8 15
R8 12
C3 14
FT7 SEE NOTE 13
17
18 SEE NOTE 20
FT4
R11 13
R4 12
FT2
FT1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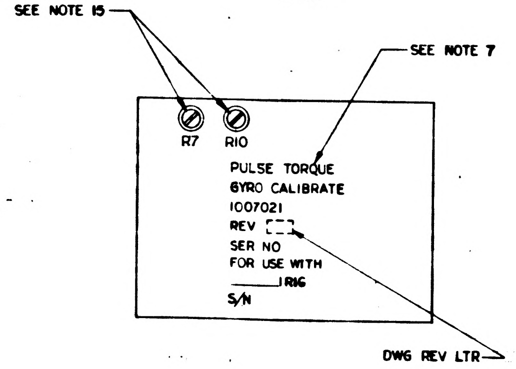
SECTION A-A


SEE NOTE 15
SEE NOTE 7
R7
R10
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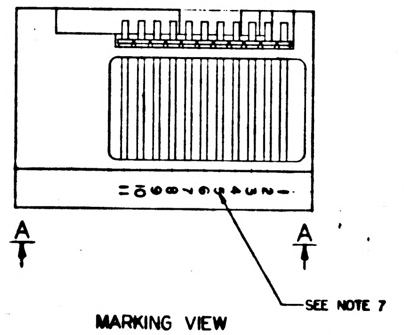
GYRO CALIBRATE
1007021
REV
SER NO
FOR USE WITH
1R16
S/N
DWG REV LTR

VIEW A-A


A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART B

PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		

CHART E

PART NO	VALUE
1010373-9	5K
1010373-10	10K

CHART A

PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C

PART NO	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D

PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST. MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497

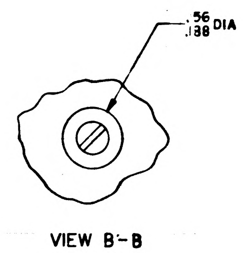
DRAWN R. Machado DATE [illegible]
CHECKED [illegible] 1 [illegible] 63
APPROVAL [illegible] 1 [illegible] 63
APPROVAL [illegible]
NASA APPROVAL [illegible] 3/4/63
MIT APPROVAL [illegible] 6 March 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

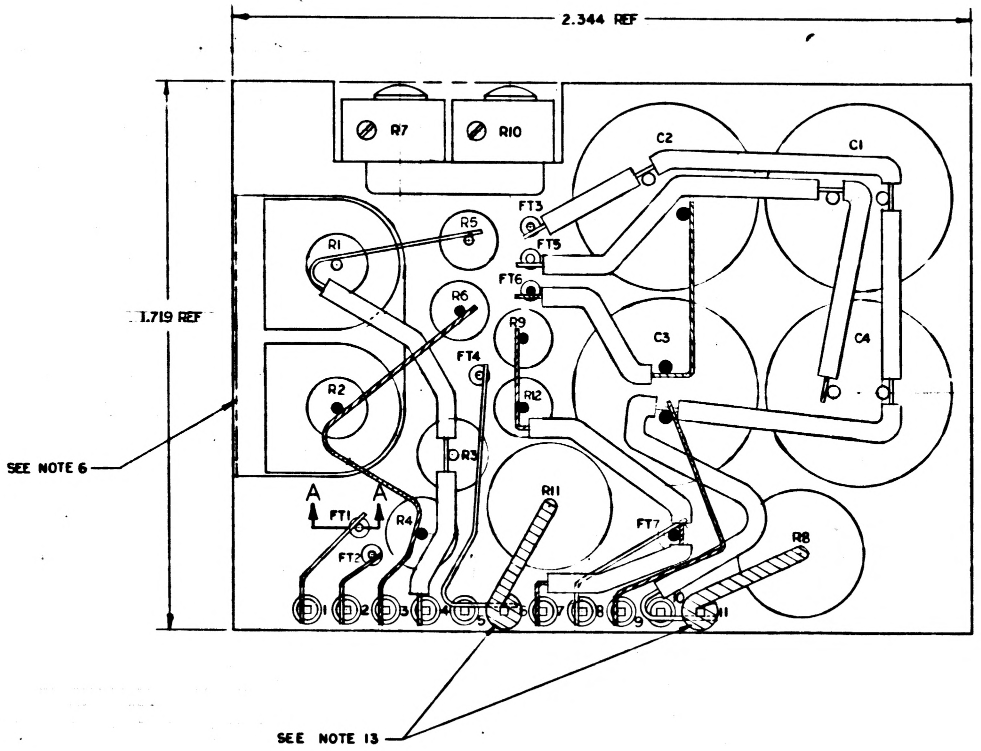
PULSE TORQUE GYRO CALIBRATE ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007021
SCALE 5/1 | WT | SHEET 1 OF 1

2



VIEW B-B
2 PLACES


2.344 REF
1.719 REF
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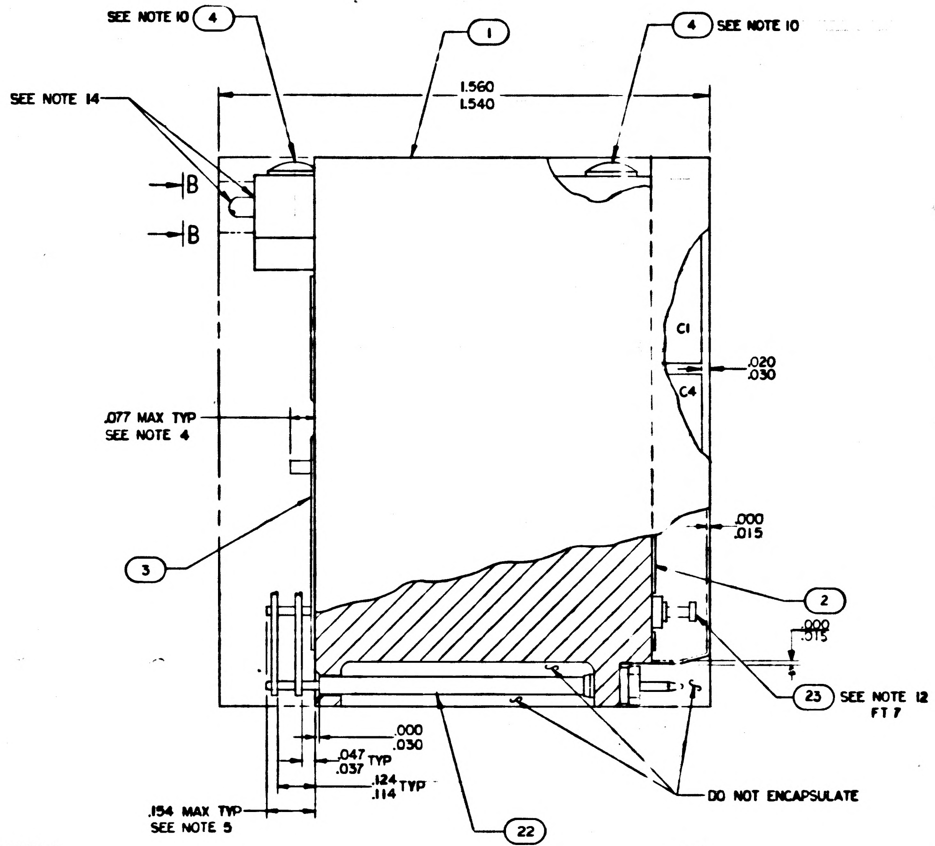
R10
C2
C1
FT3
FT5
FT6
R1
R5
R6
R9
C3
C4
FT4
R2
R12
R3
R11
A
A
FT1
R4
FT2
FT7
R8
1
2
3
4
5
6
7
8
9
10
11
SEE NOTE 6
SEE NOTE 13


SEE NOTE 10
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4
SEE NOTE 10
SEE NOTE 14
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1.540
B
B
C1
C4
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.030
.077 MAX TYP
SEE NOTE 4
.000
.015
3
2
.000
.015
23
SEE NOTE 12
FT 7
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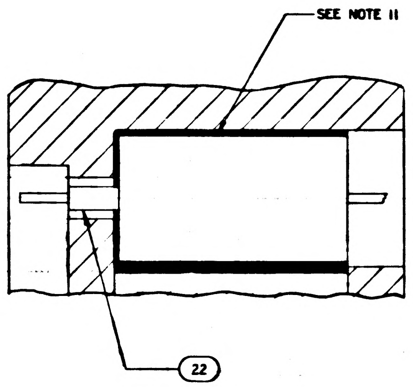
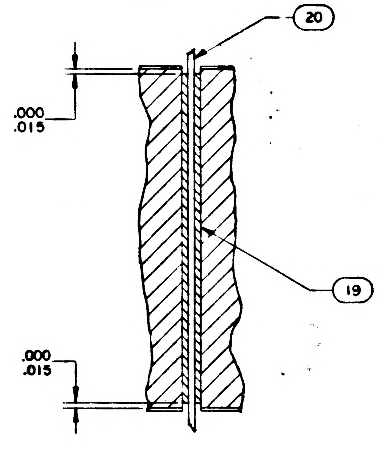
.030
.047
.037 TYP
.124
.114 TYP
.154 MAX TYP
SEE NOTE 5
22
DO NOT ENCAPSULATE


SEE NOTE 11
22

SECTION B-B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19
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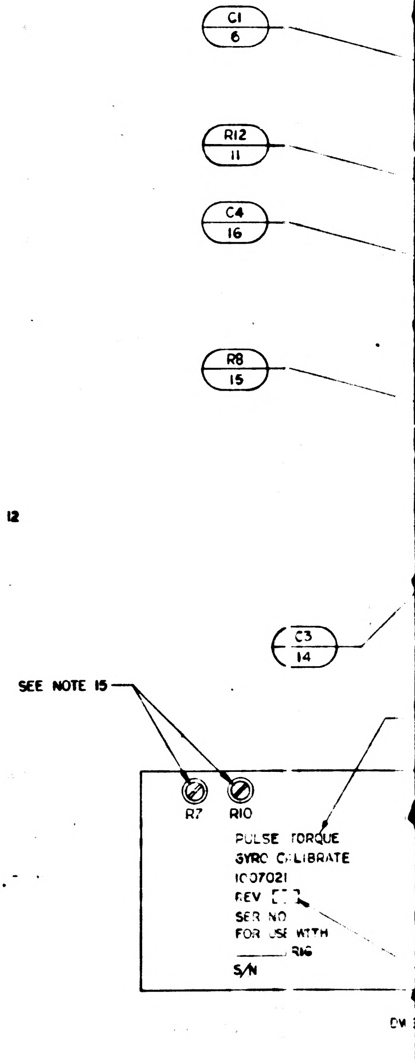
.015

SECTION A-A


C1
6
R12
11
C4
16
R8
15
C3
14
SEE NOTE 15
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV
SER NO
FOR USE WITH
R16
S/N

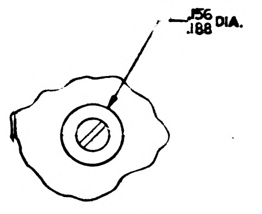
VIEW A-A

NOTES

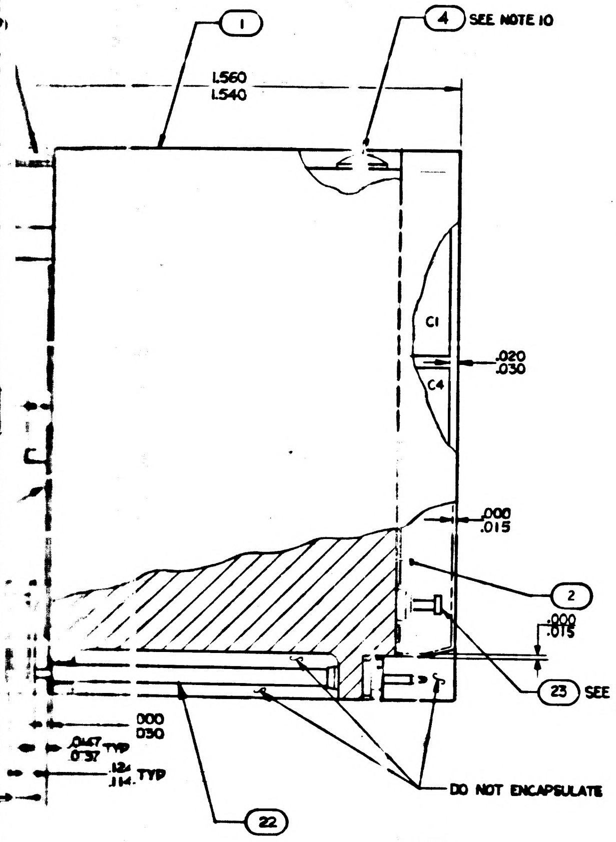
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003.~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO.5 THRU FIND NO.8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002009
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER. MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO.23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ______
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D
20. MUST MEET REQUIREMENTS OF ND1002136
21. AT FINAL TEST, R7 IS TO BE SELECTED FROM CHART E

1007021

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00 893		
A	REVISED PER TDRR 01000	4 1963	WR
B	REVISED PER TDRR 01176	4-30-63	D.T. WR
C	REVISED PER TDRR 01913	6 1963	WR
D	REVISED PER TDHR 01965	7 1963	RPK WR
E	REVISED PER TDRR 03782	63	
F	REVISED PER TDRR 04794	63	
G	REVISED PER TDRR 05956	63	WR
H	REVISED PER TDRR 07006	27 MAR 64	JJJ C7P
J	REVISED PER TDRR 07124	2 APR 64	JHR
K	REVISED PER TDRR 07931	4 MAY 64	JJJ



VIEW B-B
2 PLACES


1
4 SEE NOTE 10
1.560
1.540
C1
C4
.020
.030
.000
.015
2
.000
.015
23 SEE NOTE 12 FT 7
.000
.030
.0147
.0137 TYP
.124
.114 TYP
DO NOT ENCAPSULATE
22

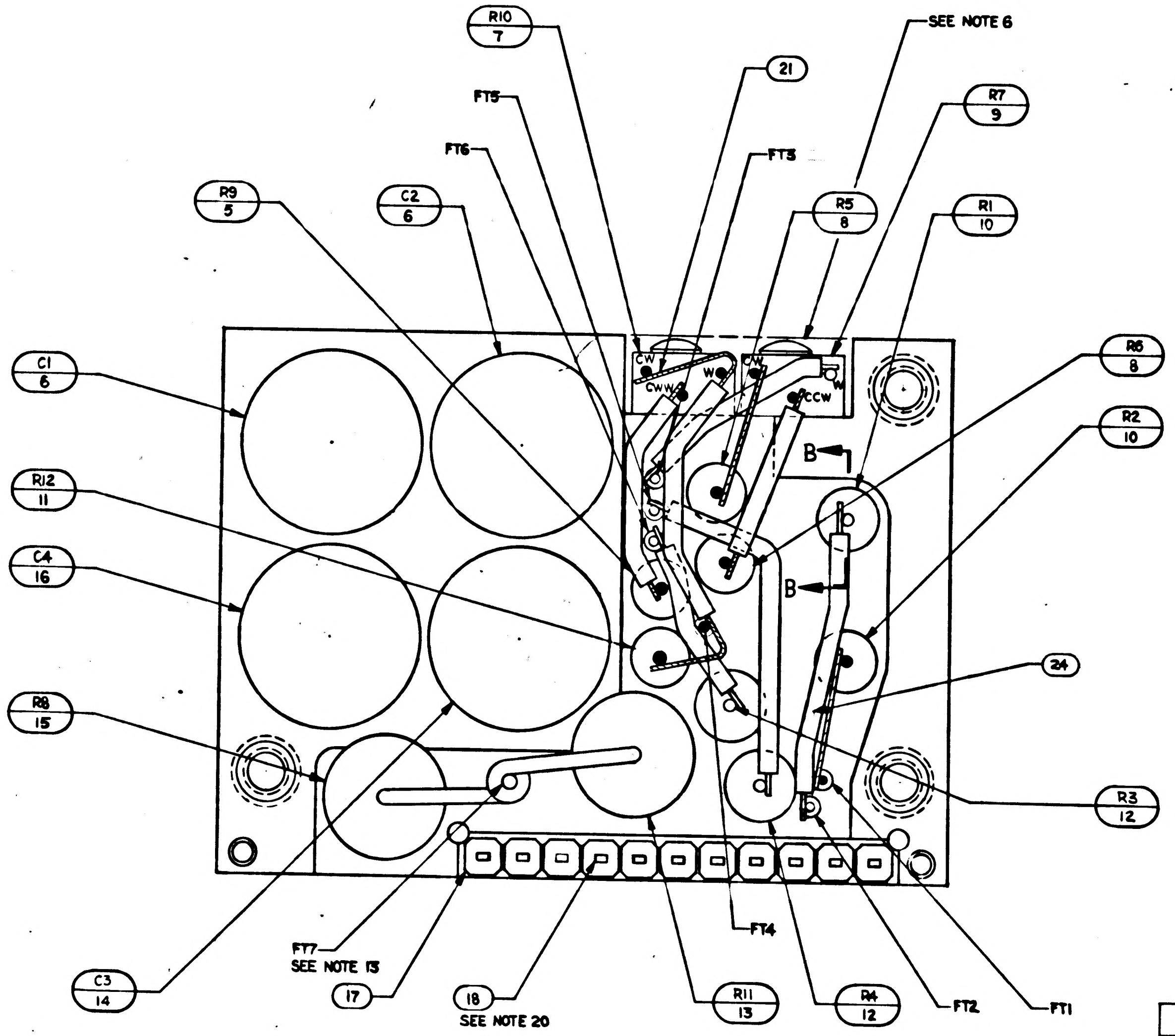

R10 7
21
SEE NOTE 6
FT5
FT3
R7 9
FT6
R9 5
C2 6
R5 8
R1 10
C1 6
CW
CCW
W
R6 8
R2 10
B
R12 11
C4 16
B
24
R8 15
R3 12
FT7
SEE NOTE 13
17
18
SEE NOTE 20
C3 14
FT4
R11 13
R4 12
FT2
FT1

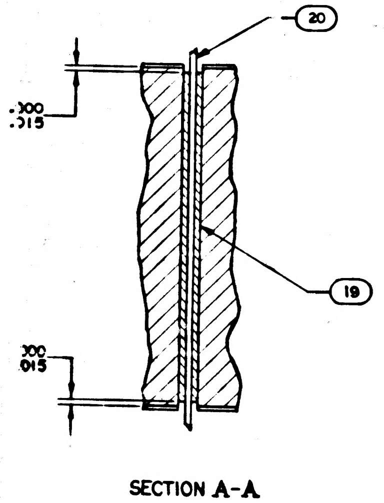
CHART E	
PART NO	VALUE
1010373-9	5K
1010373-10	10K

CHART A	
PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART B			
PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		

CHART C	
PART NO.	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772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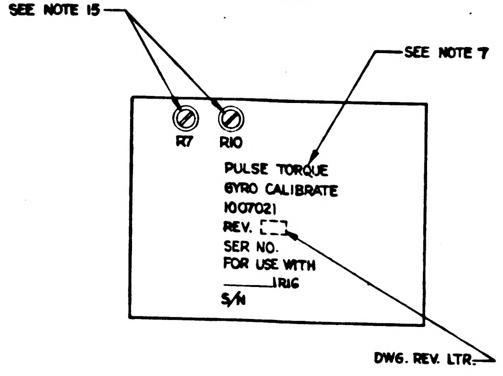
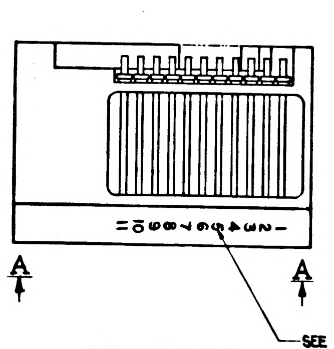
.000
.015

SECTION A-A


SEE NOTE 15
SEE NOTE 7
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV.
SER NO.
FOR USE WITH
1R16
S/N
DWG. REV. LTR.

VIEW A-A


A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF-.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF-.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

1007021 K

NEXT ASSY	USED ON
1001599	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX±.02 XXX±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

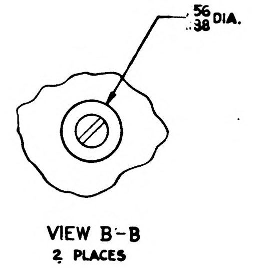
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN R. Machado DATE
CHECKED 1963
APPROVAL 1963
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

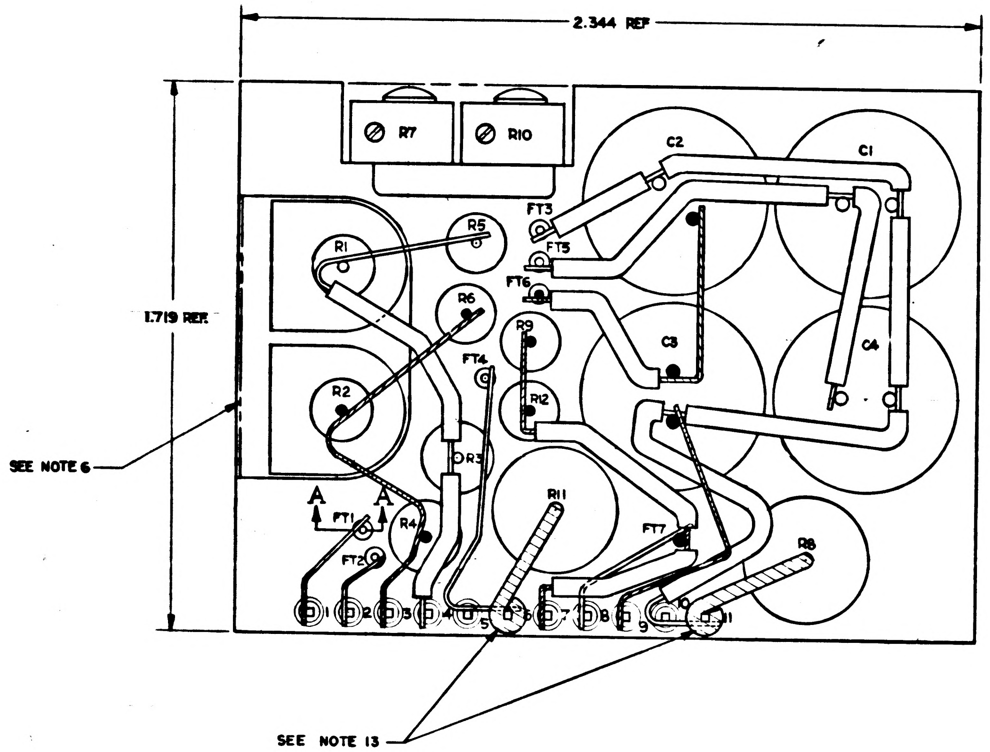
**PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY**

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007021
SCALE 5/1 | WT | SHEET 1 OF 1

2/1007021



VIEW B-B
2 PLACES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1.719 REF
R7
R10
C2
C1
R1
R5
FT3
FT5
FT6
R6
R9
C3
C4
R2
FT4
R12
R3
R11
A
A
FT1
R4
FT2
FT7
R8
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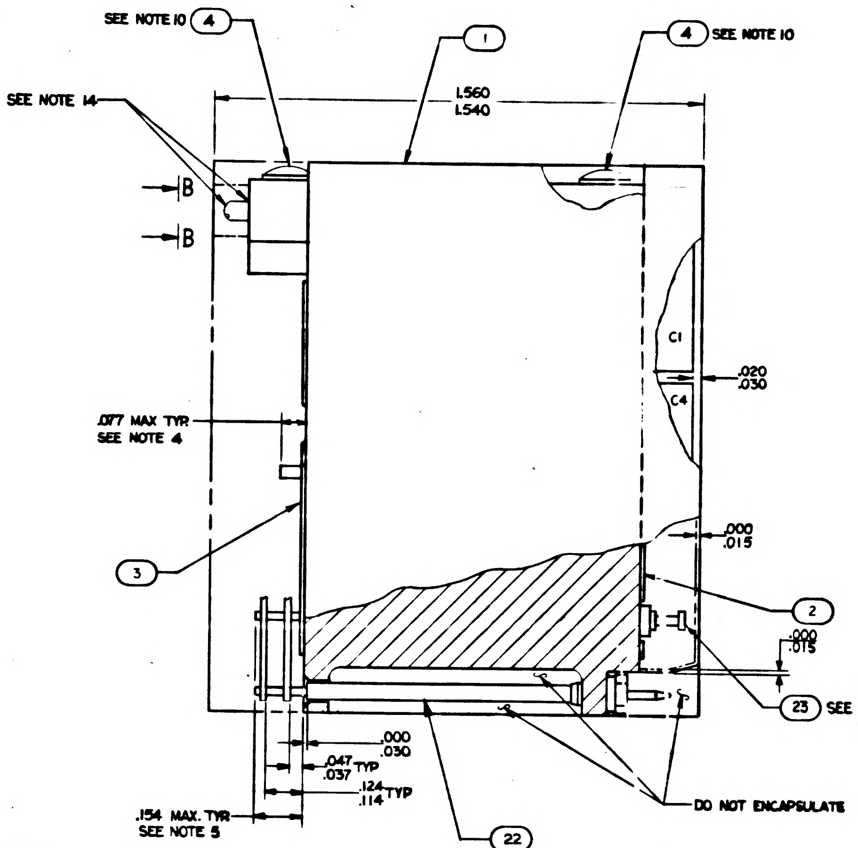
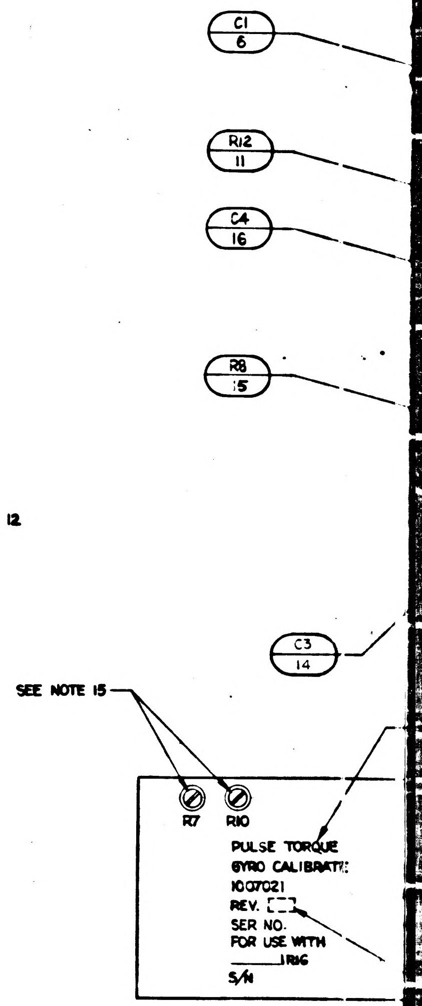
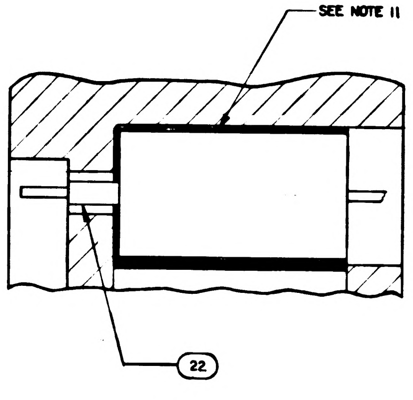
7
8
9
10
11
SEE NOTE 6
SEE NOTE 13


SEE NOTE 10
4
1
4
SEE NOTE 10
SEE NOTE 14
1.560
1.540
B
B
C1
C4
.020
.030
.077 MAX TYP.
SEE NOTE 4
3
.000
.015
2
.000
.015
23
SEE NOTE 12
FT 7
.000
.030
.047
.037 TYP
.124
.114 TYP
.154 MAX. TYP.
SEE NOTE 5
22
DO NOT ENCAPSULATE


C1
6
R12
11
C4
16
R8
15
C3
14
SEE NOTE 15
R7
R10
PULSE TORQUE
GYRO CALIBRATI
1007021
REV.
SER NO.
FOR USE WITH
IRIG
S/N

VIEW A-A


SEE NOTE 11
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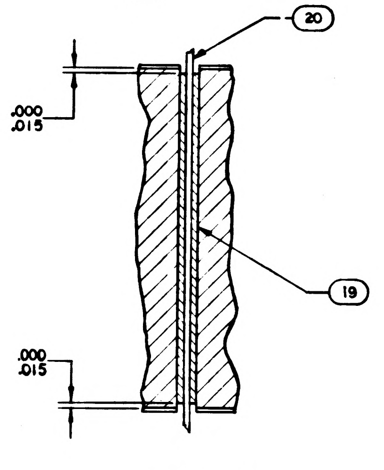
SECTION B-B


20
.000
.015
19
.000
.015

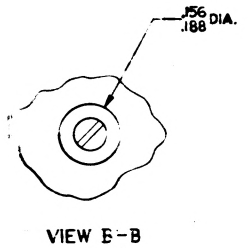
SECTION A-A

NOTES

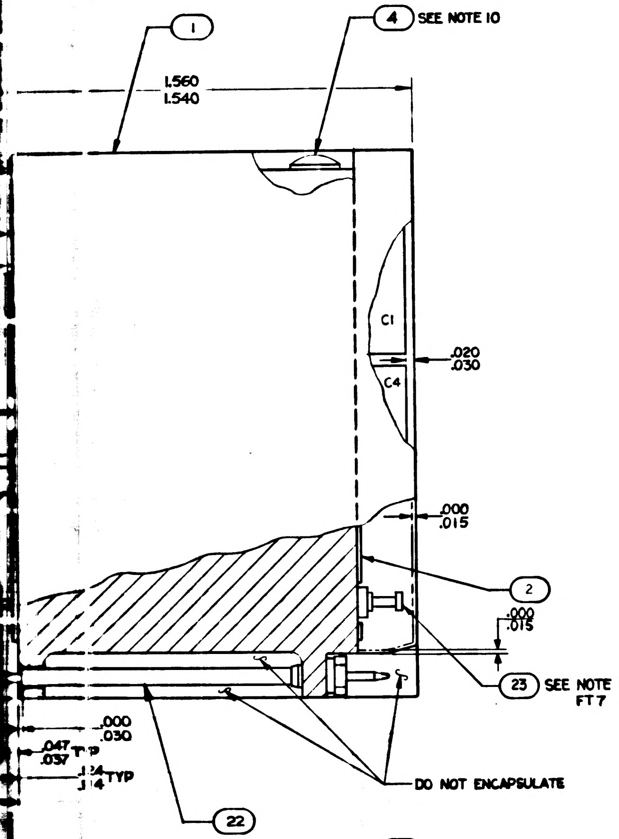
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003.~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO.5 THRU FIND NO.8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002009
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ________
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D
20. MUST MEET REQUIREMENTS OF ND1002136
21. AT FINAL TEST, R7 IS TO BE SELECTED FROM CHART E

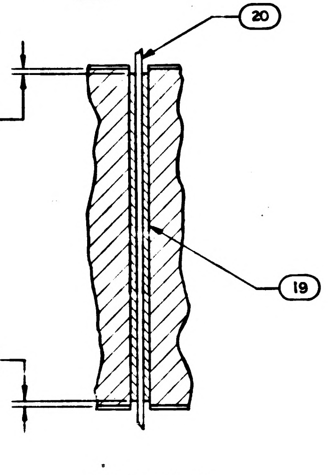
1007021 L

SYM	DESCRIPTION	DATE	APPROVAL
REVISIONS TDRR 00693			
A	REVISED PER TDRR 01000	[illegible]	WR
B	REVISED PER TDRR 01176	4-30-63	D.T. WR
C	REVISED PER TDRR 01713	[illegible]	WR
D	REVISED PER TDRR 01965	7-20-63	WR
E	REVISED PER TDRR 03782	[illegible]	[illegible]
F	REVISED PER TDRR 04794	[illegible] 63	[illegible]
G	REVISED PER TDRR 05956	[illegible] 63	WR
H	REVISED PER TDRR 07006	27 MAR 64	JJJ CTP
J	REVISED PER TDRR 07124	2 APR 64	JHR
K	REVISED PER TDRR 07931	4 MAY 64	JJJ
L	REVISED PER TDRR 10912	28 JUL 64	[illegible]



VIEW B-B
2 PLACES


1
4 SEE NOTE 10
1.560
1.540
C1
C4
.020
.030
.000
.015
2
.000
.015
23 SEE NOTE 12
FT7
.000
.030
.047
.037 TYP
.124
.114 TYP
DO NOT ENCAPSULATE
22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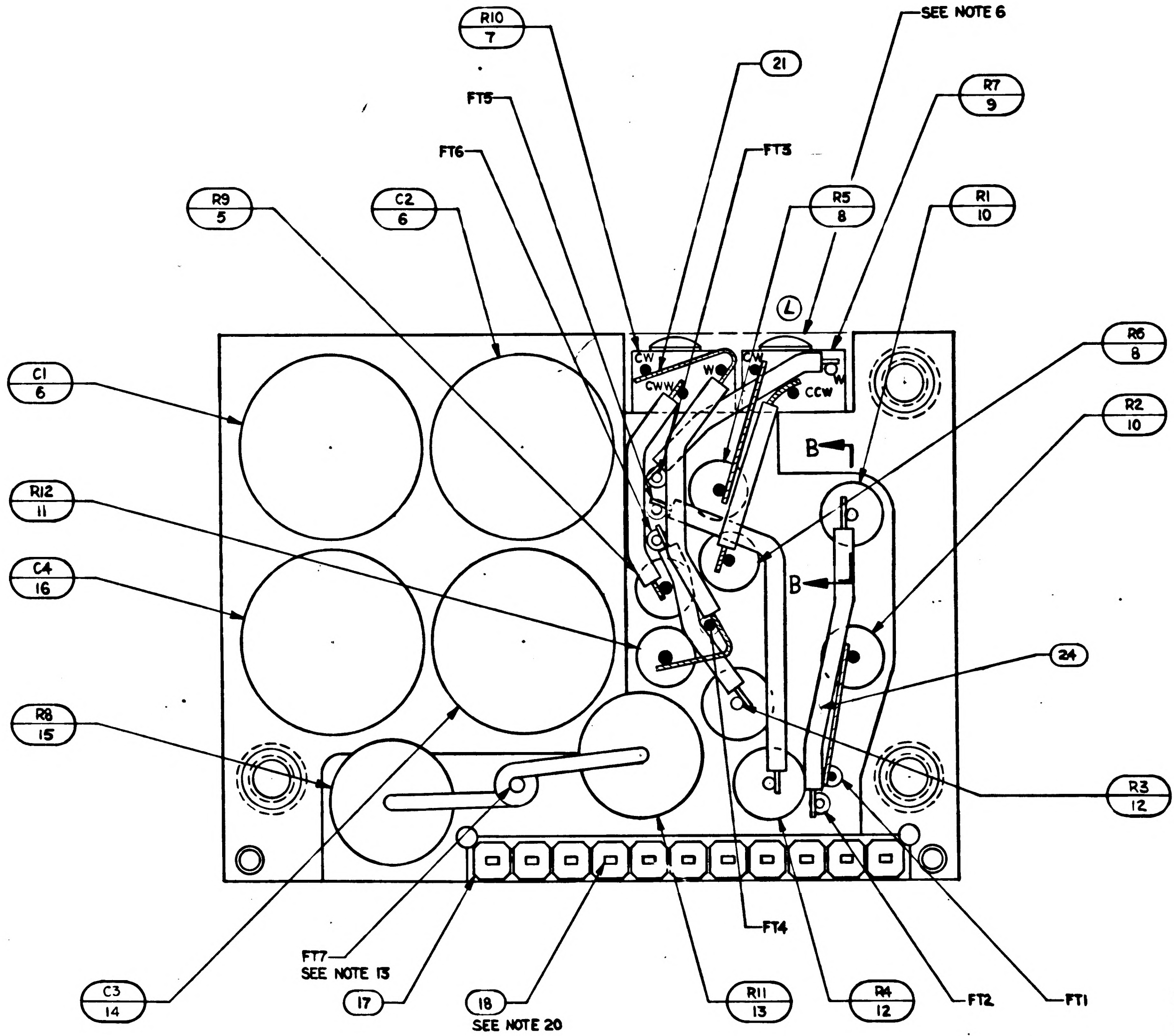
SECTION A-A


R10
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FT6
R5
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R1
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R9
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C2
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CW
CWW
W
CW
CCW
W
C1
6
R6
8
R2
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B
B
R12
11
C4
16
24
R8
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R3
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SEE NOTE 13
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SEE NOTE 20
R11
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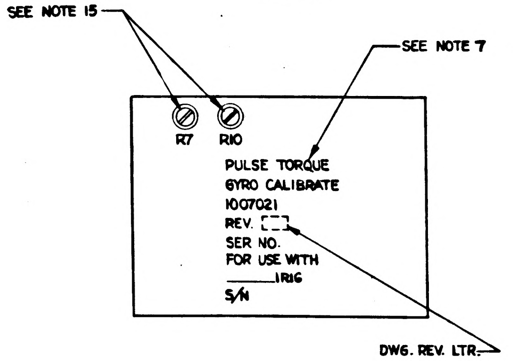
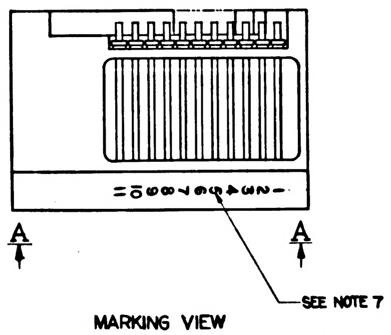
R4
12
FT2
FT1


SEE NOTE 15
SEE NOTE 7
R7
R10
DWG. REV. LTR.

PULSE TORQUE
GYRO CALIBRATE
1007021
REV.
SER NO.
FOR USE WITH
_______ IRIG
S/N

VIEW A-A


A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART B			
PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		

CHART E	
PART NO	VALUE
1010373-9	5K
1010373-10	10K

CHART A	
PART NO.	VALUE UF
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO.	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253-13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF-.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF-.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 5W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

1001599	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN R. Machado DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

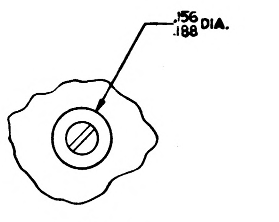
PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1

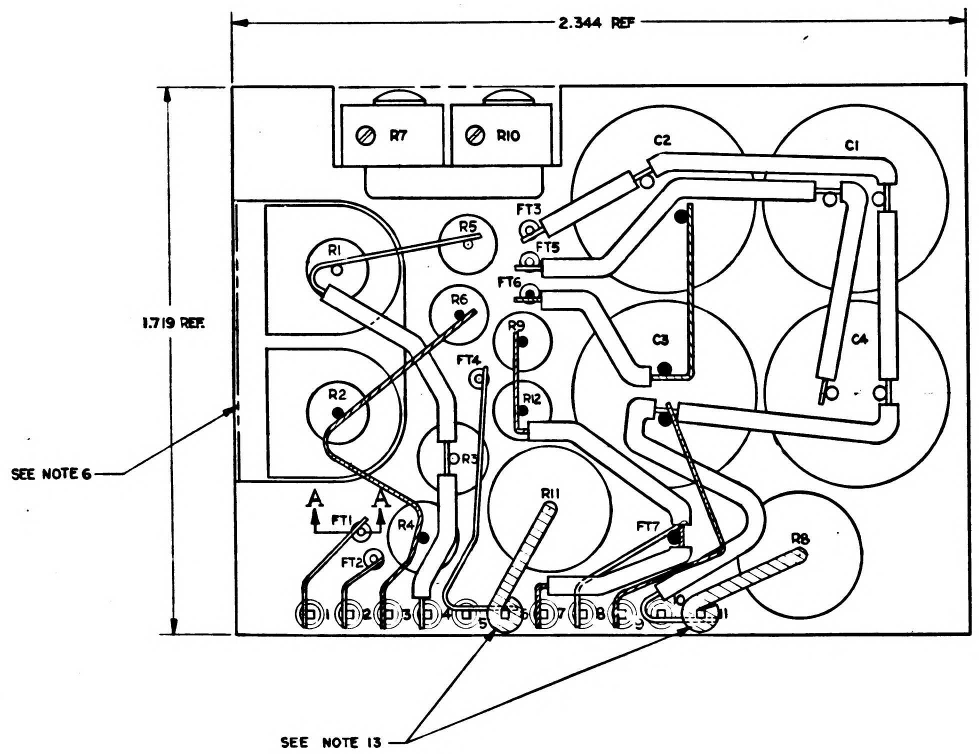
L 1007021

2/1007021

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO



VIEW B-B
2 PLACES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R1
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FT5
FT6
R6
R9
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C4
FT4
R12
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R11
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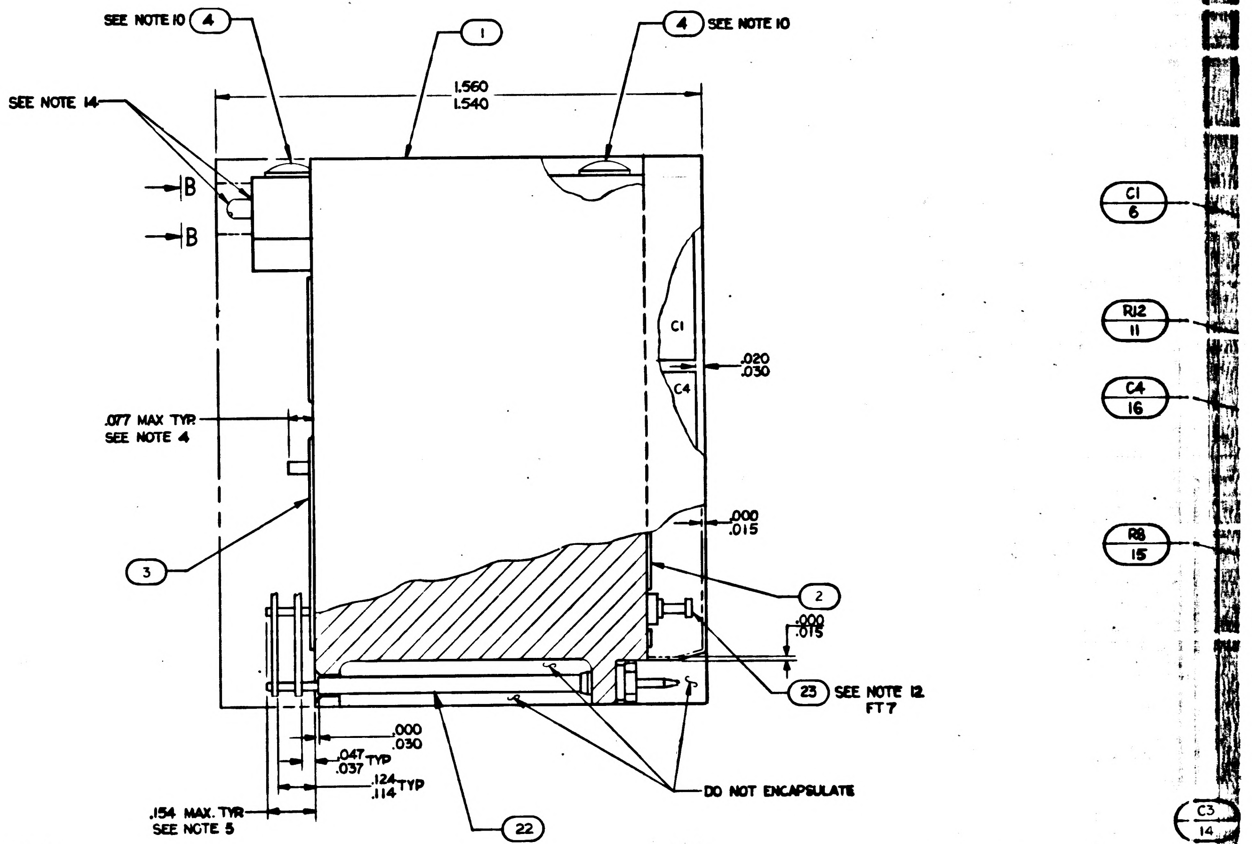
11
SEE NOTE 6
SEE NOTE 13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4
SEE NOTE 10
SEE NOTE 14
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B
B
C1
C4
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.030
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SEE NOTE 4
.000
.015
3
2
.000
.015
23
SEE NOTE 12
FT7
.000
.030
.047
.037 TYP
.124
.114 TYP
.154 MAX. TYP
SEE NOTE 5
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DO NOT ENCAPSULATE
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R12
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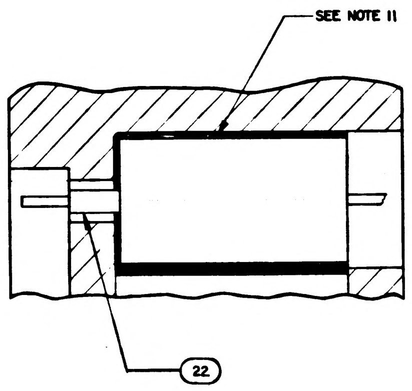
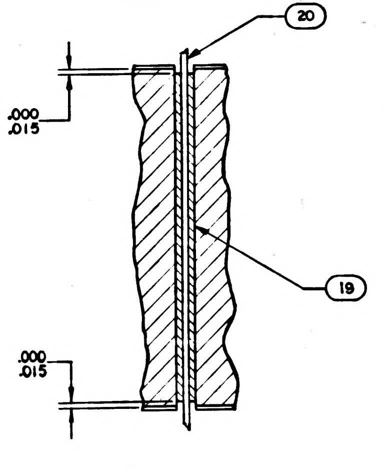
C4
16
R8
15
C3
14


SEE NOTE 11
22

SECTION B-B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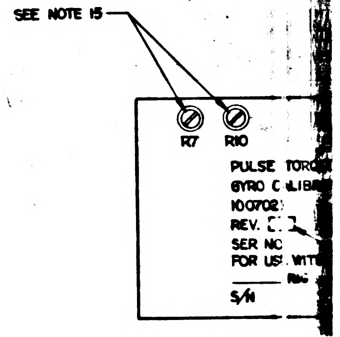
.015
19
.000
.015

SECTION A-A


SEE NOTE 15
R7
R10
PULSE TORQ
GYRO C LIB
100702
REV.
SER NC
FOR US WIT
S/N

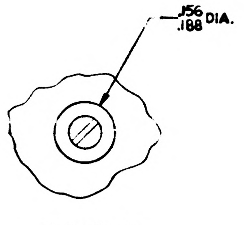
VIEW A

NOTES

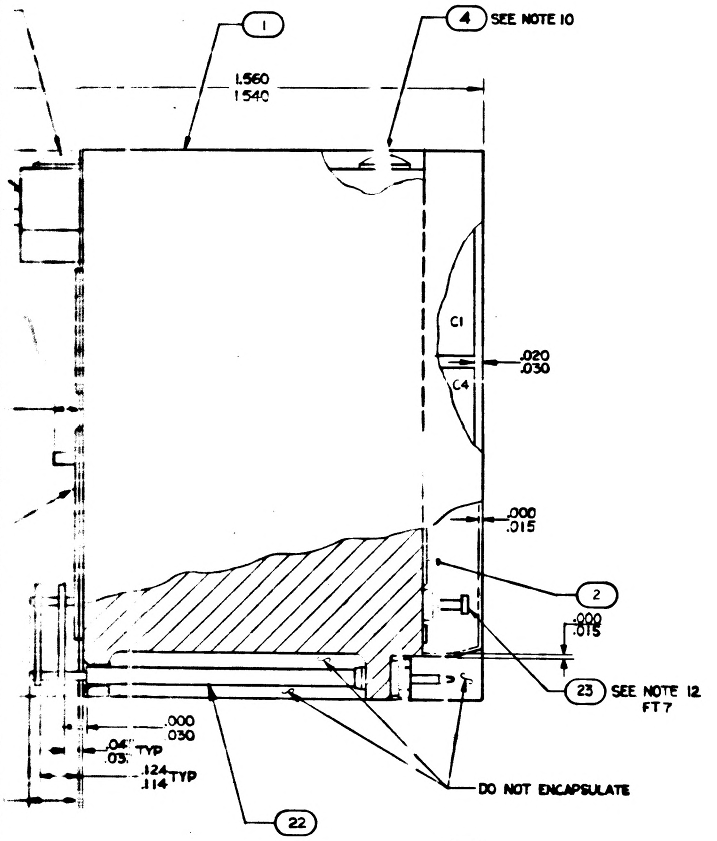
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO.5 THRU FIND NO.8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002009
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO.23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A PER A.T.P. ______
17. AT FINAL TEST, R5 AND R6 TO BE SELECTED FROM CHART B
18. AT FINAL TEST, R12 TO BE SELECTED FROM CHART C
19. AT FINAL TEST, R11 TO BE SELECTED FROM CHART D
20. MUST MEET REQUIREMENTS OF ND1002136
21. AT FINAL TEST, R7 IS TO BE SELECTED FROM CHART E
22. PROCURE PER PS 1007021. Ⓛ

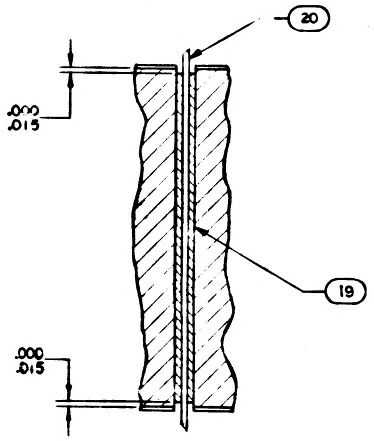
1007021 M

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 00 493		
A	REVISED PER TDRR 01000	4-[illegible]63	WR
B	REVISED PER TDRR 01176	4-30-63	D.T. WR
C	REVISED PER TDRR 01713	[illegible]	EPK WR
D	REVISED PER TDRR 01965	[illegible]	WR
E	REVISED PER TDRR 03782	[illegible]	[illegible]
F	REVISED PER TDRR 04794	20 Nov 63	[illegible]
G	REVISED PER TDRR 05456	[illegible] 63	WR
H	REVISED PER TDRR 07006	27 MAR 64	JJJ CJP
J	REVISED PER TDRR 07124	2 APR 64	JHR W.D.
K	REVISED PER TDRR 07931	4 MAY 64	JJJ
L	REVISED PER TDRR 10912	28 JUL 64	JJJ J.G.G.
M	REVISED PER TDRR 14335	24 Nov 64	RL

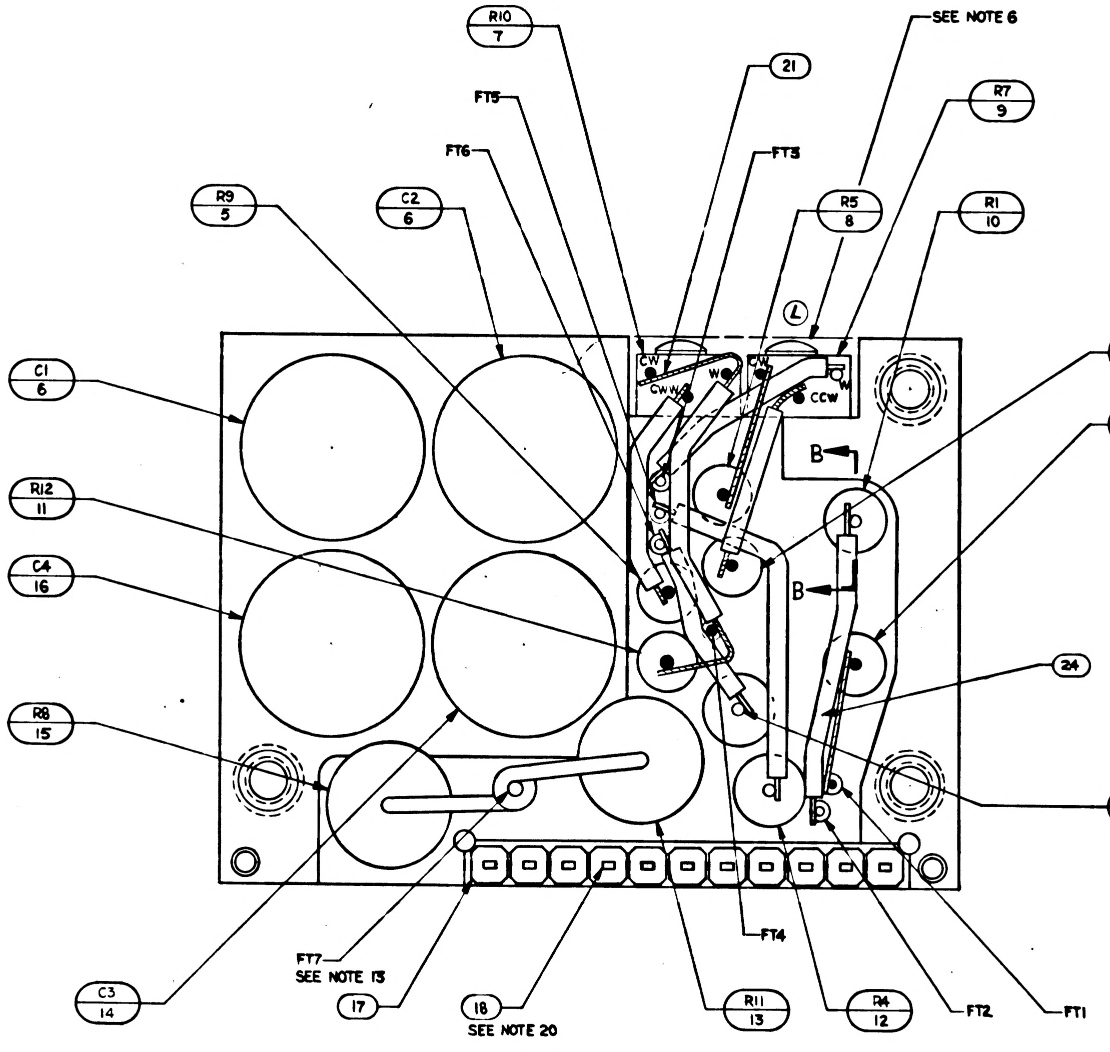


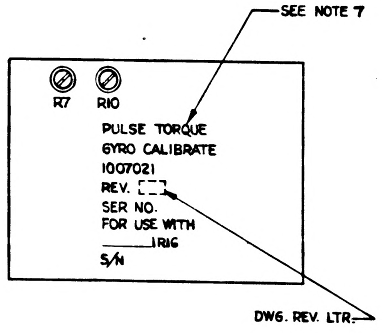
VIEW B-B
2 PLACES





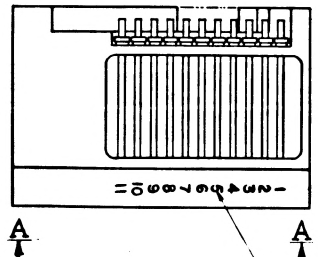
SECTION A-A





PULSE TORQUE
GYRO CALIBRATE
1007021
REV.
SER NO.
FOR USE WITH
_______ IRIG
S/N

VIEW A-A



MARKING VIEW
SCALE 2/1

CHART A

PART NO.	VALUE UF
1010289-016	0.0220
1010289-017	0.0228
1010289-018	0.0330
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART B

PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		

CHART C

PART NO.	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D

PART NO	VALUE Ω
1010253-13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

CHART E

PART NO	VALUE
1010373-9	5K
1010373-10	10K

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0220 UF-.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0220UF-.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1001599	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497

DRAWN R. Machado DATE [illegible]
CHECKED [illegible] 18[illegible]63
APPROVAL [illegible] 1[illegible]63
APPROVAL A.R. Tost 1[illegible]63
NASA APPROVAL [illegible] 3/4/63
MIT APPROVAL [illegible] 6 March 63

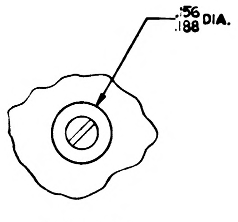
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

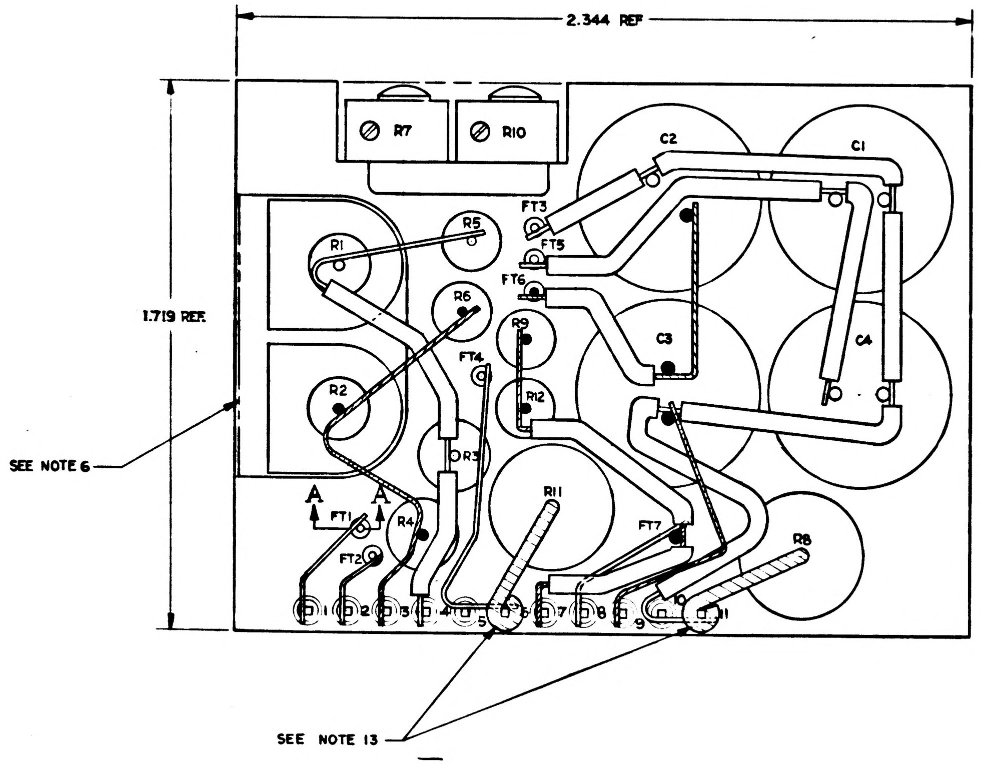
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1

1007021 M

2/1007021



VIEW B-B
2 PLACES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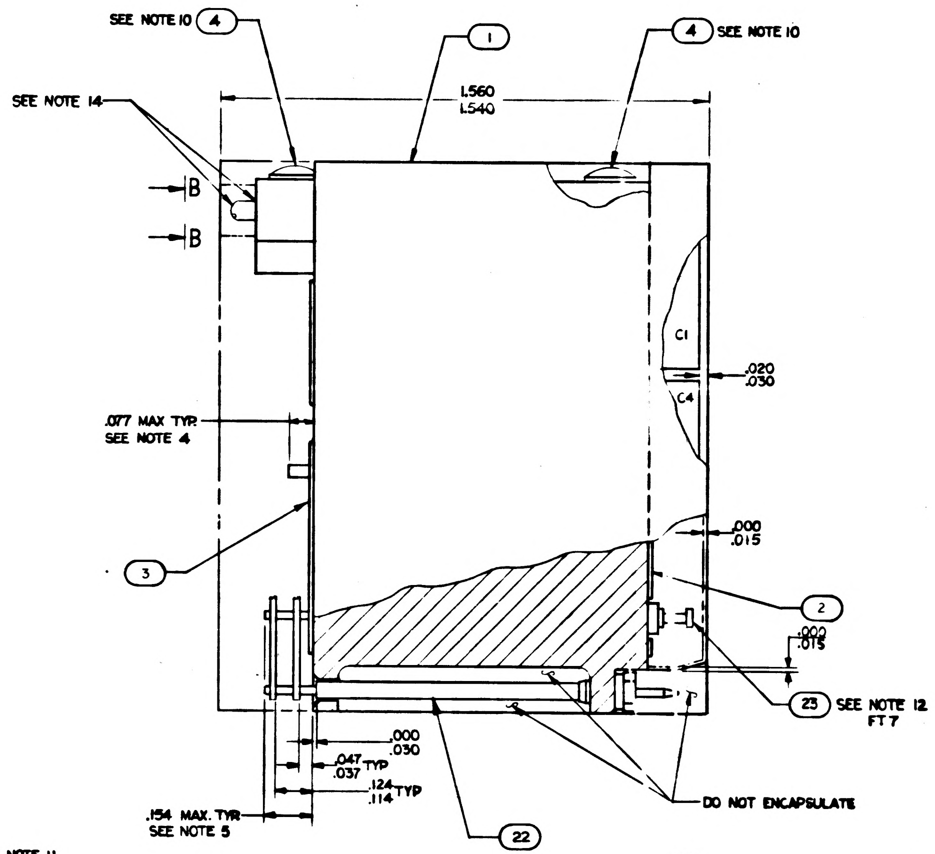
SEE NOTE 6
SEE NOTE 13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C4
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.015
23
SEE NOTE 12
FT7
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.030
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.037 TYP
.124
.114 TYP
.154 MAX. TYP
SEE NOTE 5
22
DO NOT ENCAPSULATE

C1
6
R12
11
C4
16
15
C3
14
R7
R10
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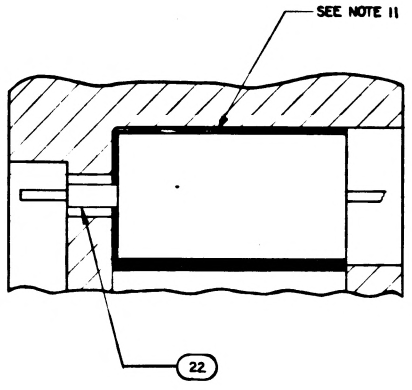
GYRO CALIBR
1007021
REV.
SER NO.
FOR USE WIT
IRIG
S/N

VIEW A-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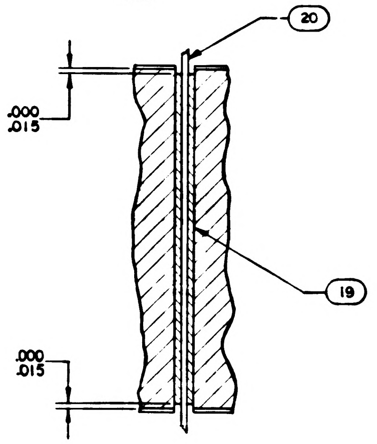
SECTION B-B


20
.000
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19
.000
.015

SECTION A-A

NOTES

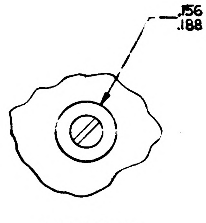
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
~~3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO.5 THRU FIND NO.8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002009, METHOD C
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
~~15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND~~
16. ~~AT FINAL TEST,~~ C3 AND C4 TO BE SELECTED FROM CHART A PER ATP 1007021.
17. ~~AT FINAL TEST,~~ R5 AND R6 TO BE SELECTED FROM CHART B PER ATP 1007021.
18. ~~AT FINAL TEST,~~ R12 TO BE SELECTED FROM CHART C PER ATP 1007021.
19. ~~AT FINAL TEST,~~ R11 TO BE SELECTED FROM CHART D PER ATP 1007021.
20. MUST MEET REQUIREMENTS OF ND1002136
21. ~~AT FINAL TEST,~~ R7 IS TO BE SELECTED FROM CHART E PER ATP 1007021.

Ⓛ 22. PROCURE PER PS 1007021.

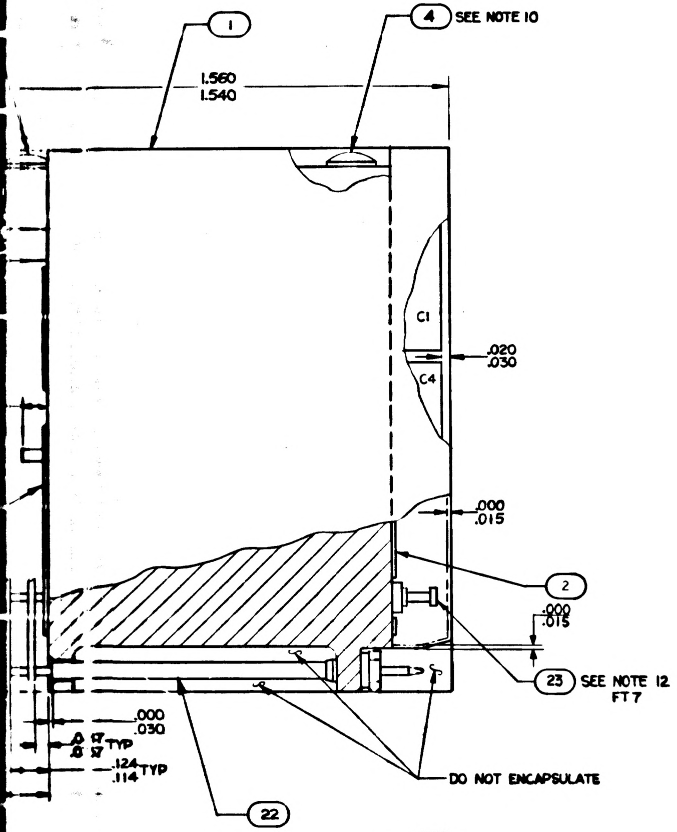
N 1007021

REVISIONS TDRR 00493

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	4 [illegible] 63	WR
B	REVISED PER TDRR 01176	4-30-63	D.T. WR
C	REVISED PER TDRR 01713	[illegible] 63	EPK WR
D	REVISED PER TDRR 01965	7 20 63	[illegible] WR
E	REVISED PER TDRR 03782	10 14 63	[illegible]
F	REVISED PER TDRR 04794	20 NOV 63	[illegible]
G	REVISED PER TDRR 05456	[illegible] 63	[illegible]
H	REVISED PER TDRR 07006	27 MAR 64	JJJ C7
J	REVISED PER TDRR 07124	2 APR 64	JHR
K	REVISED PER TDRR 07931	4 MAY 64	JJJ
L	REVISED PER TDRR 10912	28 JUL 64	JJJ
M	REVISED PER TDRR 4335	24 Nov 64	RJJ
N	REVISED PER TDRR 17356	[illegible] 65	[illegible]



VIEW B-B
2 PLACES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4 SEE NOTE 10
1.560
1.540
C1
C4
.020
.030
.000
.015
2
.000
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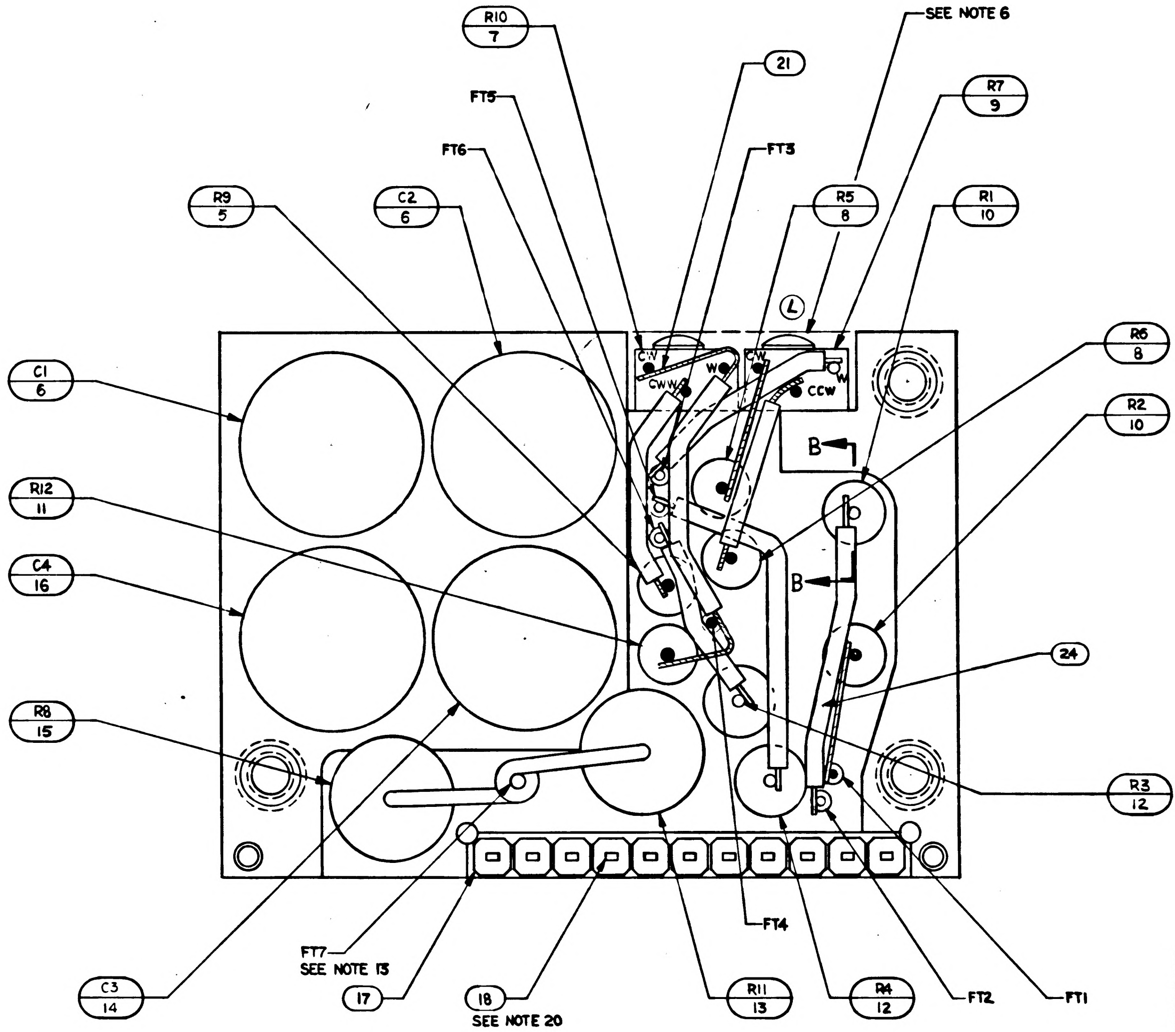
23 SEE NOTE 12
FT 7
.000
.030
.017
.013 TYP
.124
.114 TYP
DO NOT ENCAPSULATE
22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SEE NOTE 6
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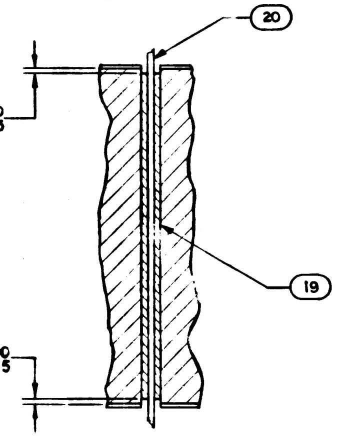
R7
9
FT5
FT3
FT6
R9
5
C2
6
R5
8
R1
10
L
CW
CCW
W
CCW
W
C1
6
R6
8
R2
10
B
B
R12
11
C4
16
24
R8
15
R3
12
C3
14
FT7
SEE NOTE 13
17
18
SEE NOTE 20
FT4
R11
13
R4
12
FT2
FT1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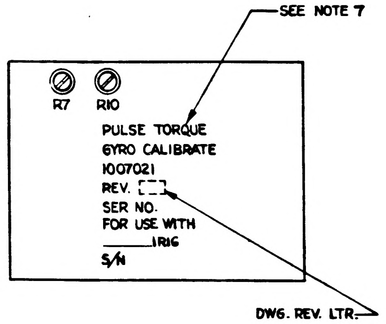
SECTION A-A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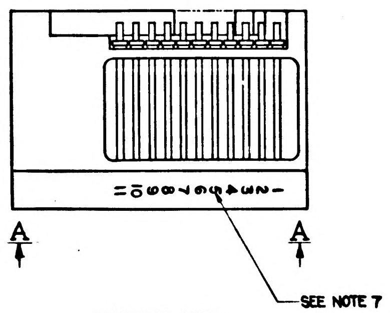
PULSE TORQUE
GYRO CALIBRATE
1007021
REV.
SER NO.
FOR USE WITH
IRIG
S/N
DWG. REV. LTR.

VIEW A-A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SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART A

PART NO.	VALUE UF
1010289-016	0.0220
1010289-017	0.0228
1010289-018	0.0330
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART B

PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		

CHART C

PART NO.	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D

PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

CHART E

PART NO	VALUE
1010373-9	5K
1010373-10	10K

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0220UF-.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0220UF-.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

1007021

NEXT ASSY	USED ON
1001599	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497

DRAWN E. Machado DATE [illegible] 63
CHECKED R P Kingsbury 18 [illegible] 63
APPROVAL [illegible] 1 [illegible] 63
APPROVAL [illegible] 1 MAR 63
NASA APPROVAL [illegible] 3/4/63
MIT APPROVAL [illegible]

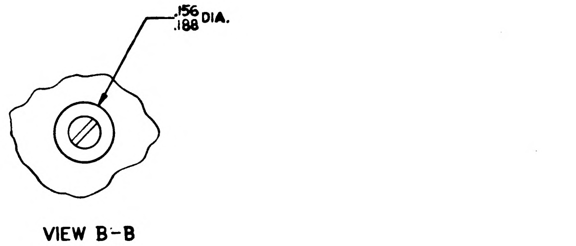
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PULSE TORQUE GYRO CALIBRATE ASSEMBLY

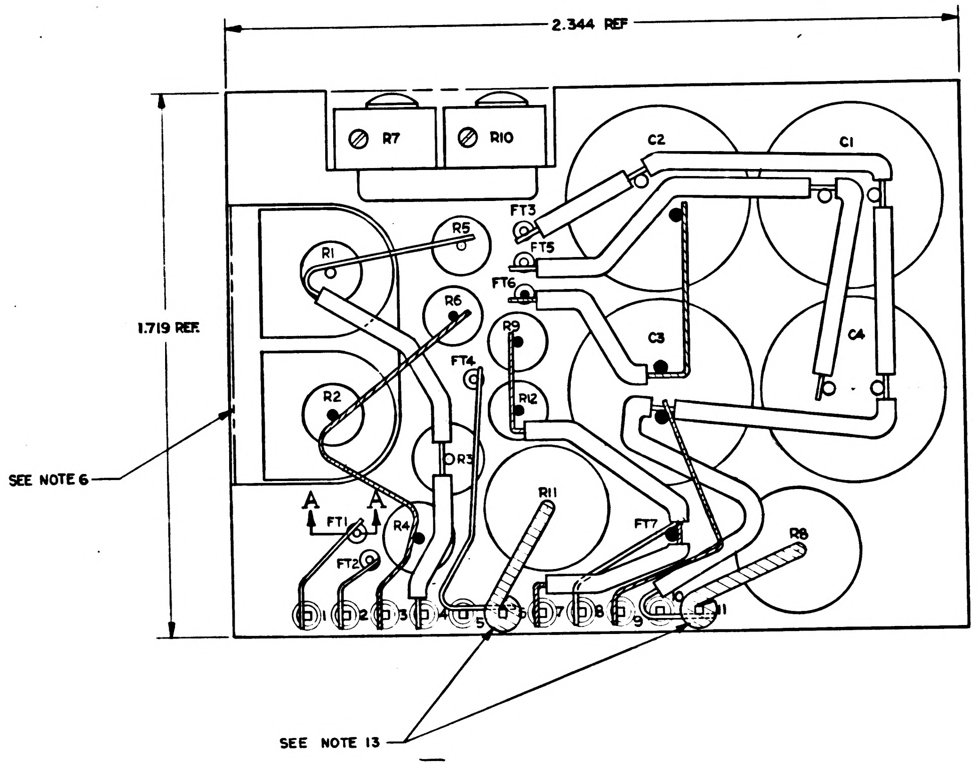
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1

27 1007021

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO



VIEW B-B
2 PLACES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C1
R1
R5
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R2
R12
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R11
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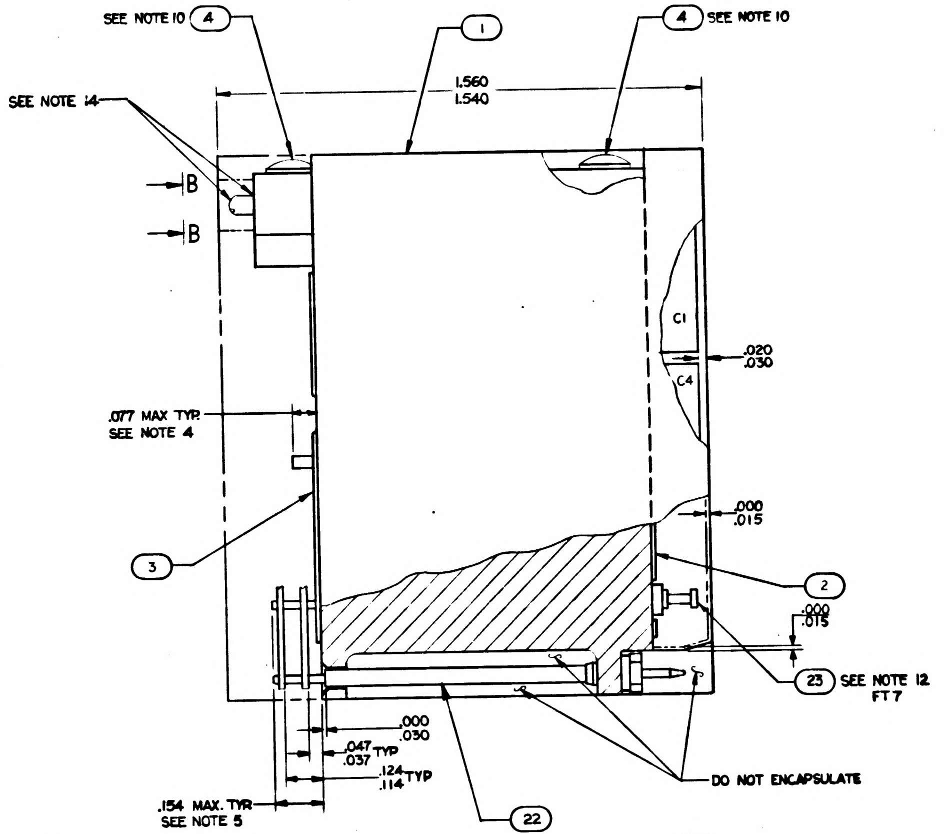
SEE NOTE 6
SEE NOTE 13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1
4
SEE NOTE 10
SEE NOTE 14
1.560
1.540
B
B
C1
C4
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.030
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SEE NOTE 4
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.015
3
2
.000
.015
23
SEE NOTE 12
FT7
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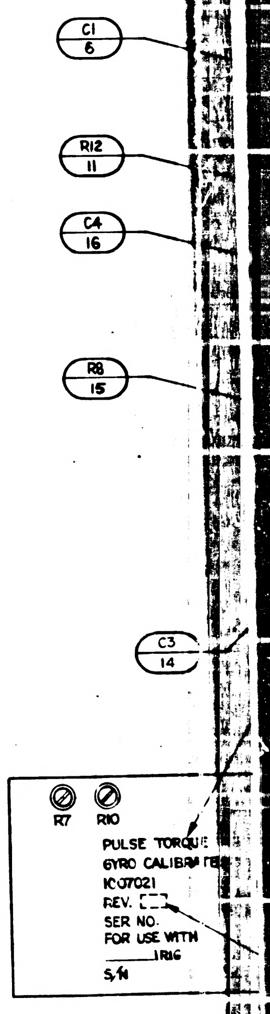
.030
.047
.037 TYP
.124
.114 TYP
.154 MAX. TYP
SEE NOTE 5
22
DO NOT ENCAPSULATE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R12
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C4
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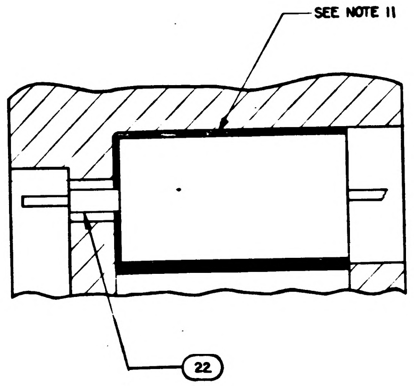
R8
15
C3
14
R7
R10

PULSE TORQUE
GYRO CALIBRATE
1007021
REV. [ ]
SER NO.
FOR USE WITH
_____ IRIG
S/N

VIEW A-A


SEE NOTE 11
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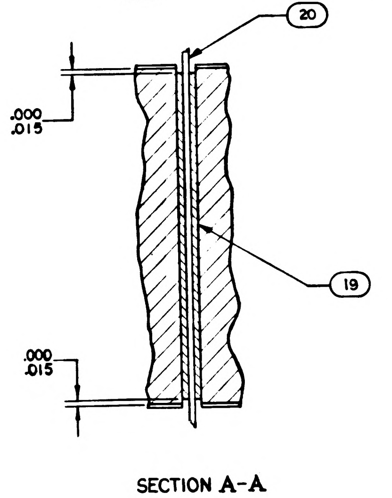
SECTION B-B


20
.000
.015
19
.000
.015

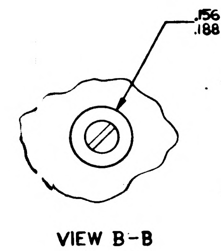
SECTION A-A

NOTES

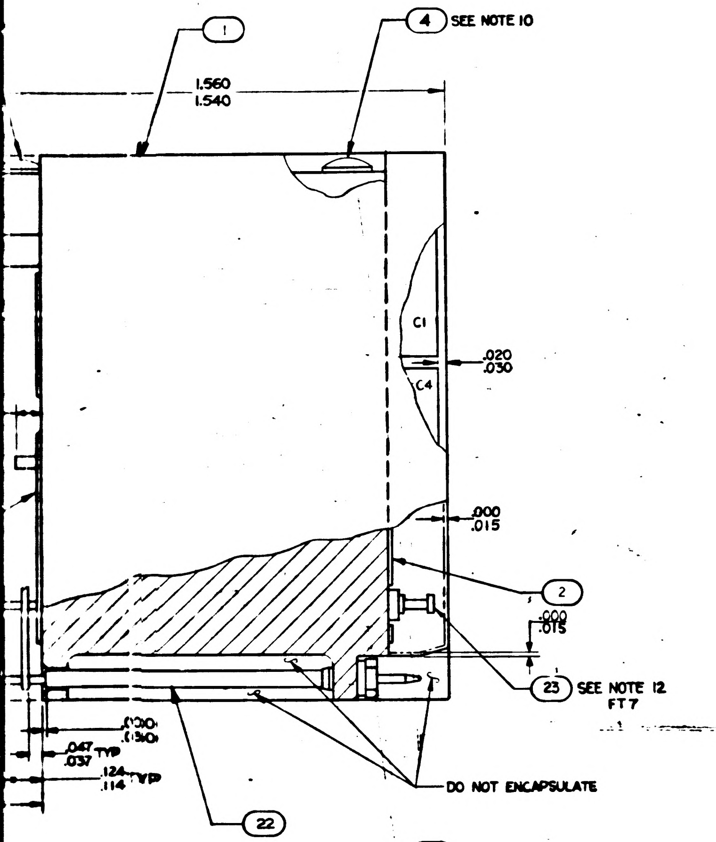
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO.5 THRU FIND NO.8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002009, METHOD C
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. ~~AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND~~
16. ~~AT FINAL TEST,~~ C3 AND C4 TO BE SELECTED FROM CHART A PER ATP 1007021.
17. ~~AT FINAL TEST,~~ R5 AND R6 TO BE SELECTED FROM CHART B PER ATP 1007021.
18. ~~AT FINAL TEST,~~ R12 TO BE SELECTED FROM CHART C PER ATP 1007021.
19. ~~AT FINAL TEST,~~ R11 TO BE SELECTED FROM CHART D PER ATP 1007021.
20. MUST MEET REQUIREMENTS OF ND1002136
21. ~~AT FINAL TEST,~~ R7 IS TO BE SELECTED FROM CHART E PER ATP 1007021.
22. (L) PROCURE PER PS 1007021.
23. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND 1002187 TYPE I.

1007021 P

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01000	[illegible]	WR
B	REVISED PER TDRR 01176	30 [illegible]	WR
C	REVISED PER TDRR 01913	[illegible]	WR
D	REVISED PER TDRR 01965	[illegible]	WR
E	REVISED PER TDRR 03782	[illegible]	[illegible]
F	REVISED PER TDRR 04794	63	[illegible]
G	REVISED PER TDRR [illegible]	63	WR
H	REVISED PER TDRR 07006	27 MAR 64	JJJ C?P
J	REVISED PER TDRR 07124	2 APR 64	JHB
K	REVISED PER TDRR 07931	4 MAY 64	JJJ
L	REVISED PER TDRR 10912	28 JUL 64	JJJ
M	REVISED PER TDRR 14333	Nov 64	RJJ
N	REVISED PER TDRR 17356	65	KJ
P	REVISED PER TDRR 19468	1 JUN 65	SEO



VIEW B-B
2 PLACES



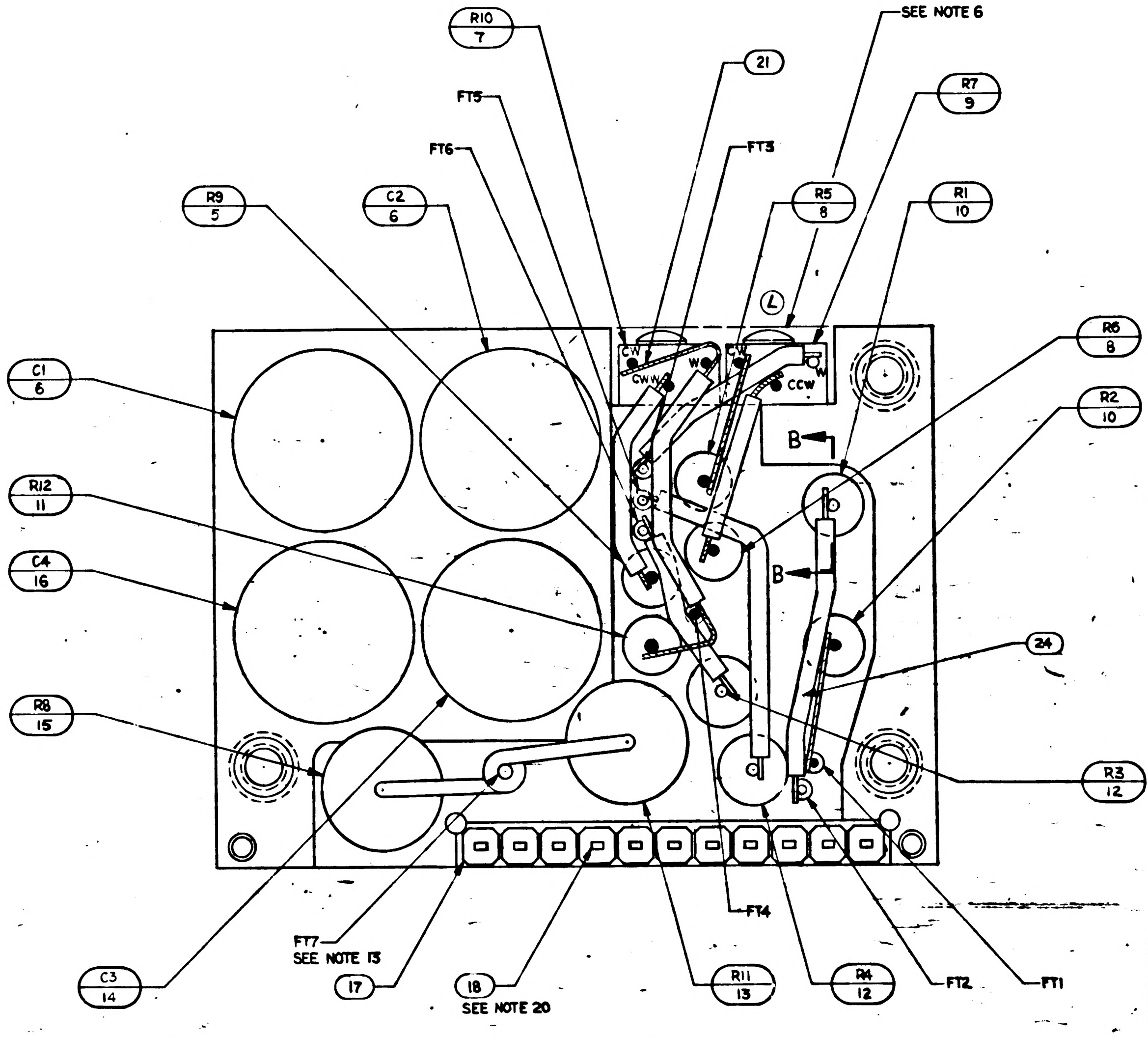


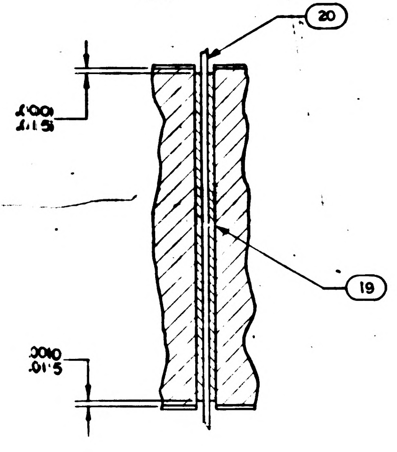
CHART B			
PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		

CHART E	
PART NO	VALUE
1010373-9	5K
1010373-10	10K

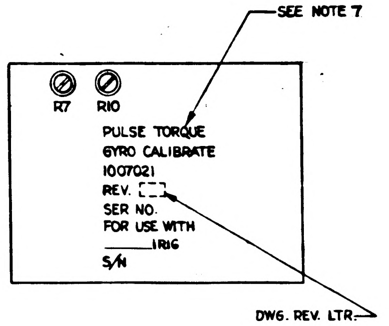
CHART A	
PART NO.	VALUE UF
1010289-016	0.0220
1010289-017	0.0228
1010289-018	0.0330
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO.	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010253-13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

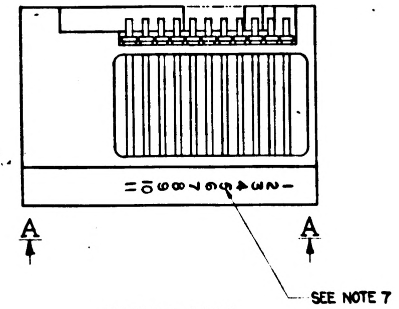


SECTION A-A



PULSE TORQUE
GYRO CALIBRATE
1007021
REV. [ ]
SER NO.
FOR USE WITH
______ IRIG
S/N

VIEW A-A



MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .080	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0220 UF-.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0220UF-.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

1007021 P

1001599	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX ± .005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
Contract NAS 9-497
DRAWN E. Machado DATE Jul 64
CHECKED R. P. Kingsbury 18 Feb 63
APPROVAL 17 Mar 63
APPROVAL R. R. Test 1 Mar 63
NASA APPROVAL 3/4/63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

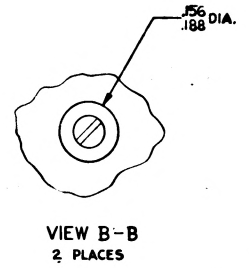
PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

CODE IDENT NO 80230
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1

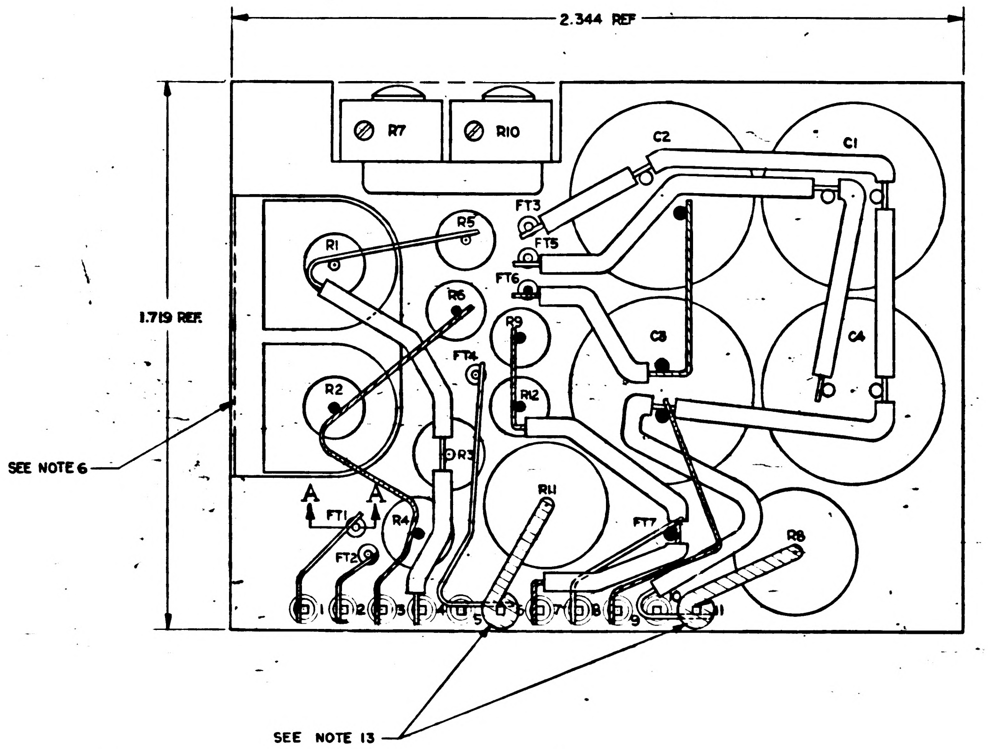
2/1007021

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03±.03 OF EXTERNAL EDGE



VIEW B-B
2 PLACES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R10
C2
C1
R1
R5
FT3
FT5
FT6
R6
R9
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C4
FT4
R2
R12
R3
R11
A
A
FT1
R4
FT2
FT7
R8
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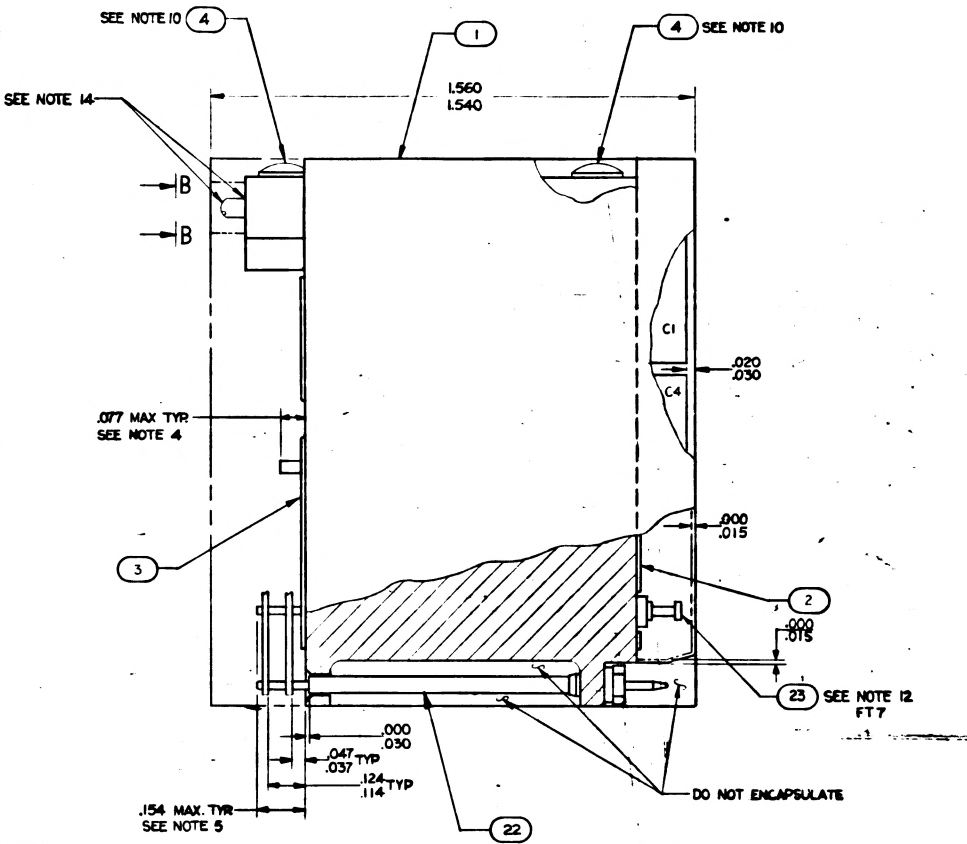
11
SEE NOTE 6
SEE NOTE 13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SEE NOTE 10
SEE NOTE 14
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1.540
B
B
C1
C4
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.030
.077 MAX TYP
SEE NOTE 4
3
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.015
2
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.015
23
SEE NOTE 12
FT7
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.030
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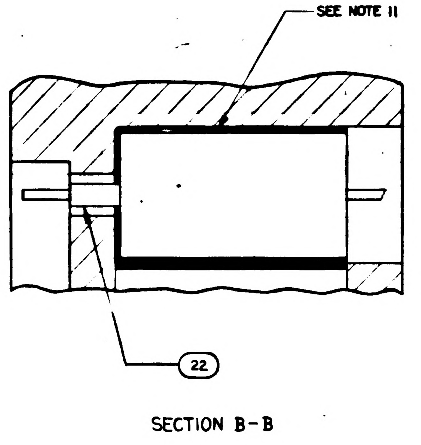
.037 TYP
.124
.114 TYP
.154 MAX. TYP
SEE NOTE 5
22
DO NOT ENCAPSULATE


SEE NOTE 11
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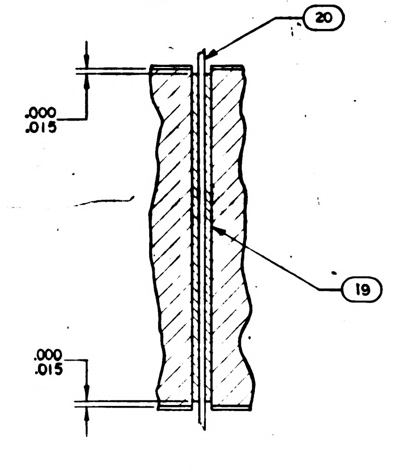
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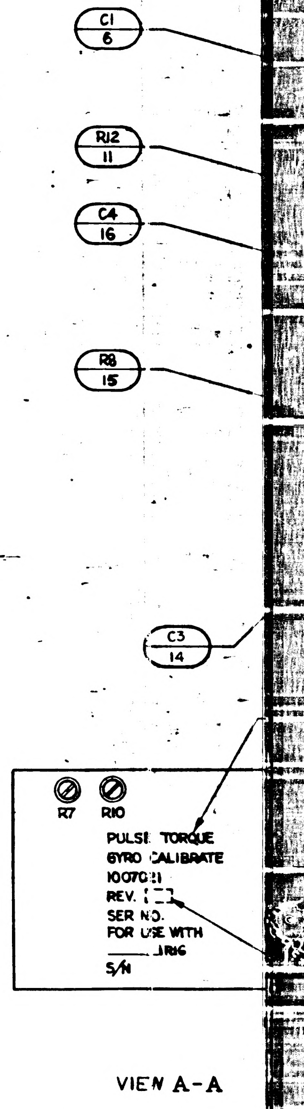
SECTION A-A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C3
14
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV.
SER NO.
FOR USE WITH
IRIG
S/N

VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO.5 THRU FIND NO.8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002009, METHOD C
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. ~~AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND~~
16. ~~AT FINAL TEST,~~ C3 AND C4 TO BE SELECTED FROM CHART A PER ATP1007021.
17. ~~AT FINAL TEST,~~ R5 AND R6 TO BE SELECTED FROM CHART B PER ATP1007021.
18. ~~AT FINAL TEST,~~ R12 TO BE SELECTED FROM CHART C PER ATP 1007021.
19. ~~AT FINAL TEST,~~ R11 TO BE SELECTED FROM CHART D PER ATP 1007021.
20. MUST MEET REQUIREMENTS OF ND1002136
21. ~~AT FINAL TEST,~~ R7 IS TO BE SELECTED FROM CHART E PER ATP 1007021.

Ⓛ 22. PROCURE PER PS 1007021.

23. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~

24. CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.

1007021 | R

SYM	DESCRIPTION	DATE	APPROVAL
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A	REVISED PER TDRR 01000	[illegible]	WK
B	REVISED PER TDRR 01176	4-30-63	D.T. WK
C	REVISED PER TDRR 01713	[illegible]	EPK WK
D	REVISED PER TDRR 01965	7-20-63	[illegible] WK
E	REVISED PER TDRR 03782	[illegible]	[illegible]
F	REVISED PER TDRR 04794	[illegible] 63	[illegible]
G	REVISED PER TDRR 05456	[illegible] 63	WK
H	REVISED PER TDRR 07006	27 MAR 64	JJJ C7P
J	REVISED PER TDRR 07 24	2 APR 64	JHR
K	REVISED PER TDRR 07931	4 MAY 64	JJJ
L	REVISED PER TDRR 10912	28 JUL 64	JJJ E.G.
M	REVISED PER TDRR 6335	24 Nov 64	RJJ
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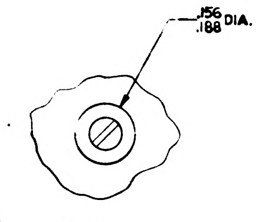
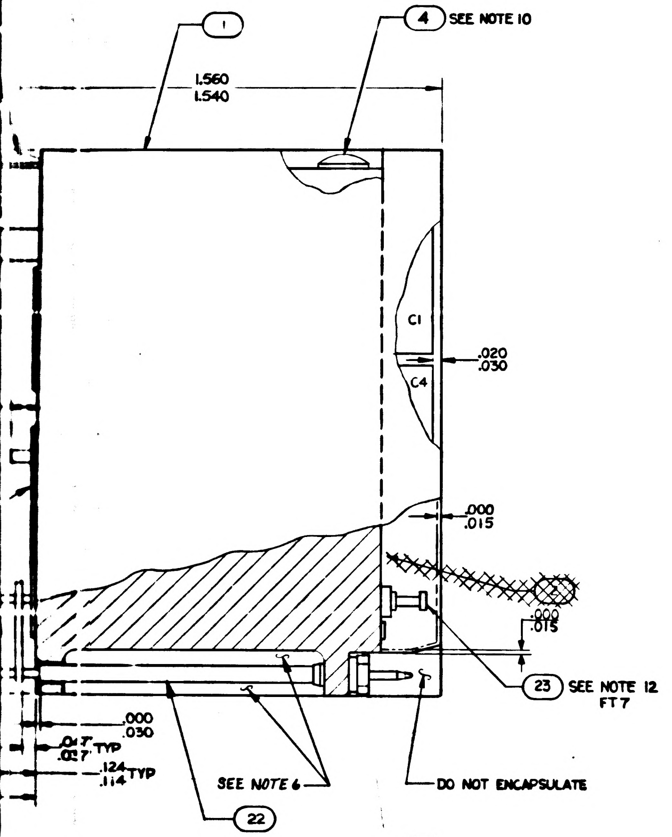


VIEW B-B
2 PLACES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1.540
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C4
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.030
.000
.015
.000
.015
23 SEE NOTE 12
FT 7
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.027 TYP
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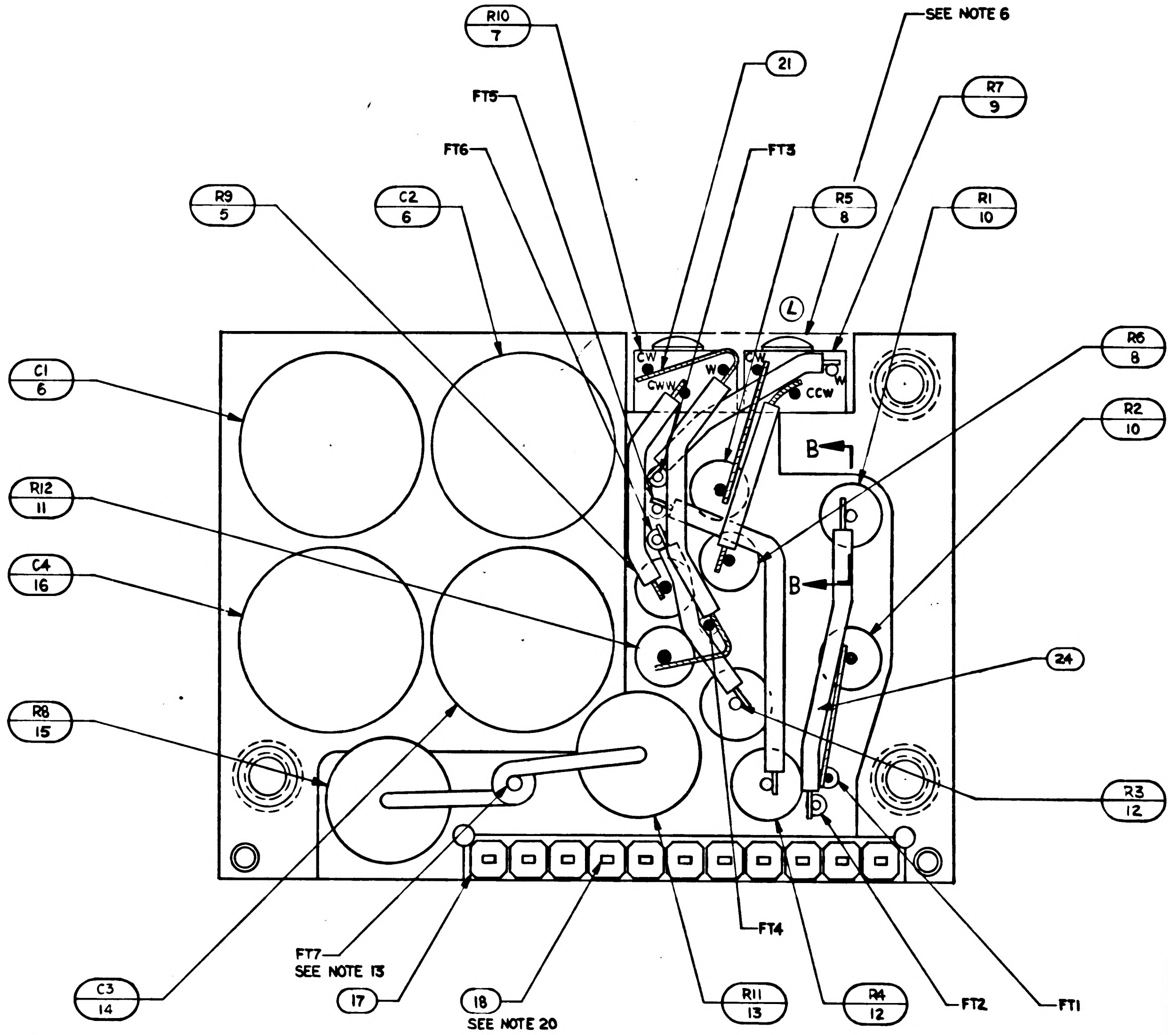
.114 TYP
SEE NOTE 6
DO NOT ENCAPSULATE
22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FT5
FT3
FT6
R9
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C2
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R5
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R1
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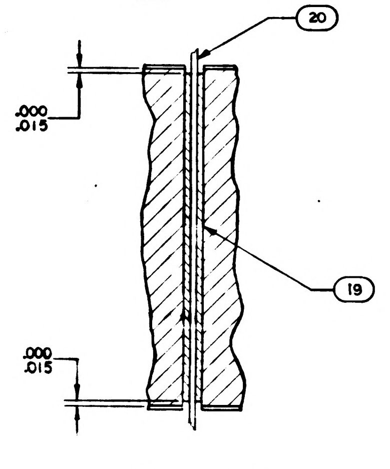
CW
CWW
W
CW
CCW
W
R6
8
R2
10
C1
6
B
B
R12
11
C4
16
24
R8
15
R3
12
FT4
FT7
SEE NOTE 13
C3
14
17
18
SEE NOTE 20
R11
13
R4
12
FT2
FT1

CHART B

PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		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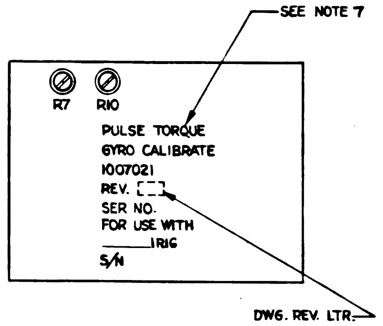
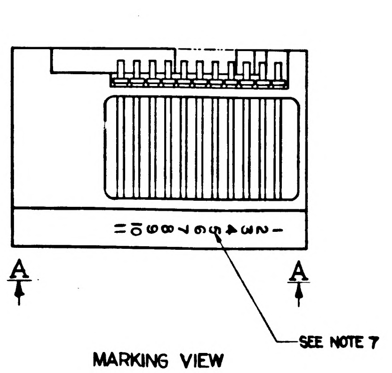
SECTION A-A


SEE NOTE 7
R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV.
SER NO.
FOR USE WITH
IRIG
S/N
DWG. REV. LTR.

VIEW A-A


A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART E

PART NO	VALUE
1010373-9	5K
1010373-10	10K

CHART A

PART NO.	VALUE UF
1010289-016	0.0220
1010289-017	0.0228
1010289-018	0.0330
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C

PART NO.	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D

PART NO	VALUE Ω
1010253 -13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
	1010011	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING	24
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0220 UF-.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10 Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0220 UF-.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600 Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525 Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
~~1~~	~~1008023-2~~	~~INSULATOR~~	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

1007021 R

NEXT ASSY	USED ON
1001599	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497

DRAWN R. Machado DATE Feb 1 63
CHECKED R. P. Kuykendall 18 Feb 63
APPROVAL [illegible] 1 Mar 63
APPROVAL A. R. Test 1 Mar 63
NASA APPROVAL [illegible] 3/4/63
MIT APPROVAL [illegible] 6 March 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PULSE TORQUE GYRO CALIBRATE ASSEMBLY

CODE IDENT NO. 80230
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1

2/1007021

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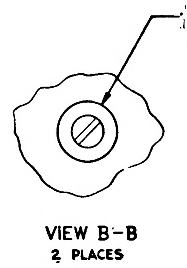
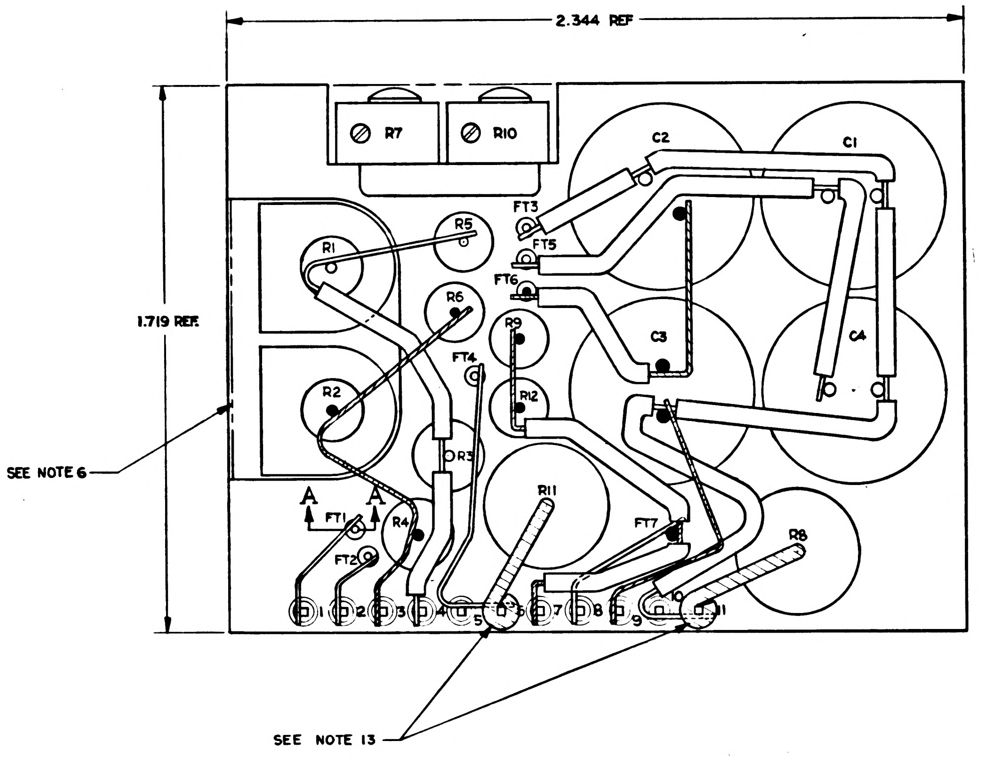
~~TABLE I~~

~~CONFIGURATION~~	~~BOND BETWEEN WAFER AND HEATSINK~~	~~TOP OF WAFER~~	~~HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE~~
~~WAFER AND FLAT HEATSINK~~	~~50% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~WAFER AND ADJACENT VERTICAL HEATSINK SURFACE~~	~~CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE.~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~HEATSINK FOAM CONTACT SURFACE PERIMETER~~	~~N/A~~	~~N/A~~	~~.25 MIN WIDTH OR TOTAL AVAILABLE ON 80% OF PERIMETER TO WITHIN .03±.03 OF EXTERNAL EDGE~~



VIEW B-B
2 PLACES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SEE NOTE 6
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R10
C2
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R1
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R4
R11
C3
C4
R8
FT1
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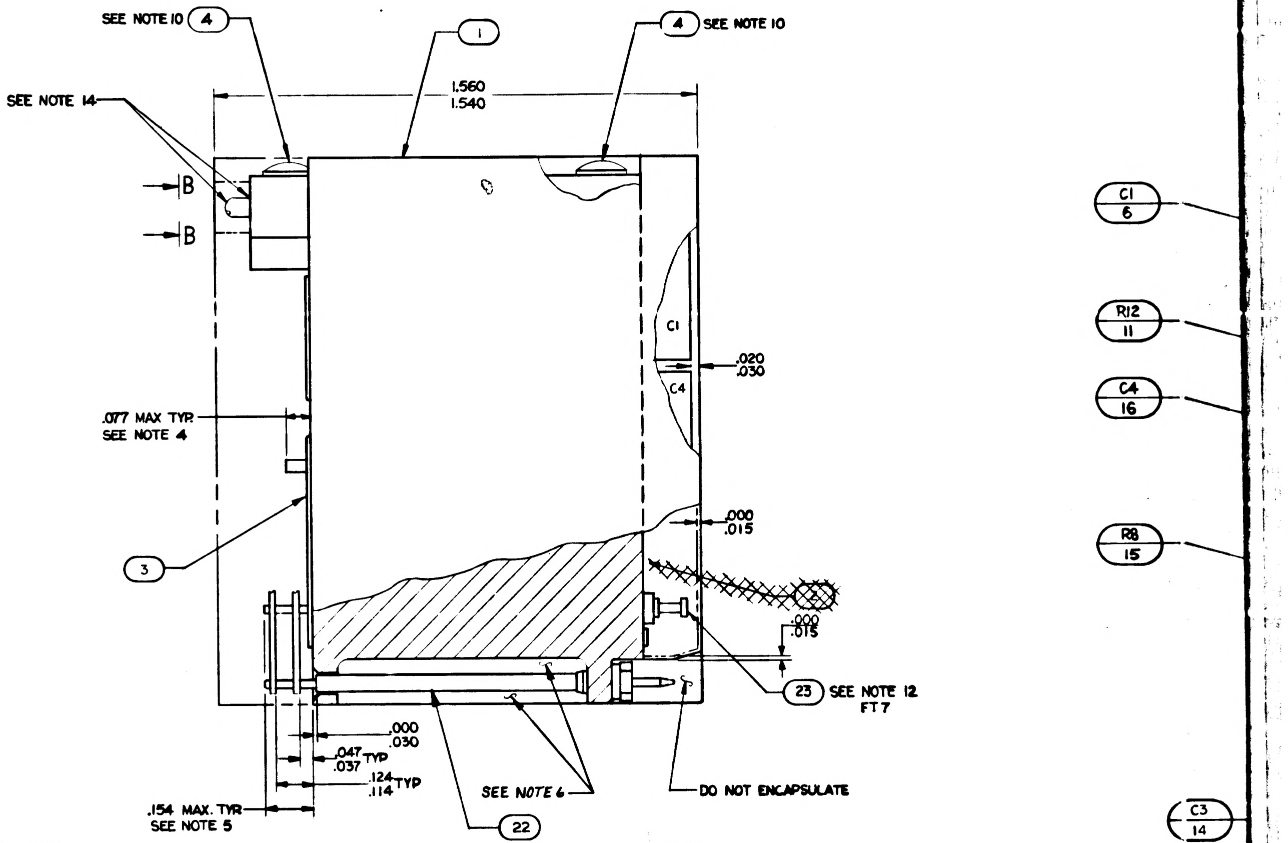
SEE NOTE 13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SEE NOTE 10
SEE NOTE 14
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1.540
B
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C1
C4
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SEE NOTE 4
3
.000
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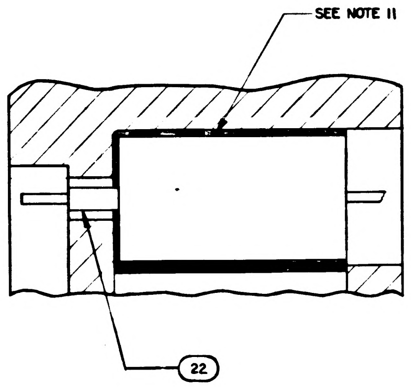
23
SEE NOTE 12
FT7
.000
.030
.047 TYP
.037
.124 TYP
.114
.154 MAX. TYP
SEE NOTE 5
SEE NOTE 6
22
DO NOT ENCAPSULATE
C1
6
R12
11
C4
16
R8
15
C3
14

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO.5 THRU NO.8 AND FIND NO.10 THRU NO.16 PER ND 1002009, METHOD H
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. ~~AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND~~
16. ~~AT FINAL TEST,~~ C3 AND C4 TO BE SELECTED FROM CHART A PER ATP 1007021.
17. ~~AT FINAL TEST,~~ R5 AND R6 TO BE SELECTED FROM CHART B PER ATP 1007021.
18. ~~AT FINAL TEST,~~ R12 TO BE SELECTED FROM CHART C PER ATP 1007021.
19. ~~AT FINAL TEST,~~ R11 TO BE SELECTED FROM CHART D PER ATP 1007021.
20. MUST MEET REQUIREMENTS OF ND 1002136
21. ~~AT FINAL TEST,~~ R7 IS TO BE SELECTED FROM CHART E PER ATP 1007021.
22. Ⓛ PROCURE PER PS 1007021.
23. ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~
24. ~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~
25. *CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.*
26. *EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND 1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.*


SEE NOTE 11
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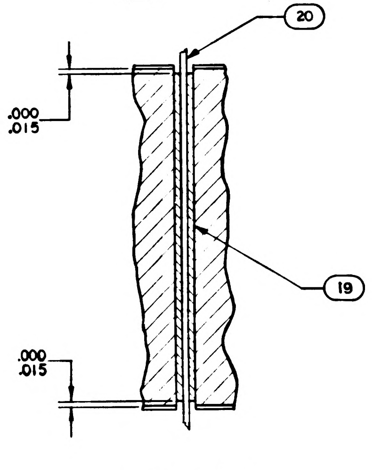
SECTION B-B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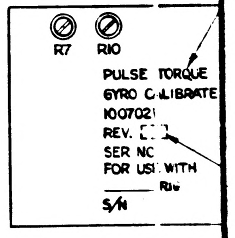
SECTION A-A


R7
R10
PULSE TORQUE
GYRO CALIBRATE
100702
REV.
SER NC
FOR USE WITH
R10
S/N

VIEW A-A

S	1007021

REVISIONS TDRR 00493

SYM	DESCRIPTION	DATE	APPROVAL
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B	REVISED PER TDRR 01176	4-30-63	D.T. WK
C	REVISED PER TDRR 01713	6 26 63	RPK WK
D	REVISED PER TDRR 01965	7 20 63	RPK WK
E	REVISED PER TDRR 03782	10 14 63	[illegible]
F	REVISED PER TDRR 04794	20 Nov 63	[illegible]
G	REVISED PER TDRR 05456	[illegible] 63	RPK WK
H	REVISED PER TDRR 07006	27 MAR 64	JJJ CTP
J	REVISED PER TDRR 07124	2 APR 64	JHR
K	REVISED PER TDRR 07931	4 MAY 64	JJJ
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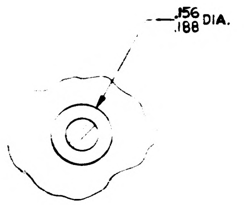
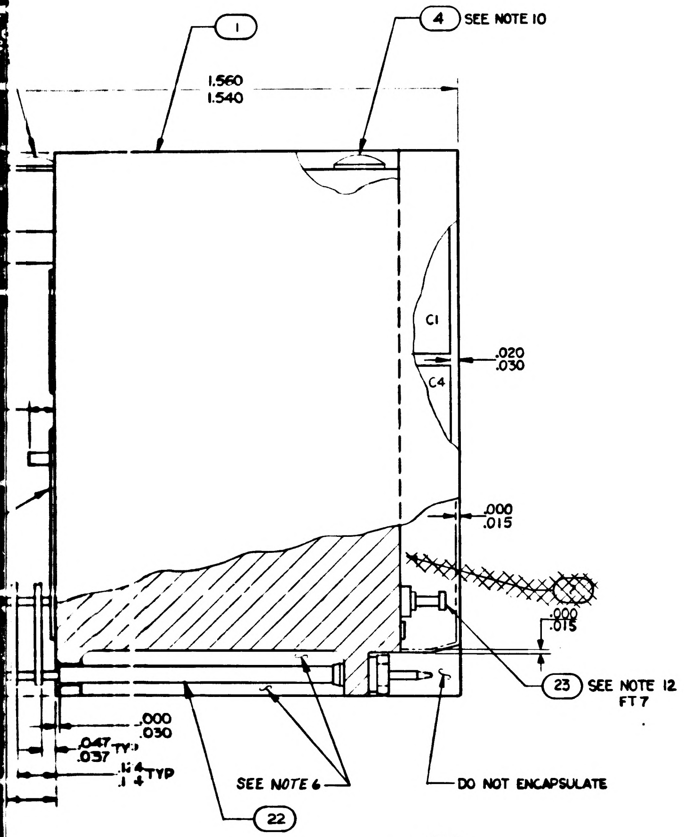
R	REVISED PER TDRR 19516	7 JUN 65	WSM
S	REVISED PER TDRR 2 27	3 JUL 65	RLF



VIEW B-B
2 PLACES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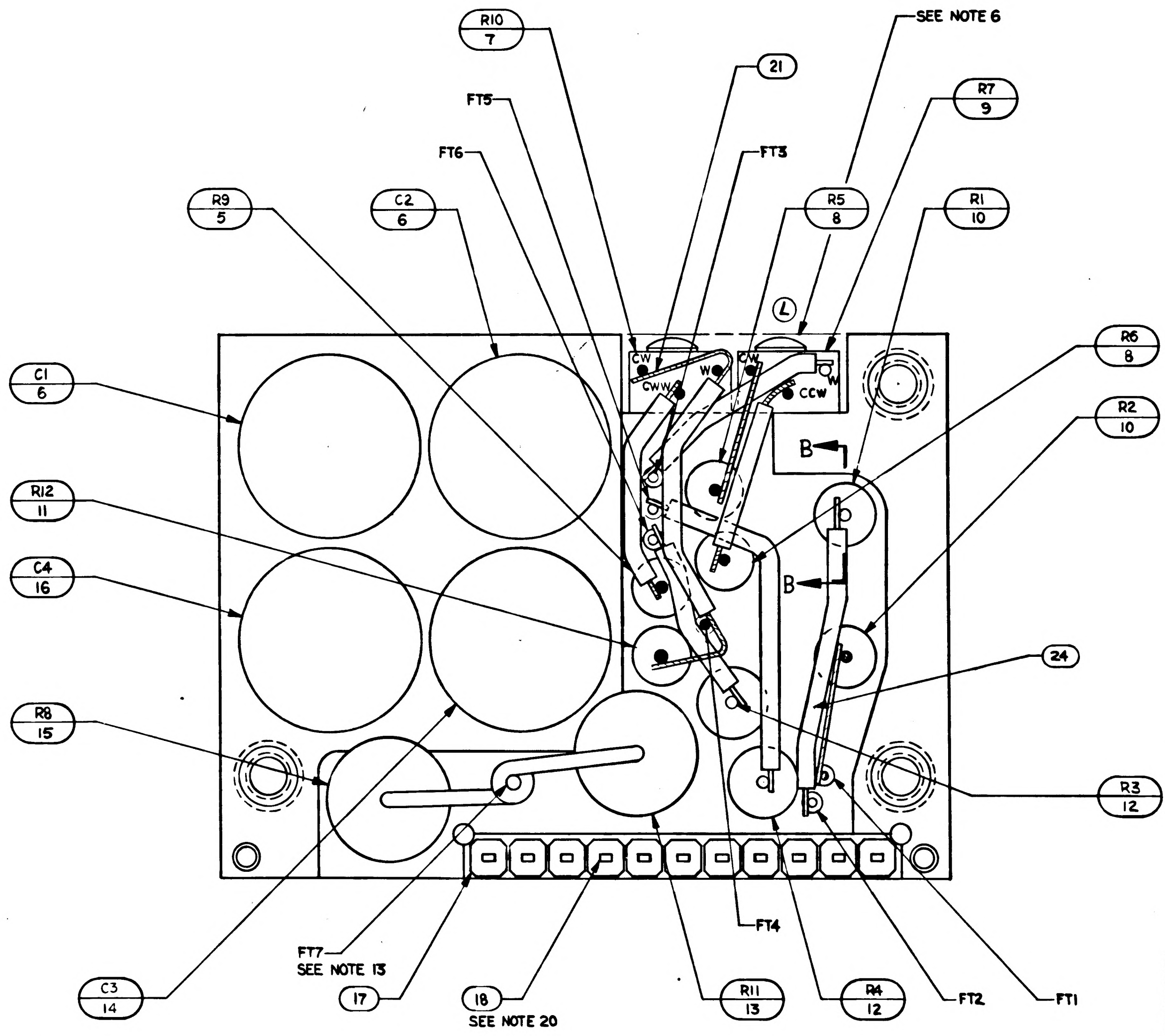
SEE NOTE 6
DO NOT ENCAPSULATE
22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R1
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C1
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R6
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R2
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R12
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C4
16
24
R8
15
R3
12
CW
CCW
CW
W
W
L
B
B
C3
14
FT7
SEE NOTE 13
17
18
SEE NOTE 20
R11
13
R4
12
FT4
FT2
FT1

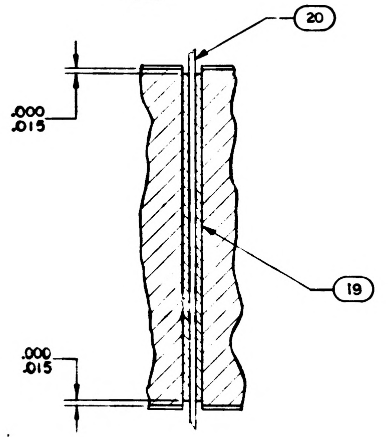
CHART B			
PART NO	VALUE Ω	PART NO	VALUE
1010377-76	82.5K	1010377-281	53K
-77	83.75K	-282	64K
-78	85.0K	-283	73K
-79	86.25K	-284	127K
-80	87.5K	-285	136K
-81	88.75K	-286	145K
-82	90.0K	-287	154K
-83	91.25K	-288	163K
-84	92.5K	-289	172K
-85	93.75K	-290	181K
-86	95.0K	-291	190K
-87	96.25K	-292	199K
-88	97.5K	-293	208K
-89	98.75K	-294	217K
-90	100.0K	-295	226K
-91	101.25K	-296	235K
-92	102.5K	-297	244K
-93	103.75K	-298	253K
-94	105.0K	-299	262K
-95	106.25K	-300	271K
-96	107.5K		
-97	108.75K		
-98	101.0K		
-99	111.25K		
-100	112.5K		
-101	113.75K		
-102	115.0K		
-103	116.25K		
-104	117.5K		

CHART A	
PART NO.	VALUE UF
1010289-016	0.0220
1010289-017	0.0228
1010289-018	0.0330
1010289-019	0.0350
1010289-020	0.0375
1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

CHART C	
PART NO.	VALUE Ω
1010283-12	25.13K
-13	12.56K
-14	8.38K
-15	6.28K
-16	5.03K

CHART D	
PART NO	VALUE Ω
1010834-13	49.001
-14	49.581
-15	50.175
-16	50.784
-17	51.407
-18	52.046
-19	52.701
-20	53.373
-21	54.062
-22	54.772

CHART E	
PART NO	VALUE
1010373-9	5K
1010373-10	10K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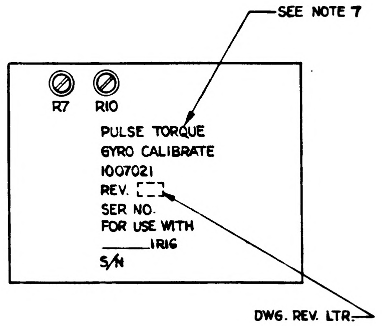
SECTION A-A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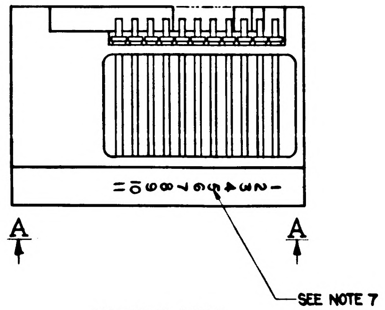
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV.
SER NO.
FOR USE WITH
IRIG
S/N
DWG. REV. LTR.

VIEW A-A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A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

	1010011	SCHEMATIC	REF
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1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006757-8	WIRE, ELEC .020 DIA	20
A/R	1006776-22	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0220 UF-.0775UF 200V ±1%	16
1	1010834-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0220UF-.0775UF 200V ±1%	14
1	SEE NOTE 19	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-93	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	SEE NOTE 18	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-1	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	SEE NOTE 21	RESISTOR, VAR, 1W ±5%	9
2	SEE NOTE 17	RESISTOR, FXD, WW 1/10W ±1%	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-17	RESISTOR, FXD, WW 5.1K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
~~1~~	~~1008023-2~~	~~INSULATOR~~	2
1	1007020	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

1001599	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
Contract NAS 9-497
DRAWN E. Machado DATE Feb 1 63
CHECKED E. P. Kingsbury 1 Feb 63
APPROVAL [illegible] 1 Mar 63
APPROVAL D. R. Test 1 Mar 63
NASA APPROVAL [illegible] 3/4/63
MIT APPROVAL [illegible] 6 March 63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

CODE IDENT NO. 80230
SIZE J
NASA DRAWING NO 1007021
SCALE 5/1
WT
SHEET 1 OF 1

2/1007021

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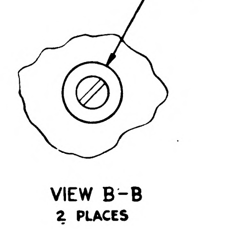
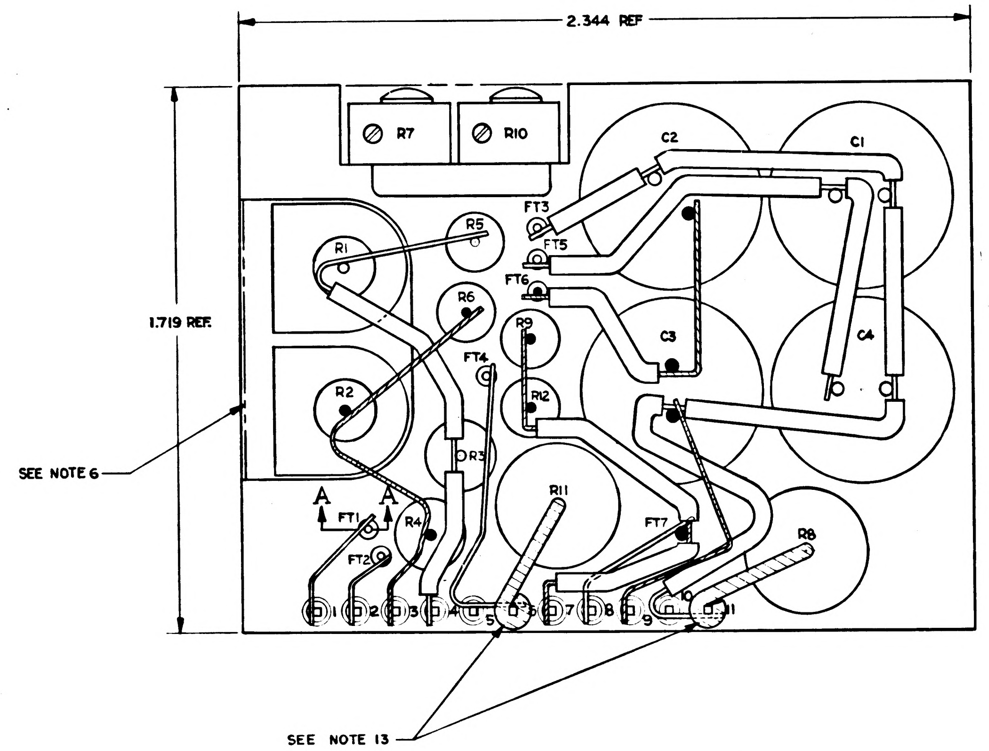
TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03±.03 OF EXTERNAL EDGE



VIEW B-B
2 PLACES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R7
R10
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C1
R5
R1
FT3
FT5
FT6
R6
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C4
FT4
R2
R12
R3
R11
FT7
R8
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FT1
FT2
R4
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3
4
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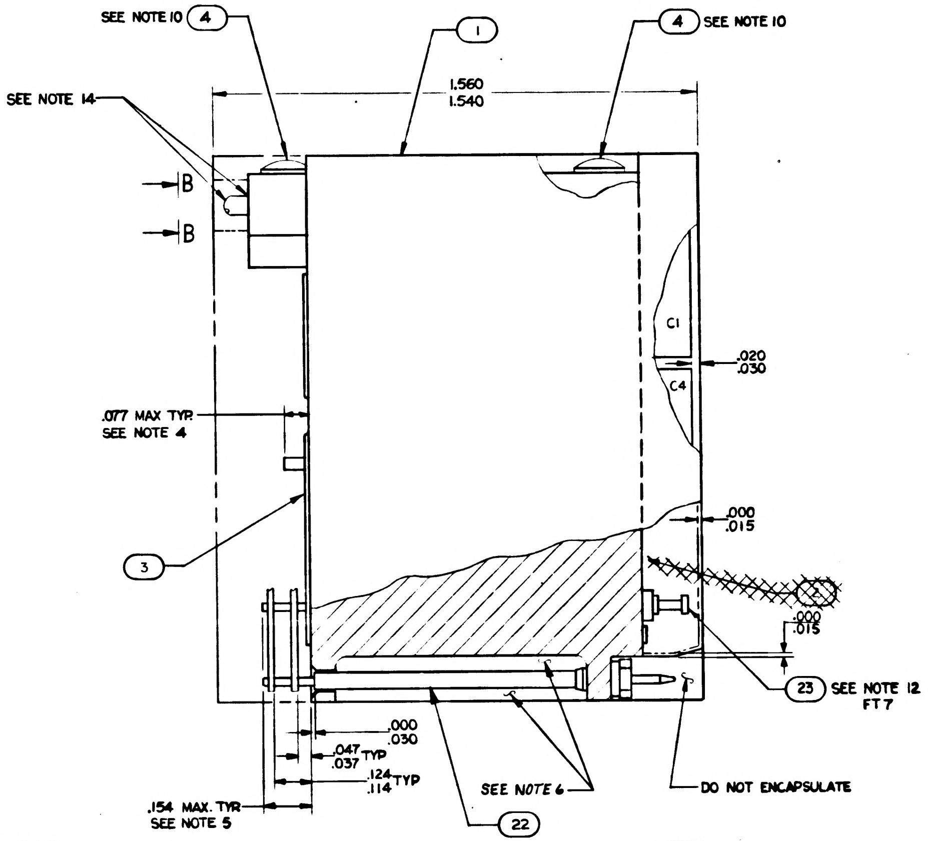
6
7
8
9
10
11
SEE NOTE 6
SEE NOTE 13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4
SEE NOTE 10
SEE NOTE 14
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1.540
B
B
C1
C4
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.030
.077 MAX TYP
SEE NOTE 4
.000
.015
3
.000
.015
23
SEE NOTE 12
FT7
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.030
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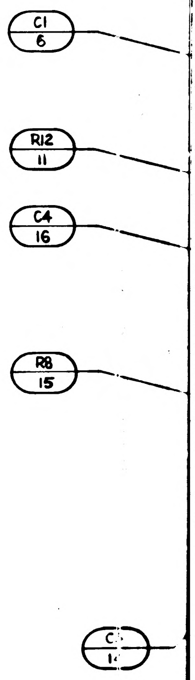
.037 TYP
.124
.114 TYP
.154 MAX. TYP
SEE NOTE 5
SEE NOTE 6
22
DO NOT ENCAPSULATE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6
R12
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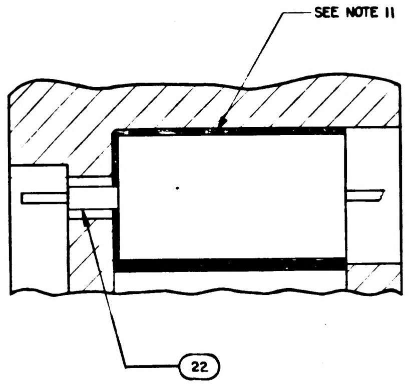
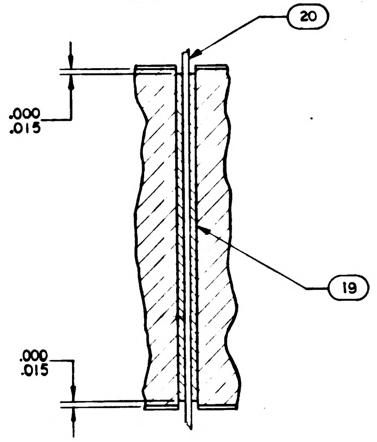
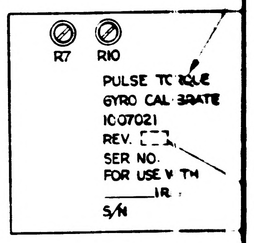
C4
16
R8
15


SEE NOTE 11
22

SECTION B-B


20
.000
.015
19
.000
.015

SECTION A-A


R7
R10
PULSE TORQUE
GYRO CALIBRATE
1007021
REV.
SER NO.
FOR USE WITH
________ IR
S/N

VIEW A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003~~
4. WHITE DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) USING CURING CYCLE NO.2. UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
7. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHARACTORS .12 HIGH (WHITE) PER ND1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
8. STAKE FIND NO.5 THRU NO.8 AND FIND NO.10 THRU NO.16 PER ND 1002009, METHOD H
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002117
12. CUT FIND NO. 23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. ~~AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND~~
16. ~~AT FINAL TEST,~~ C3 AND C4 TO BE SELECTED FROM CHART A PER ATP 1007021.
17. ~~AT FINAL TEST,~~ R5 AND R6 TO BE SELECTED FROM CHART B PER ATP 1007021.
18. ~~AT FINAL TEST,~~ R12 TO BE SELECTED FROM CHART C PER ATP 1007021.
19. ~~AT FINAL TEST,~~ R11 TO BE SELECTED FROM CHART D PER ATP 1007021.
20. MUST MEET REQUIREMENTS OF ND1002136
21. ~~AT FINAL TEST,~~ R7 IS TO BE SELECTED FROM CHART E PER ATP 1007021.

(L) 22. PROCURE PER PS 1007021.

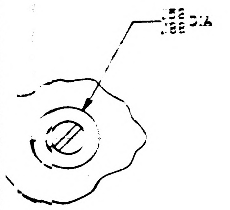
23. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.

~~24 CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~

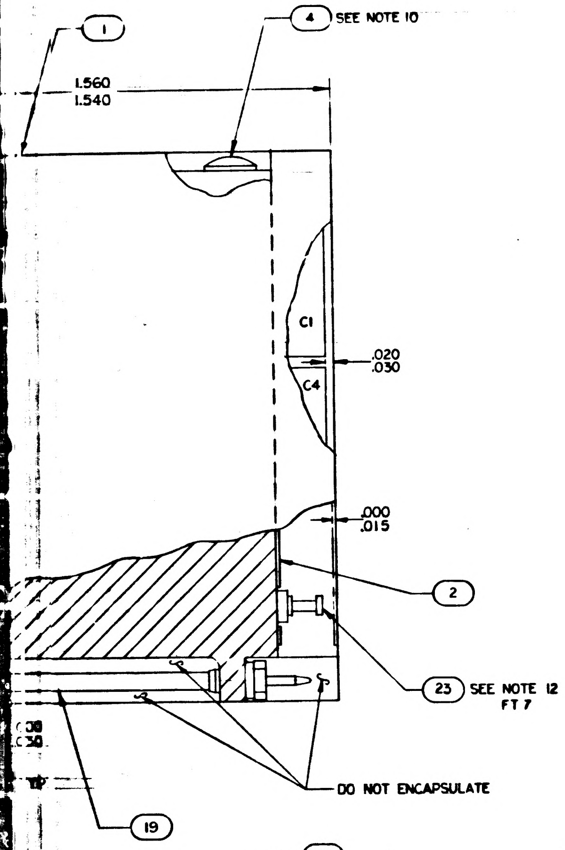
25. CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.
26. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND 1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.

REVISIONS TORR OU 473

SYM	DESCRIPTION	DATE	APPROVAL



VIEW B-B
2 PLACES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C4
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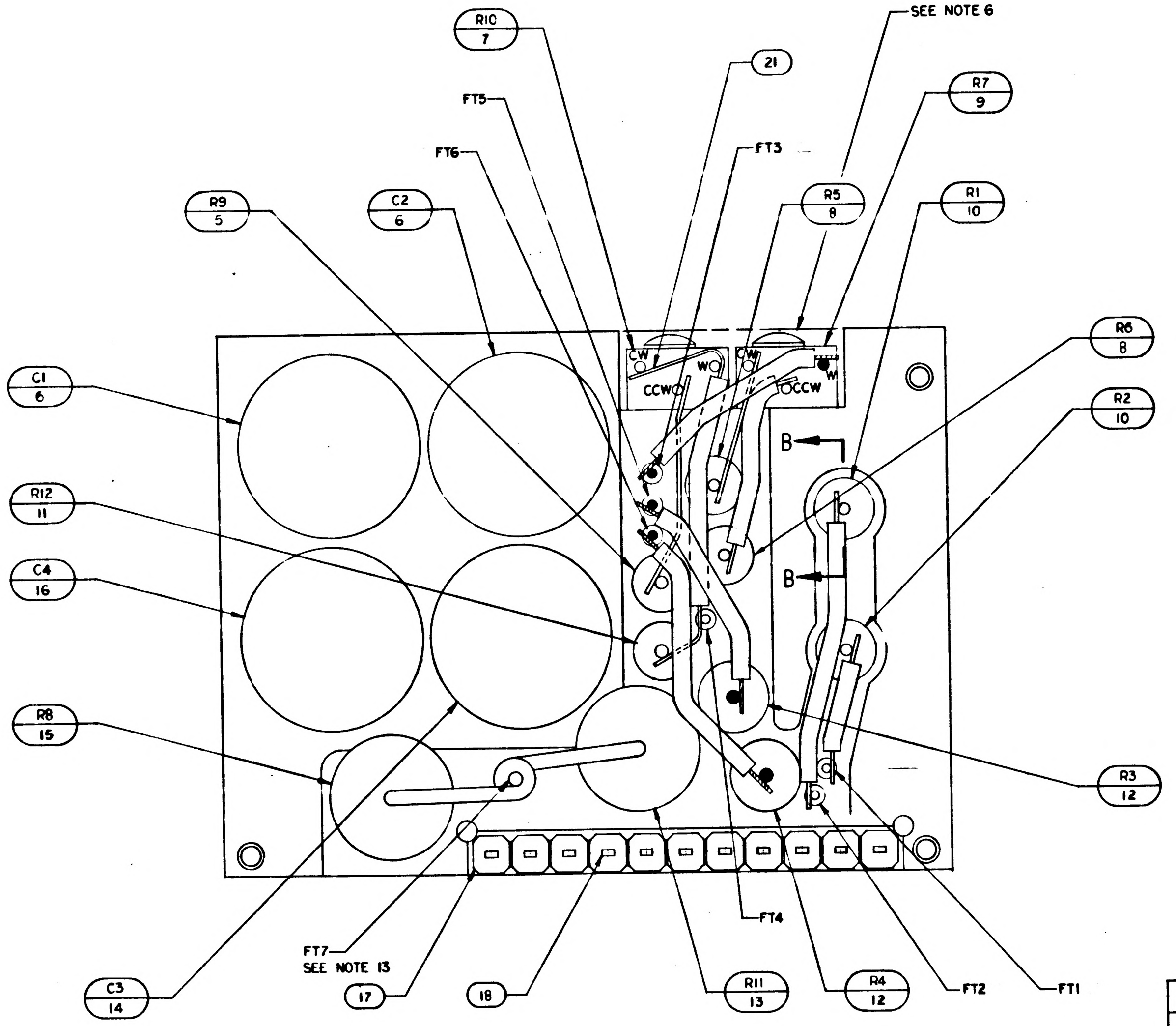
2
23 SEE NOTE 12
FT 7
DO NOT ENCAPSULATE
19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FT6
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CW
CCW
W
B
R12 11
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FT7
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18
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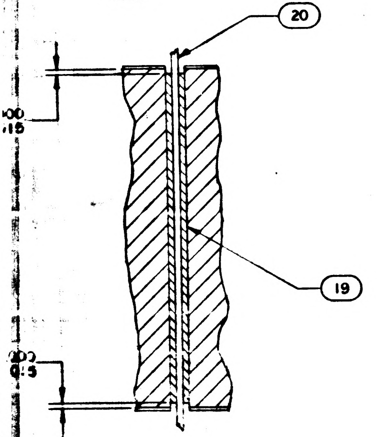
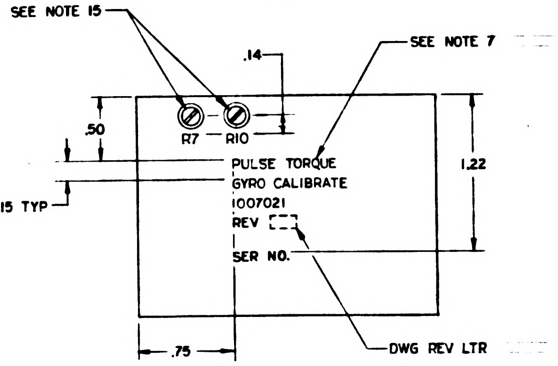
FT4
R4 12
FT2
FT1
C3 14



SECTION A-A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GYRO CALIBRATE
1007021
REV
SER NO.
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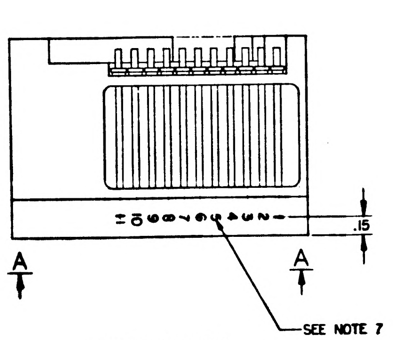
1.22
.75
DWG REV LTR

VIEW A-A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A
A
SEE NOTE 7

MARKING VIEW
SCALE 2/1

CHART A

PART NO.	VALUE UF
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1010289-021	0.0400
1010289-022	0.0425
1010289-023	0.0450
1010289-024	0.0475
1010289-025	0.0500
1010289-026	0.0525
1010289-027	0.0550
1010289-028	0.0575
1010289-029	0.0600
1010289-030	0.0625
1010289-031	0.0650
1010289-032	0.0675
1010289-033	0.0700
1010289-034	0.0725
1010289-035	0.0750
1010289-036	0.0775

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010011	SCHEMATIC	REF
1	1006784-6	TERMINAL, FEEDTHRU, INSULATED	23
A/R	1006776-20	INSULATION, SLEEVING	22
A/R	1006757-1	WIRE, ELEC .010 X .020	21
A/R	1006787-2	WIRE, ELEC .020 DIA	20
A/R	1006776-21	INSULATION, SLEEVING	19
11	1006782-4	CONTACT, WRAPOST, MALE MIN	18
11	1006775	INSULATOR, WRAPOST, MALE, MIN	17
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	16
1	1010253-12	RESISTOR, FXD, WW 10Ω 1W ±.01%	15
1	SEE NOTE 16	CAPACITOR, .0350UF -.0775UF 200V ±1%	14
1	1010253-	RESISTOR, FXD, WW 1W ±.01%	13
2	1010389-	RESISTOR, FXD, WW 600Ω 3W ±1%	12
1	1010283-	RESISTOR, FXD, WW 1/10W ±.1%	11
2	1010262-	RESISTOR, FXD, WW 525Ω 10W ±1%	10
1	1010373-9	RESISTOR, VAR, 5K 1W ±5%	9
2	1010377-	RESISTOR, FXD, WW	8
1	1010373-8	RESISTOR, VAR, 2K 1W ±5%	7
2	1010289-036	CAPACITOR, POLY, .0775UF 200V ±.5%	6
1	1010283-12	RESISTOR, FXD, WW 4K 1/10W ±.1%	5
4	1000093-3	SCREW, BUTTON HD	4
1	1008023-1	INSULATOR	3
1	1008023-2	INSULATOR	2
1	1007020	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007102	
1007101	

APPLICATION

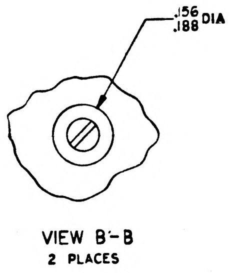
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN R. Machado DATE Feb 63
CHECKED R. Kuphaldt 18 Feb 63
APPROVAL 1 Mar 63
APPROVAL A.R. Test 1 Mar 63
NASA APPROVAL 3/4/63
MIT APPROVAL 6 March 63

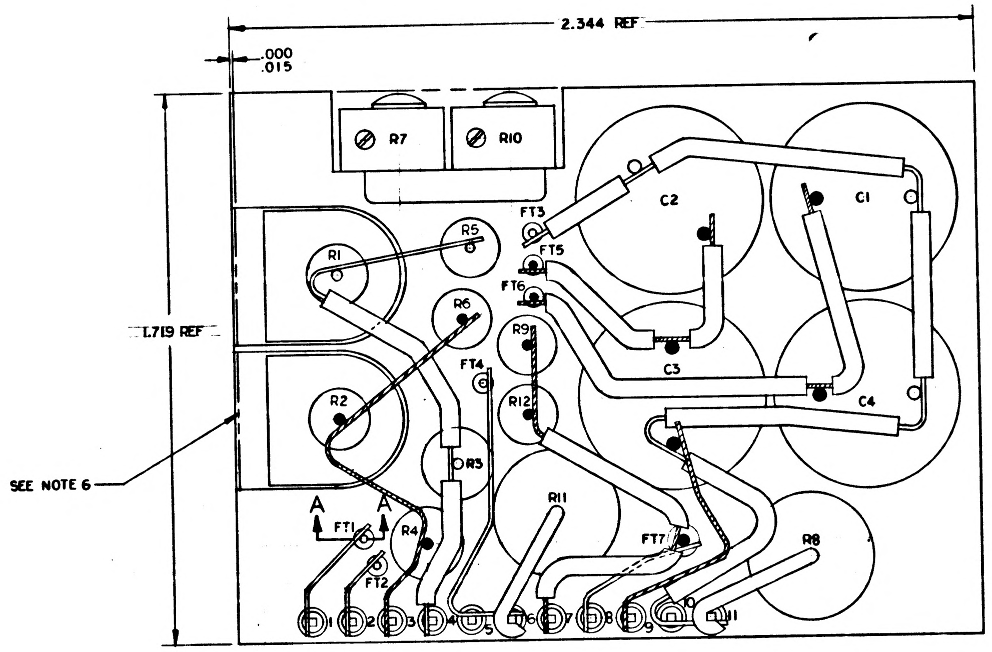
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

PULSE TORQUE
GYRO CALIBRATE
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007021
SCALE 5/1
WT
SHEET 1 OF 1



VIEW B'-B
2 PLACES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1.719 REF
SEE NOTE 6
R7
R10
R1
R5
R6
R2
R3
R4
R9
R12
R11
R8
C1
C2
C3
C4
FT1
FT2
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FT7
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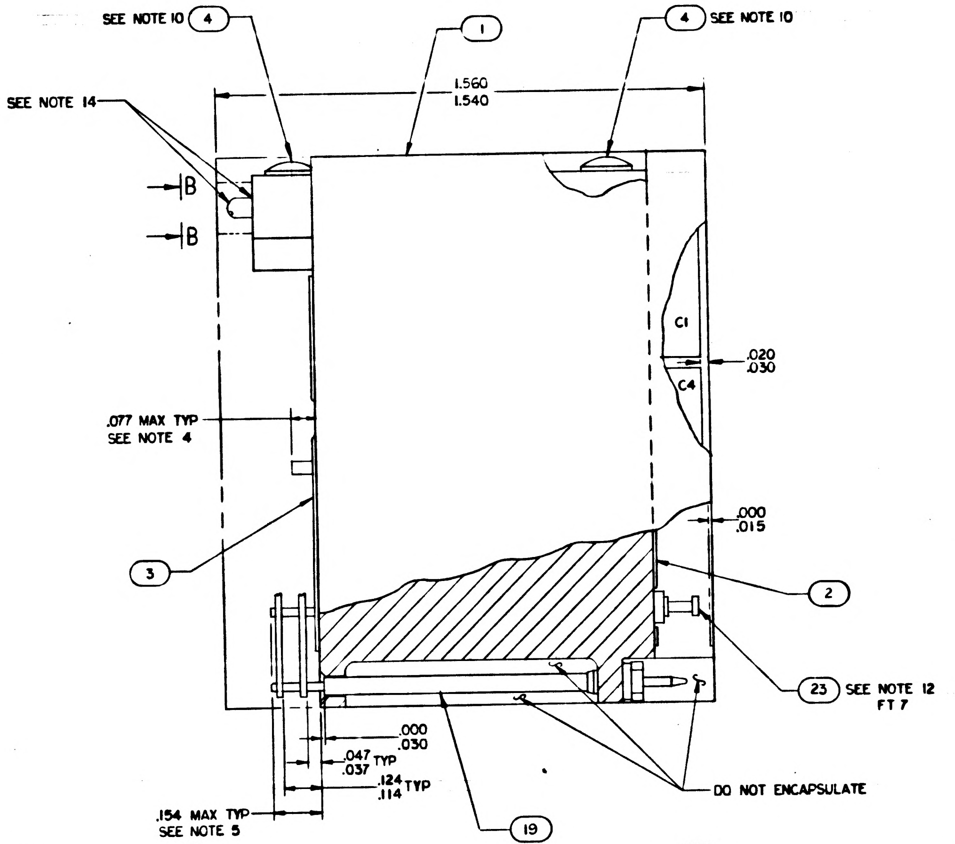
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SEE NOTE 14
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C4
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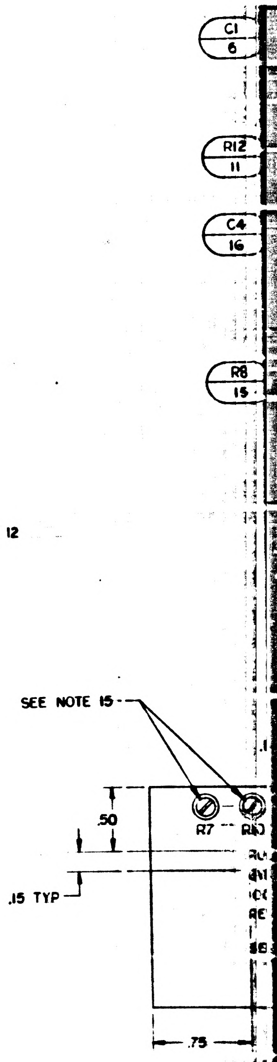
SEE NOTE 4
.000
.015
3
2
23
SEE NOTE 12
FT 7
.000
.030
.047
.037 TYP
.124
.114 TYP
.154 MAX TYP
SEE NOTE 5
19
DO NOT ENCAPSULATE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C4
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R8
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R10
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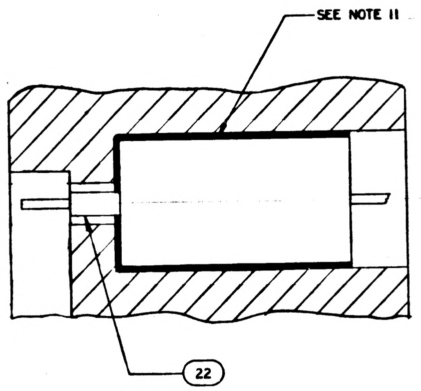
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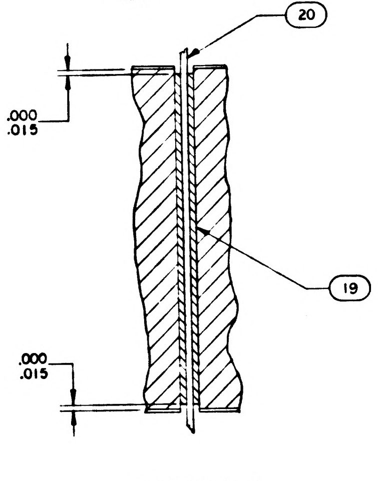
SECTION B-B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.000
.015
19
.000
.015

SECTION A-A

NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL CONNECTIONS TO BE MADE BY WELDING PER ND1002005 EXCEPT WHERE SHOWN
3. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND1002003
4. WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
5. BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
6. ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM)
7. MARK .100/.060 HIGH WHITE CHARACTERS PER ND1002019
8. STAKE FIND NO.5 THRU FIND NO.8 AND FIND NO.10 THRU FIND NO.16 PER ND 1002019
9. A/R DENOTES AS REQUIRED
10. APPLY ZINC CHROMATE PRIMER, MIL-P-8585 PER MIL-P-6808
(AS6) TO THREADS OF FIND NO.4
11. BOND FIND NO.10 PER ND1002041
12. CUT FIND NO.23 AT TOP OF TURRET
13. SOLDER PER MIL-S-6872
14. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
15. AFTER FINAL ADJUSTMENT SEAL ADJUSTING SCREW PER ND
16. AT FINAL TEST, C3 AND C4 TO BE SELECTED FROM CHART A

APOLLO G&N Specification
PS-1007021
22 May 1964
Class A Release
TDRR

TDRR 08637 MAY 22 1964

PROCUREMENT SPECIFICATION
FOR
PULSE TORQUE GYRO CALIBRATE ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 4 inclusive.

PROCUREMENT SPECIFICATION
FOR
PULSE TORQUE GYRO CALIBRATE ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Pulse Torque Gyro Calibrate Assembly for use in APOLLO Guidance and Navigation Equipment.

22 May 64
MIT/IL DATE

5-22-64
NASA/MSC APPROVAL DATE

PROCUREMENT SPECIFICATION
FOR
PULSE TORQUE GYRO CALIBRATE ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Pulse Torque Gyro Calibrate Assembly, Drawing 1007021, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies.
ND-1002214	General Specification for Preservation, Packaging, Packing and Container Marking of Apollo Guidance and Navigation Major Assemblies, Assemblies, Subassemblies and Parts.
FTM-1007021	Final Test Method for Pulse Torque Gyro Calibrate Assembly

DRAWINGS

APOLLO G&N

1007021	Pulse Torque Gyro Calibrate Assembly
1010011	Schematic, Pulse Torque Gyro Calibrate, Assembly (For Reference Only)

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007021
22 May 1964
Class A   Release
TDRR

TDRR 0 8 6 3 7   MAY 22 1964

PROCUREMENT SPECIFICATION

FOR

PULSE TORQUE GYRO CALIBRATE ASSEMBLY

Record of Revisions

(N)

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i
to iii and 1 to 4 inclusive.

APOLLO G&N Specification
PS-1007021
22 May 1964

PROCUREMENT SPECIFICATION
FOR
PULSE TORQUE GYRO CALIBRATE ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Pulse Torque Gyro Calibrate Assembly, Drawing 1007021, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

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DRAWINGS

APOLLO G&N

1007021	Pulse Torque Gyro Calibrate Assembly
1010011	Schematic, Pulse Torque Gyro Calibrate, Assembly (For Reference Only)

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly has three fundamental functions as follows:

a. To provide a means of coupling the PSA constant current source and its related control circuity with the torque ducosyn windings of the gyro. This includes the following subfunctions:

   (1) To provide a means of precisely obtaining the required torquing currents for a particular gyro. This shall be accomplished by selection of appropriate resistances for R7, R6 and R5.

   (2) To provide a means of compensating the inductance of the gyro torque ducosyns such that the switching circuitry of the ternary current module sees a basically resistive load. This shall be accomplished by selection of appropriate values of capacitance for C4 and C3.

b. To provide a sampling capability such that a specified nominal voltage level of 6.0V can be obtained and supplied to the DC Differential Amplifier. This shall be accomplished by selection of appropriate resistance values for the scale factor resistors R11 and R12.

c. To provide a current sampling capability for use by the ground support equipment.

3.3 FUNCTIONAL REQUIREMENTS

3.3.1 DC Resistance. The nominal dc resistance shall be in accordance with Table I (Reference Drawing 1010011).

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SYM	DESCRIPTION	DATE	APPROVAL
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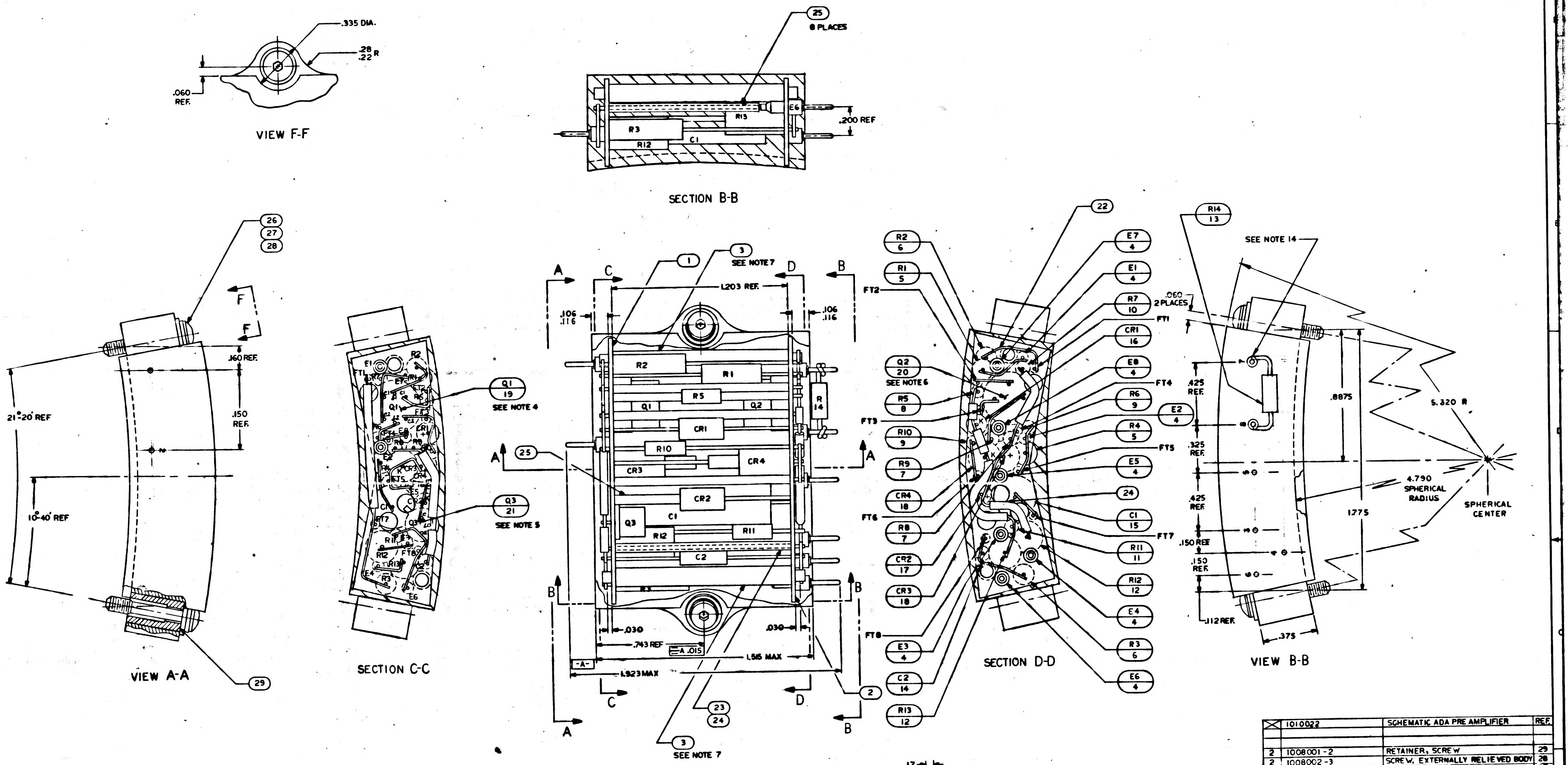
REVISIONS TDRR 00579



VIEW F-F
.335 DIA.
.28 R
.22
.060 REF.
25
8 PLACES
SECTION B-B
R13
E6
R3
R12
C1
.200 REF
26
27
28
F
F
.160 REF.
21°-20' REF
.150 REF.
10°-40' REF
VIEW A-A
29
SECTION C-C
Q1 19 SEE NOTE 4
Q3 21 SEE NOTE 5
1
3 SEE NOTE 7
A
C
D
B
L203 REF.
.106 .116
R2
R1
R5
Q1
Q2
CR1
R10
R14
CR3
CR4
CR2
C1
Q3
R12
R11
C2
25
.030
.743 REF
A .015
1.515 MAX
1.923 MAX
2
23
24
3 SEE NOTE 7
FT1
FT2
FT3
FT4
FT5
FT6
FT7
FT8
R2 6
R1 5
Q2 20 SEE NOTE 6
R5 8
R10 9
R9 7
CR4 18
R8 7
CR2 17
CR3 18
E3 4
C2 14
R13 12
22
E7 4
E1 4
R7 10
CR1 16
E8 4
R6 9
R4 5
E5 4
24
C1 15
R11 11
R12 12
E4 4
R3 6
E6 4
E2 4
SECTION D-D
R14 13
SEE NOTE 14
.060 2 PLACES
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.8875
5.320 R
.325 REF.
4.790 SPHERICAL RADIUS
SPHERICAL CENTER
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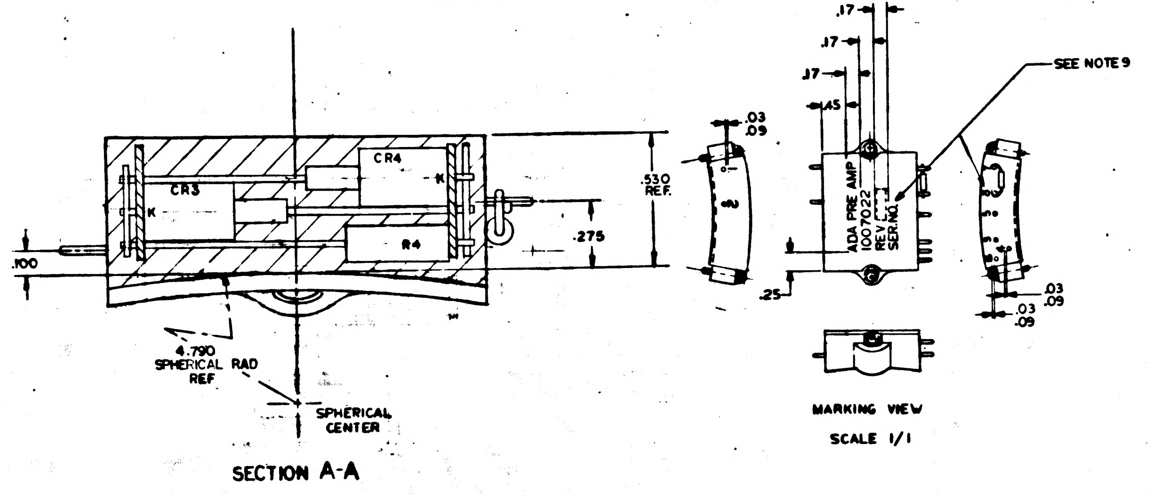
1.775
.150 REF.
.150 REF.
.112 REF.
.375
VIEW B-B



CR4
CR3
K
R4
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SPHERICAL CENTER
SECTION A-A
.17
.17
.17
.45
.03 .09
SEE NOTE 9
ADA PRE AMP 1007022 REV SER NO.
.25
.03 .09
.03 .09
MARKING VIEW
SCALE 1/1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NO. 19 TO FIND NO. 1 PER ND-1002004
5. BOND FIND NO. 21 TO FIND NO. 1 PER ND-1002004
6. BOND FIND NO. 20 TO FIND NO. 2 PER ND-1002004
7. BOND FIND NO. 3 TO FIND NO. 1 AND FIND NO. 2 PER ND-1002004
8. AFTER WELDING TRIM ALL LEADS .005/.015 BEYOND RIBBON
9. MARK .060/.100 HIGH BLACK PER ND-1002019
10. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
11. R14 TO BE SELECTED BY TEST (NOMINAL VALUE 750 K) 1010369-
12. COMPONENT LEADS (BOTH ENDS) OF R5, R6, / R7 TO BE INSULATED WITH FIND NO. 25
13. AR DENOTES AS REQUIRED
14. SOLDER PER MIL-S-6872
15. ENCAPSULATE PER ND-1002106
16. K DENOTES CATHODE SIDE OF DIODE

	1010022	SCHEMATIC ADA PRE AMPLIFIER	REF.
2	1008001-2	RETAINER, SCREW	29
2	1008002-3	SCREW, EXTERNALLY RELIEVED BODY	28
2	MS35338-78	WASHER, LOCK	27
2	MS15795-303	WASHER, FLAT	26
AR	1002074 NO. 20	INSULATION, SLEEVING, ELECTRICAL	25
AR	1002074 NO. 22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	23
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	22
1	1010397	TRANSISTOR	21
1	1010396	TRANSISTOR	20
1	1010252	TRANSISTOR	19
2	1010265-012	DIODE	18
1	1010372-1	DIODE	17
1	1010372-20	DIODE	16
1	1010320-	CAPACITOR	15
1	1006777-24	CAPACITOR	14
1	1010369-NE	RESISTOR SEE NOTE 11	13
2	1010312-030	RESISTOR	12
1	1006750-60	RESISTOR	11
1	1010369-98	RESISTOR	10
2	1006750-64	RESISTOR	9
1	1010369-96	RESISTOR	8
2	1006750-63	RESISTOR	7
2	1010321-	RESISTOR	6
2	1010364-501	RESISTOR	5
8	1006784-59	TERMINAL, FEEDTHRU	4
2	1008030	SPACER	3
1	1008041	WIRING BOARD, B	2
1	1008040	WIRING BOARD, A	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
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APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN L. G. Berkeley DATE 2-18-63
CHECKED 5 MAR 63
APPROVAL 7 MAR 63
APPROVAL 3-2-63
NASA APPROVAL 1 March 63
MIT APPROVAL 13 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PRE-AMPLIFIER ASS'Y
MIDDLE GIMBAL

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007022
SCALE 4/1
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00579

SYM	DESCRIPTION	DATE	APPROVAL
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B	REVISED PER TDRR 0[illegible]3	5-8-63	[illegible]

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-95	390K
-96	430K
-97	470K
-98	510K
-99	560K
-100	620K
-101	680K
-102	750K
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-107	1200K
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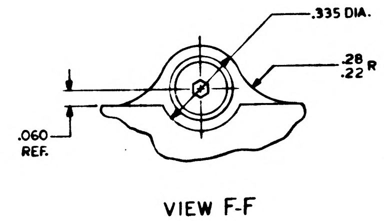
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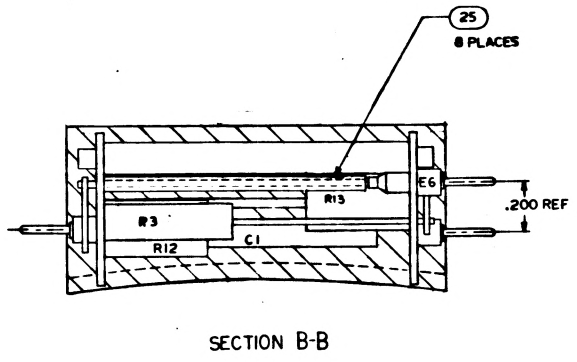
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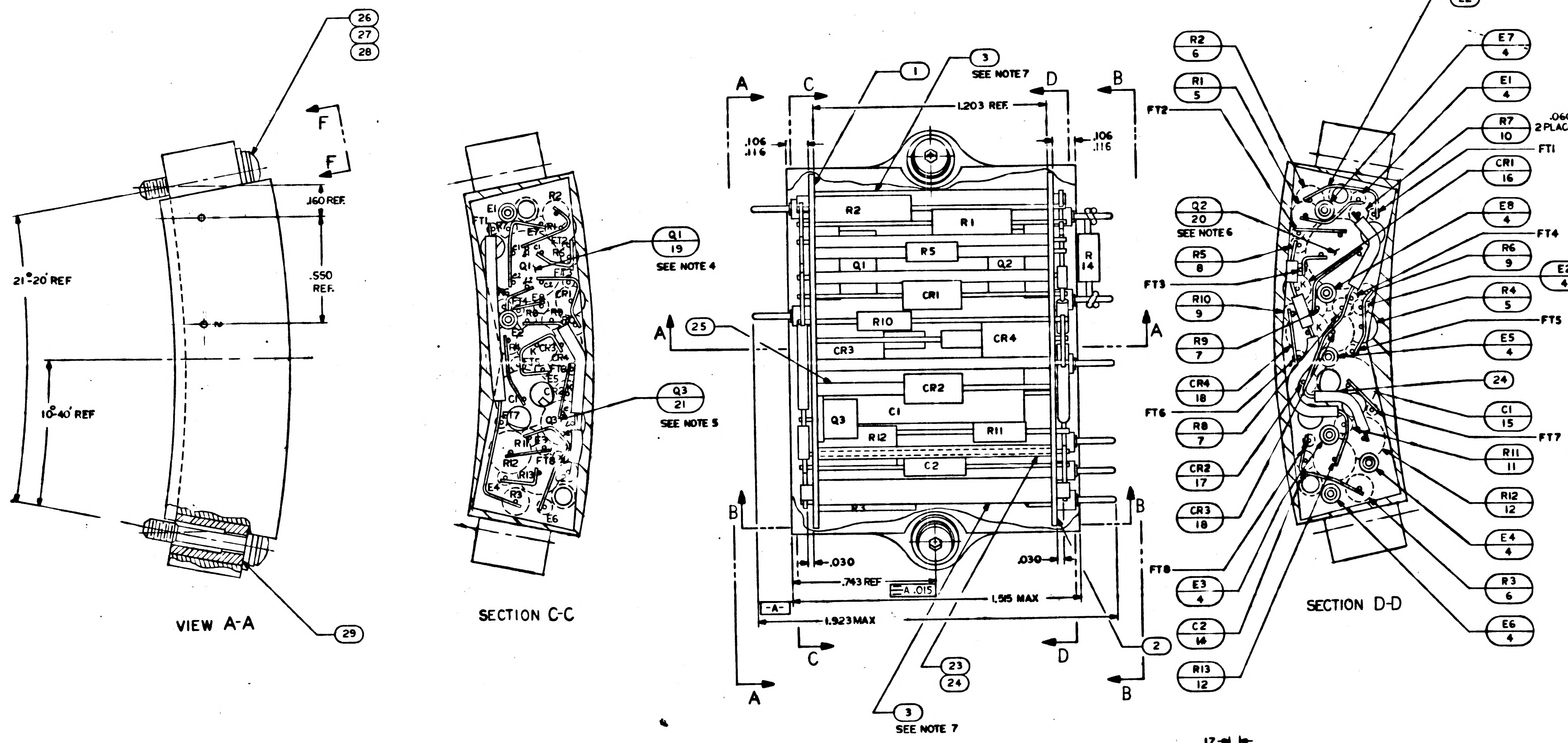
R15
R3
C1
R12
.200 REF

SECTION B-B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10°-40' REF
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FT1
Q1
E8
E7
CR1
CR4
C2
Q3
R11
R12
FT8
R13
E4
E6
Q1
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SEE NOTE 4
Q3
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SEE NOTE 5
SECTION C-C
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SEE NOTE 7
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R5
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Q3
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R11
C2
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A .015
1.515 MAX
-A-
1.923 MAX
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SEE NOTE 7
R2
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R1
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FT2
Q2
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SEE NOTE 6
R5
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R4
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FT5
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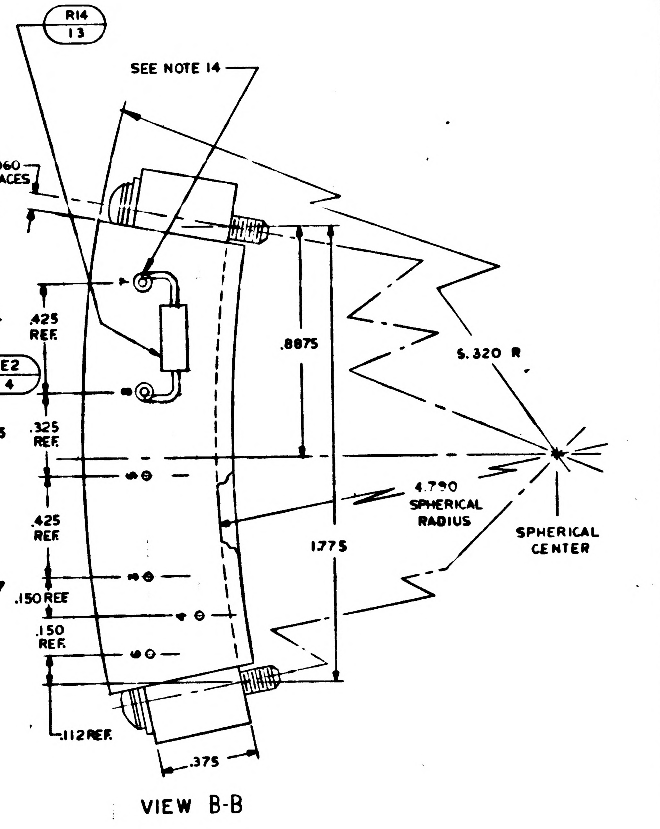
SECTION D-D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SEE NOTE 14
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RADIUS
SPHERICAL
CENTER
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.150
REF.
.112 REF.
.375
VIEW B-B

NOTES:
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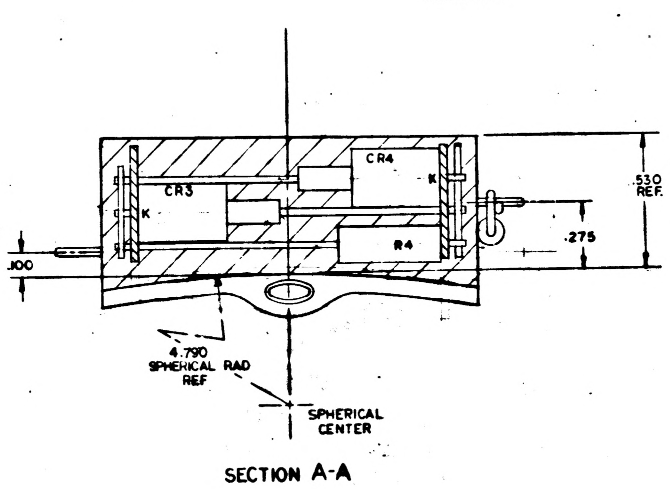
8. AFTER WELDING TRIM ALL LEADS .005/.015 BEYOND RIBBON
9. MARK .060/.100 HIGH BLACK PER ND-1002019
10. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
11. R14 TO BE SELECTED BY TEST FROM SELECTION CHART
12. COMPONENT LEADS (BOTH ENDS) OF R5, R6, / R7 TO BE INSULATED WITH FIND NO. 25
13. AR DENOTES AS REQUIRED
14. SOLDER PER MIL-S-6872
15. ENCAPSULATE PER ND-1002106
16. K DENOTES CATHODE SIDE OF DIODE
17. DASHED LINES ON FIND NOS. 1 & 2 INDICATE INSULATION SLEEVING.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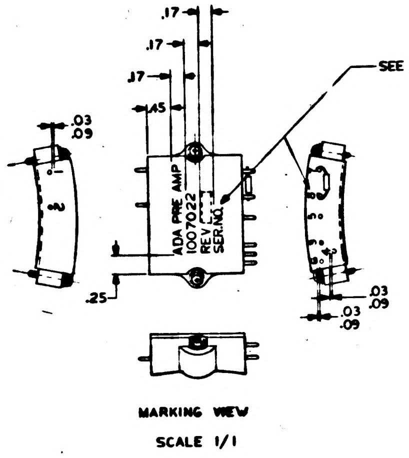
SECTION A-A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SEE NOTE 9
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ADA PRE AMP
1007022
REV
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.09

MARKING VIEW
SCALE 1/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
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2	1008002-3	SCREW, EXTERNALLY RELIEVED BODY	28
2	MS35338-78	WASHER, LOCK	27
2	MS15795-303	WASHER, FLAT	26
AR	1006776-20	INSULATION, SLEEVING, ELECTRICAL	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	23
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	22
1	1010397	TRANSISTOR	21
1	1010396	TRANSISTOR	20
1	1010252	TRANSISTOR	19
2	1010265-012	DIODE	18
1	1010372-1	DIODE	17
1	1010372-20	DIODE	16
1	1010320-1	CAPACITOR	15
1	1006777-24	CAPACITOR	14
1	1010369-NE	RESISTOR SEE NOTE 11	13
2	1010312-030	RESISTOR	12
1	1006750-60	RESISTOR	11
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2	1010321-398	RESISTOR	6
2	1010364-501	RESISTOR	5
8	1006784-59	TERMINAL, FEEDTHRU	4
2	1008030	SPACER	3
1	1008041	WIRING BOARD, B	2
1	1008040	WIRING BOARD, A	1

LIST OF MATERIALS

MASTER

1000203	DL 1000201
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG NO
CONTRACT
DRAWN DATE 2-18-63
CHECKED 5 MAR 63
APPROVAL 7 MAR 63
APPROVAL 3-7-63
NASA APPROVAL March 1963
MIT APPROVAL 13 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PRE-AMPLIFIER ASS'Y
MIDDLE GIMBAL

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007022
SCALE 4/1
WT
SHEET 1 OF 1

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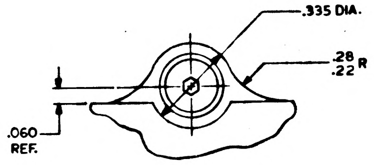
REVISIONS TDRR 00579

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00669	3-1963	WK
B	REVISED PER TDRR 01183	5-8-63	SCS WK
C	REVISED PER TDRR 01411	5-29-63	WK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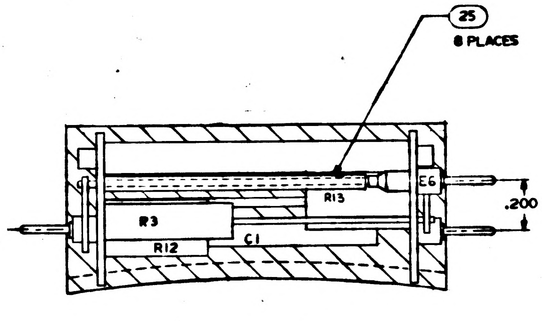
VIEW F-F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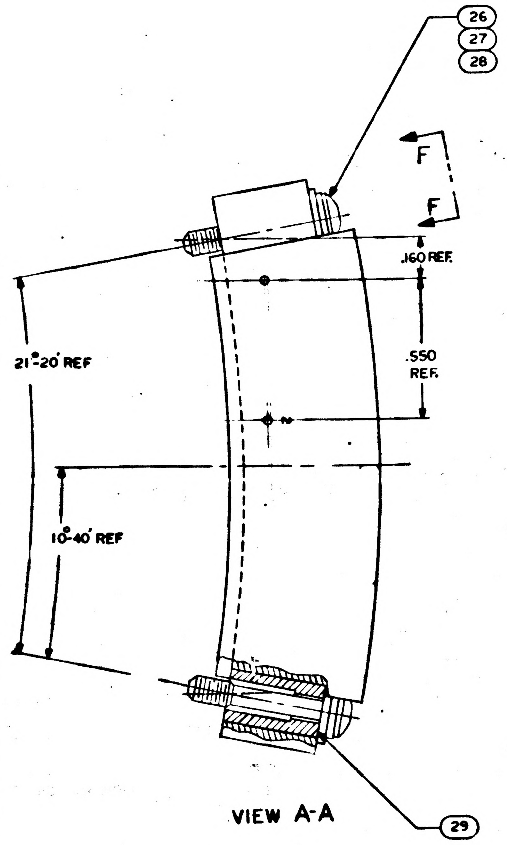
8 PLACES
R13
E6
R3
R12
C1
.200 REF

SECTION B-B

R14	
1010369-94	360K
-95	390K
-96	430K
-97	470K
-98	510K
-99	560K
-100	620K
-101	680K
-102	750K
-103	820K
-104	910K
-105	1000K
-106	1100K
-107	1200K
-108	1300K
-109	1500K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F
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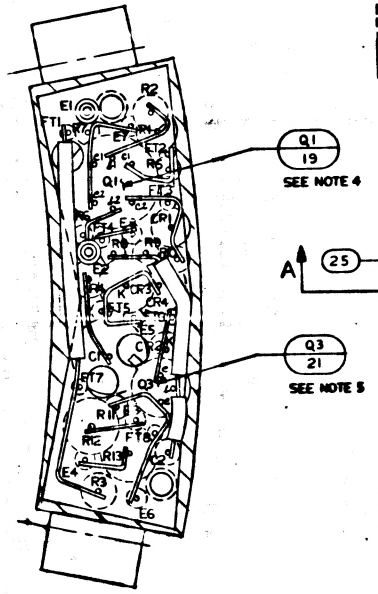
.160 REF.
.550
REF.
21°-20' REF
10°-40' REF
29

VIEW A-A


E1
R2
FT1
Q1
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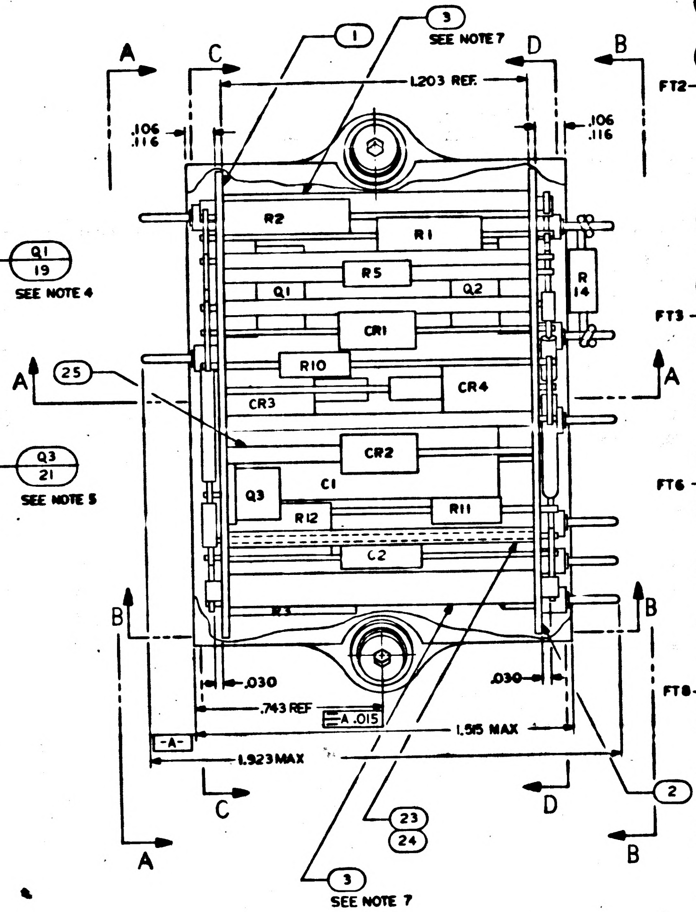
SEE NOTE 4
Q3
21
SEE NOTE 5
R13
E4
R3
E6

SECTION C-C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SEE NOTE 7
A
C
D
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1.203 REF.
.106
.116
R2
R1
R5
Q1
Q2
CR1
R10
R
14
CR3
CR4
25
CR2
Q3
C1
R12
R11
C2
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A .015
1.515 MAX
1.923 MAX
-A-
2
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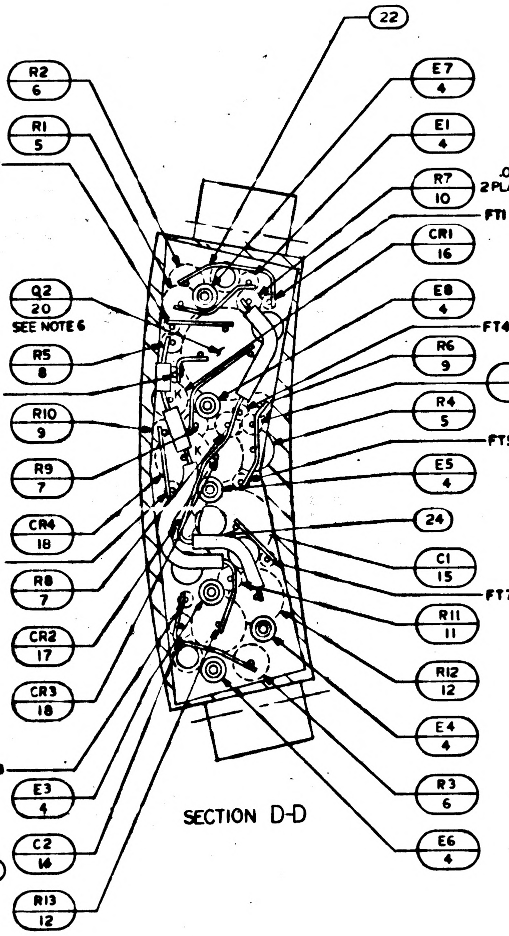
24
3
SEE NOTE 7


R2
6
R1
5
FT2
22
E7
4
E1
4
R7
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CR1
16
Q2
20
SEE NOTE 6
E8
4
R5
8
FT4
R6
9
FT3
R4
5
R10
9
FT5
R9
7
E5
4
CR4
18
24
FT6
C1
15
R8
7
R11
11
FT7
CR2
17
R12
12
CR3
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E4
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FT8
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E3
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E6
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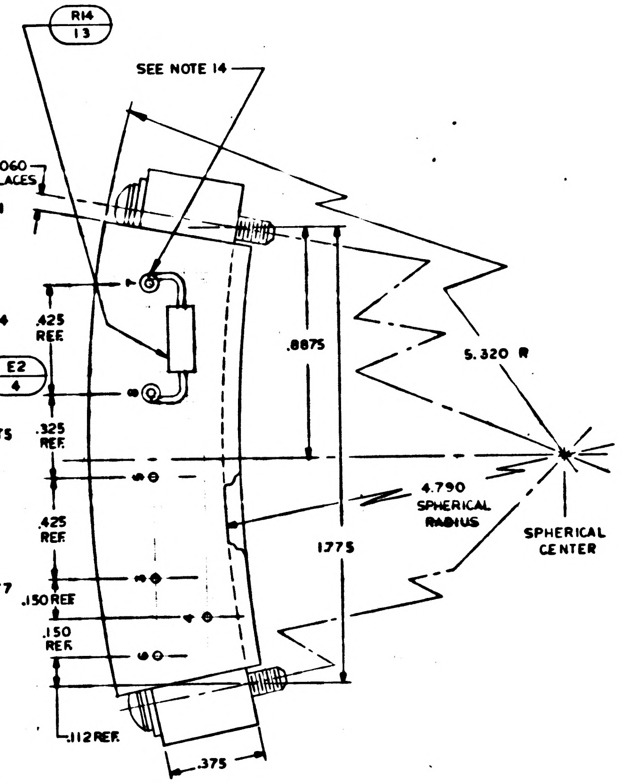
C2
14
R13
12

SECTION D-D


R14
13
SEE NOTE 14
.060
2 PLACES
FT1
.425
REF
E2
4
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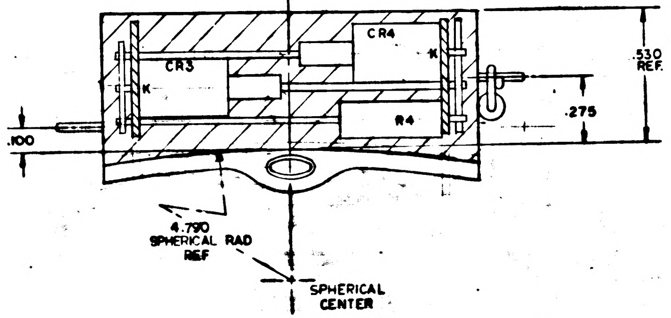
5.320 R
.325
REF.
4.790
SPHERICAL
RADIUS
SPHERICAL
CENTER
.425
REF
1.775
.150 REF
.150
REF.
.112 REF.
.375

VIEW B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NO. 19 TO FIND NO. 1 PER ND-1002004
5. BOND FIND NO. 21 TO FIND NO. 1 PER ND-1002004
6. BOND FIND NO. 20 TO FIND NO. 2 PER ND-1002004
7. BOND FIND NO. 3 TO FIND NO. 1 AND FIND NO. 2 PER ND-1002004
8. AFTER WELDING TRIM ALL LEADS .005/.015 BEYOND RIBBON
9. MARK .060/.100 HIGH BLACK PER ND-1002019
10. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
11. R14 TO BE SELECTED BY TEST FROM SELECTION CHART
12. COMPONENT LEADS (BOTH ENDS) OF R5, R6, & R7 TO BE INSULATED WITH FIND NO. 25
13. AR DENOTES AS REQUIRED
14. SOLDER PER MIL-S-6872
15. ENCAPSULATE PER ND-1002106
16. K DENOTES CATHODE SIDE OF DIODE
17. DASHED LINES ON FIND NOS. 1 & 2 INDICATE INSULATION SLEEVING.


CR4
CR3
K
K
R4
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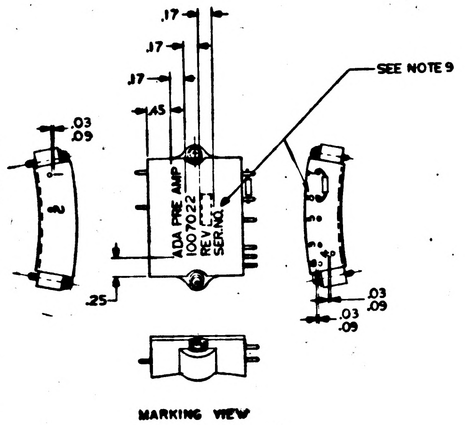
REF.
.275
.100
4.790
SPHERICAL RAD
REF
SPHERICAL
CENTER

SECTION A-A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.45
.03
.09
SEE NOTE 9
ADA PRE AMP
1007022
REV
SER NO
.25
.03
.09
.03
.09

MARKING VIEW

SCALE 1/1

MASTER

☒	1010022	SCHEMATIC ADA PRE AMPLIFIER	REF.
2	1008001-2	RETAINER, SCREW	29
2	1008002-3	SCREW, EXTERNALLY RELIEVED BODY	28
2	MS35338-78	WASHER, LOCK	27
2	MS15795-303	WASHER, FLAT	26
AR	1006776-20	INSULATION, SLEEVING, ELECTRICAL	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	23
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	22
1	1010397	TRANSISTOR	21
1	1010396	TRANSISTOR	20
1	1010252	TRANSISTOR	19
2	1010265-012	DIODE	18
1	1010372-1	DIODE	17
1	1010372-20	DIODE	16
1	1010320-13	CAPACITOR	15
1	1006777-24	CAPACITOR	14
1	1010369-NE	RESISTOR SEE NOTE 11	13
2	1010312-030	RESISTOR	12
1	1006750-60	RESISTOR	11
1	1010369-98	RESISTOR	10
2	1006750-64	RESISTOR	9
1	1010369-96	RESISTOR	8
2	1006750-63	RESISTOR	7
2	1010321-398	RESISTOR	6
2	1010364-501	RESISTOR	5
8	1006784-59	TERMINAL, FEEDTHRU	4
2	1008030	SPACER	3
1	1008041	WIRING BOARD, B	2
1	1008040	WIRING BOARD, A	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1000203	DL 1000201

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN E. Bickley DATE 2-18-63
CHECKED 5 MAR 63
APPROVAL 7 MAR 63
APPROVAL 3-7-63
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PRE-AMPLIFIER ASS'Y
MIDDLE GIMBAL

CODE IDENT NO. — SIZE E — NASA DRAWING NO. 1007022
SCALE 4/1 — WT — SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

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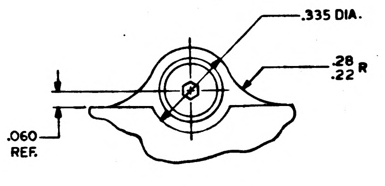
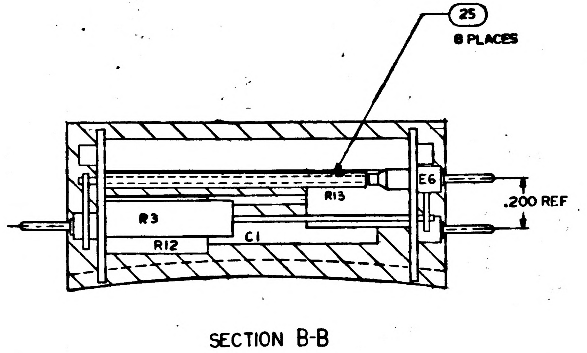
REVISIONS TDRR 00579

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00669	3-19-63	WK
B	REVISED PER TDRR 01183	5-8-63	WK
C	REVISED PER TDRR 01411	5-29-63	WK
D	REVISED PER TDRR 05069	12-9-63	WK

05069

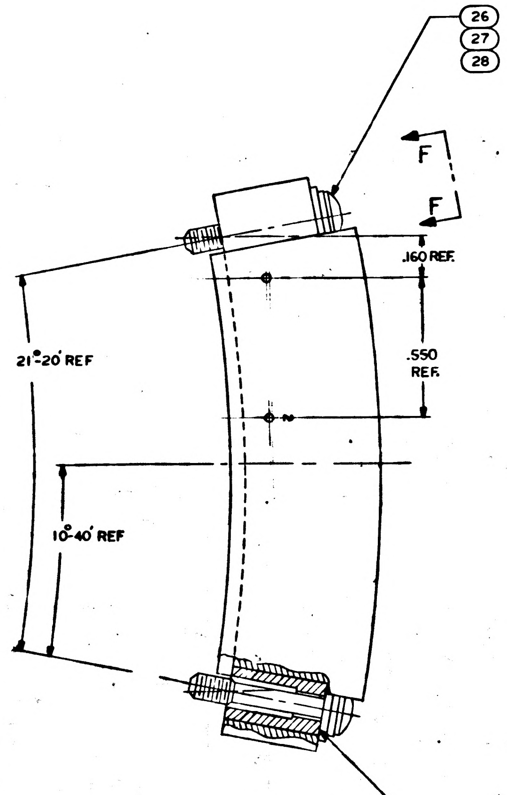

.335 DIA.
.28
.22 R
.060
REF.

VIEW F-F


25
8 PLACES
E6
R13
R3
R12
C1
.200 REF

SECTION B-B

R14	
1010369-94	360K
-95	390K
-96	430K
-97	470K
-98	510K
-99	560K
-100	620K
-101	680K
-102	750K
-103	820K
-104	910K
-105	1000K
-106	1100K
-107	1200K
-108	1300K
-109	1500K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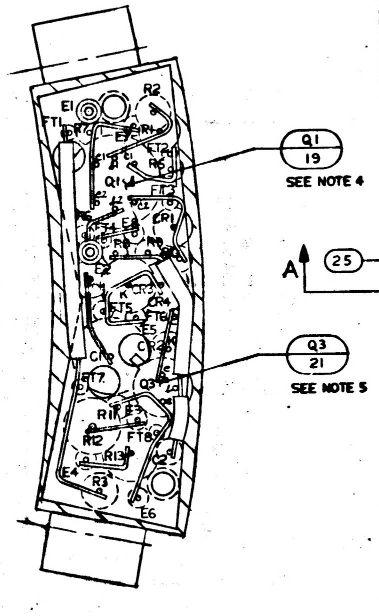
F
F
.160 REF.
.550
REF.
21°20' REF
10°40' REF
29

VIEW A-A


E1
FT1
R2
Q1
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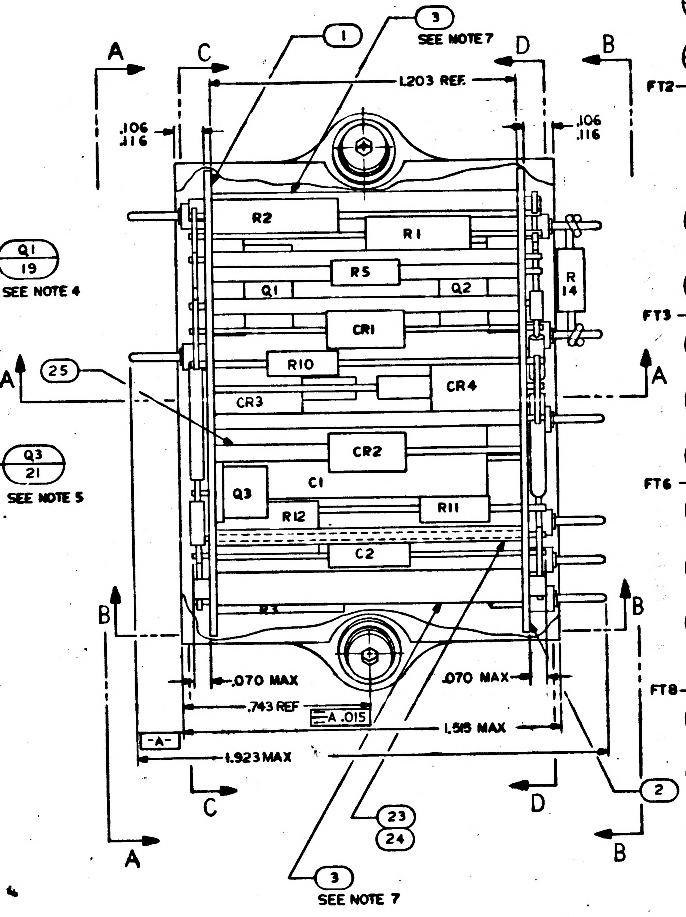
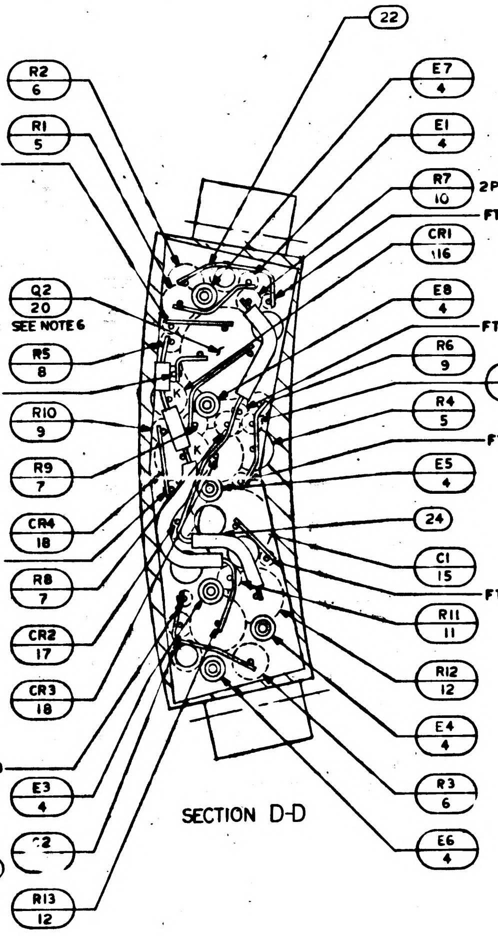
SEE NOTE 4
Q3
21
SEE NOTE 5
CR1
CR3
FT7
R11
R12
R13
E4
E6

SECTION C-C


A
C
1
3
SEE NOTE 7
D
B
1.203 REF.
.106
.116
.106
.116
R2
R1
R5
Q1
Q2
R14
CR1
R10
25
CR3
CR4
CR2
Q3
C1
R12
R11
C2
A
A
B
B
.070 MAX
.070 MAX
.743 REF
A .015
1.515 MAX
-A-
1.923 MAX
2
23
24
C
D
A
B
3
SEE NOTE 7


22
R2
6
R1
5
FT2
E7
4
E1
4
R7
10
CR1
16
Q2
20
SEE NOTE 6
E8
4
FT4
R5
8
R6
9
FT3
R10
9
R4
5
FT5
R9
7
E5
4
CR4
18
24
FT6
R8
7
C1
15
CR2
17
R11
11
FT7
CR3
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R12
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E4
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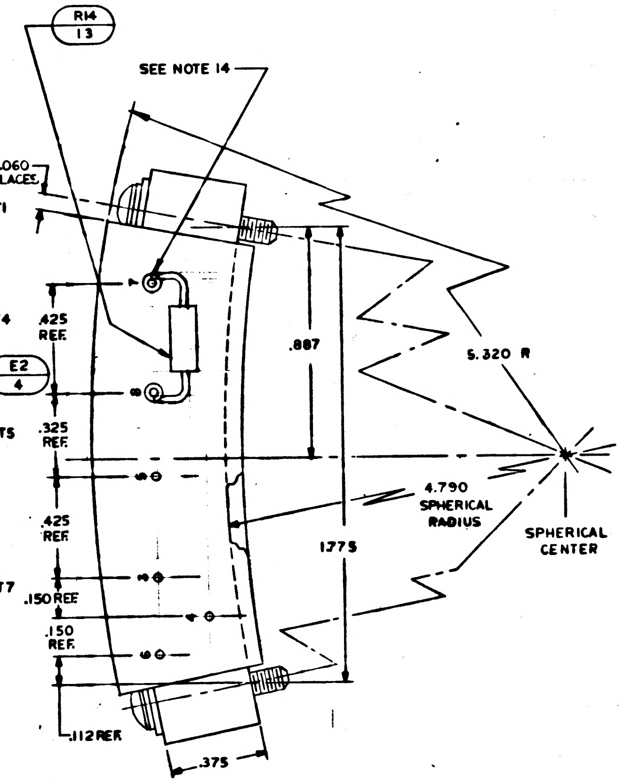
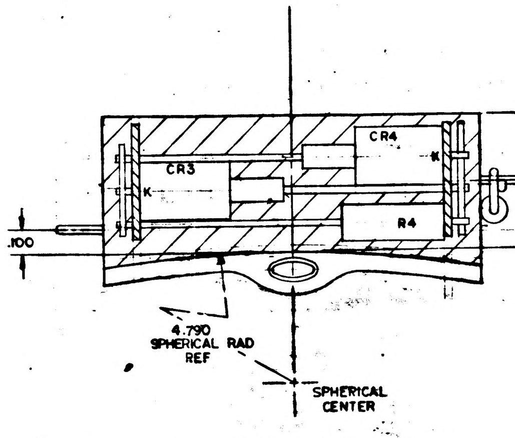
FT8
E3
4
R3
6
C2
E6
4
R13
12

SECTION D-D


R14
13
SEE NOTE 14
.060
2 PLACES
FT1
.425
REF.
E2
4
.887
5.320 R
.325
REF.
4.790
SPHERICAL
RADIUS
SPHERICAL
CENTER
.425
REF.
1.275
.150 REF.
.150
REF.
.112 REF.
.375

VIEW B-B

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NO. 19 TO FIND NO. 1 PER ND-1002004
5. BOND FIND NO. 21 TO FIND NO. 1 PER ND-1002004
6. BOND FIND NO. 20 TO FIND NO. 2 PER ND-1002004
7. BOND FIND NO. 3 TO FIND NO. 1 AND FIND NO. 2 PER ND-1002004
8. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN
9. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND 1002023
10. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
11. R14 TO BE SELECTED BY TEST FROM SELECTION CHART
12. COMPONENT LEADS (BOTH ENDS) OF R5, R6, & R7 TO BE INSULATED WITH FIND NO. 25
13. AR DENOTES AS REQUIRED
14. SOLDER PER MIL-S-6872
15. ENCAPSULATE PER ND-1002106
16. K DENOTES CATHODE SIDE OF DIODE
17. DASHED LINES ON ~~FIND NOS.~~ 1 & 2 INDICATE INSULATION SLEEVING.
18. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
19. INSPECT PER PS 1007022
20. TEST PER FTM 1007022


CR4
CR3
K
K
R4
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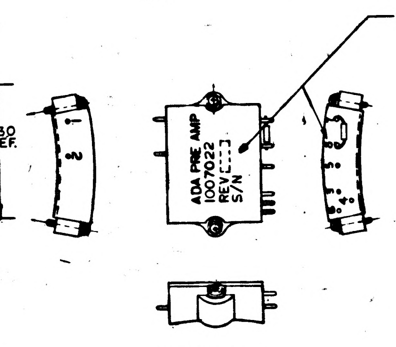
REF.
.275
4.790
SPHERICAL RAD
REF
SPHERICAL
CENTER

SECTION A-A


SEE NOTES 9 AND 18
ADA PRE AMP
1007022
REV
S/N

MARKING VIEW

SCALE 1/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010022	SCHEMATIC ADA PRE AMPLIFIER	REF.
2	1008001-2	RETAINER, SCREW	29
2	1008002-3	SCREW, EXTERNALLY RELIEVED BODY	28
2	MS35338-78	WASHER, LOCK	27
2	MS15795-303	WASHER, FLAT	26
AR	1006776-20	INSULATION, SLEEVING, ELECTRICAL	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	23
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	22
1	1010397	TRANSISTOR	21
1	1010396	TRANSISTOR	20
1	1010252	TRANSISTOR	19
2	1010265-012	DIODE	18
1	1010372-1	DIODE	17
1	1010372-20	DIODE	16
1	1010320-13	CAPACITOR	15
1	1006777-24	CAPACITOR	14
1	1010369-NE	RESISTOR SEE NOTE 11	13
2	1010312-030	RESISTOR	12
1	1006750-60	RESISTOR	11
1	1010369-98	RESISTOR	10
2	1006750-64	RESISTOR	9
1	1010369-96	RESISTOR	8
2	1006750-63	RESISTOR	7
2	1010321-398	RESISTOR	6
2	1010364-501	RESISTOR	5
8	1006784-59	TERMINAL, FEEDTHRU	4
2	1008030	SPACER	3
1	1008041	WIRING BOARD, B	2
1	1008040	WIRING BOARD, A	1

LIST OF MATERIALS

MASTER

1000203	BL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN E.O. Bukely DATE 2-18-63
CHECKED 5 MAR 63
APPROVAL 7 MAR 63
APPROVAL 3-7-63
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PRE-AMPLIFIER ASS'Y
MIDDLE GIMBAL

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007022
SCALE 4/1 WT SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 00379

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00669	[illegible]	[illegible]
B	REVISED PER TDRR 01183	[illegible]	[illegible]
C	REVISED PER TDRR 01411	[illegible]	[illegible]
D	REVISED PER TDRR 05[illegible]	[illegible]-63	[illegible]
E	REVISED PER TDRR 053[illegible]	[illegible]-63	[illegible]

R14	
1010369-94	360K
-95	390K
-96	430K
-97	470K
-98	510K
-99	560K
-100	620K
-101	680K
-102	750K
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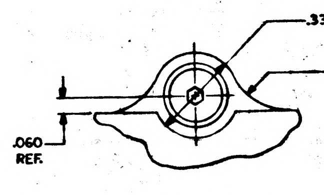
-107	1200K
-108	1300K
-109	1500K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.28
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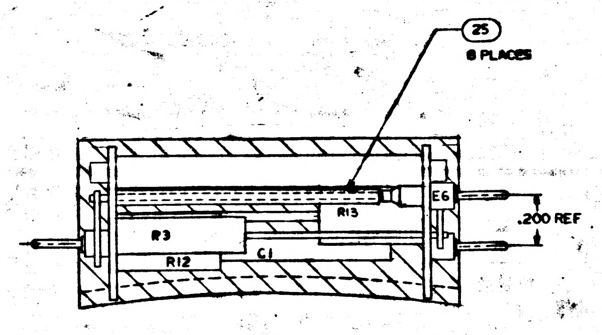
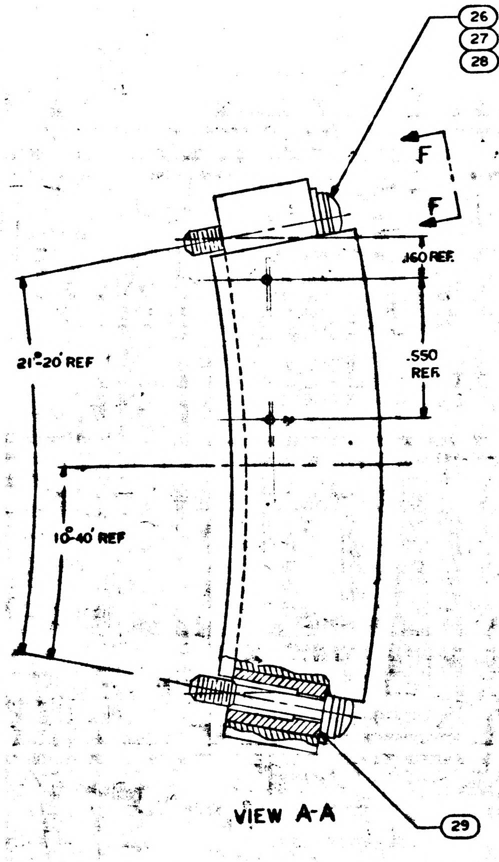
REF.

VIEW F-F


25
8 PLACES
R13
E6
.200 REF
R3
R12
C1

SECTION B-B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F
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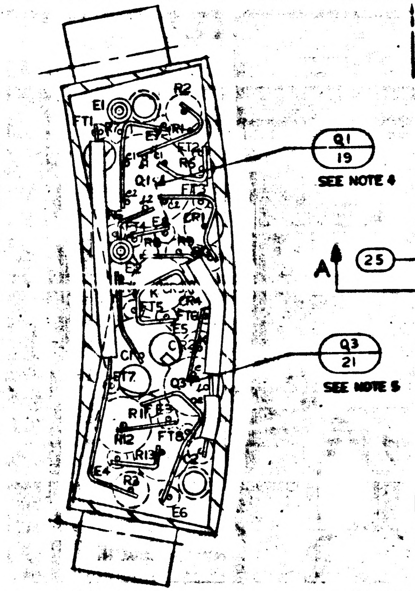
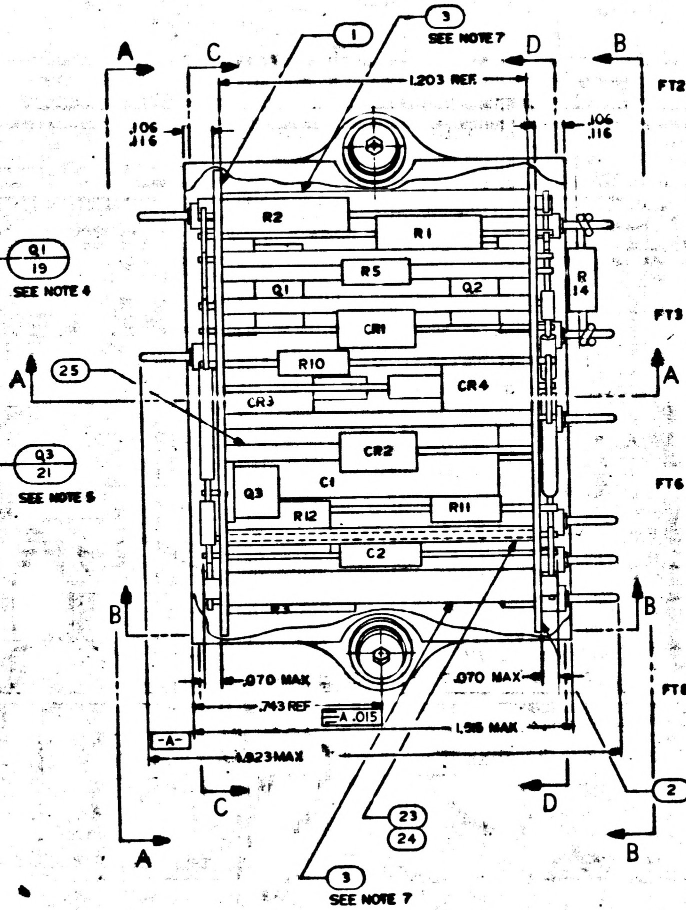
.550
REF.
21°-20' REF
10°-40' REF
29

VIEW A-A


E1
FT1
R2
Q1
19
SEE NOTE 4
Q3
21
SEE NOTE 5
E6

SECTION C-C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SEE NOTE 7
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C
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.106
.116
R2
R1
R5
Q1
Q2
CR1
R10
CR4
CR3
CR2
C1
Q3
R12
R11
C2
R
14
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.743 REF
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-A-
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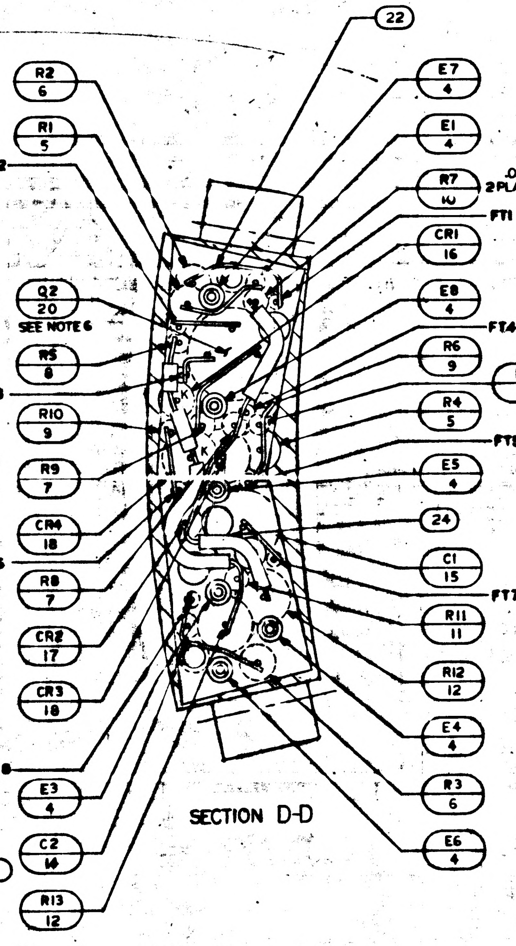
3
SEE NOTE 7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R1
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FT2
Q2
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SEE NOTE 6
R5
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R9
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CR4
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FT6
R8
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CR2
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CR3
18
FT8
E3
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R13
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E7
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E1
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R7
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FT1
CR1
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E8
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FT4
R6
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E2
4
R4
5
FT5
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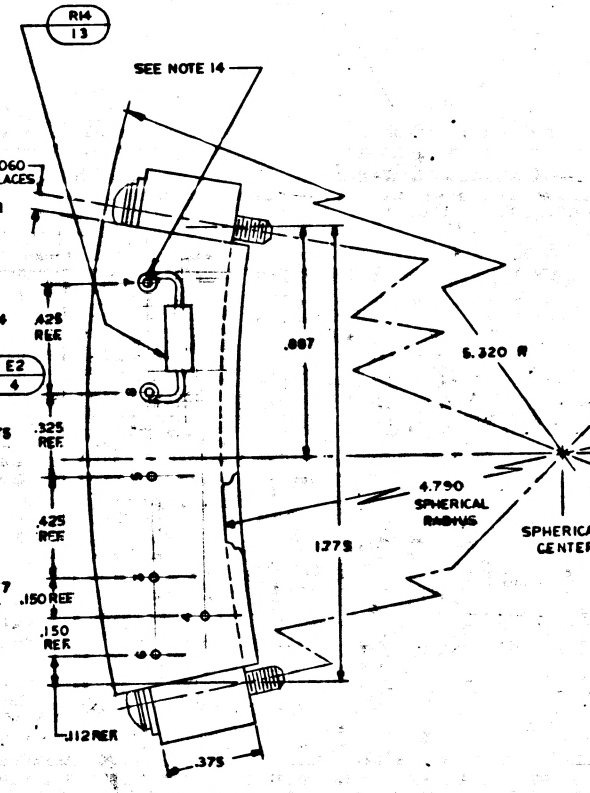
E6
4

SECTION D-D


R14
13
SEE NOTE 14
.060
2 PLACES
.425
REF
.887
5.320 R
.325
REF
4.790
SPHERICAL
RADIUS
SPHERICAL
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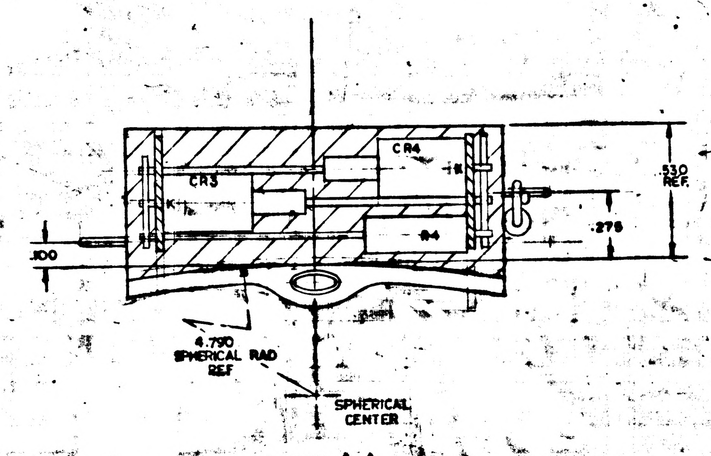
REF
1.275
.150 REF
.150
REF
.112 REF
.375

VIEW B-B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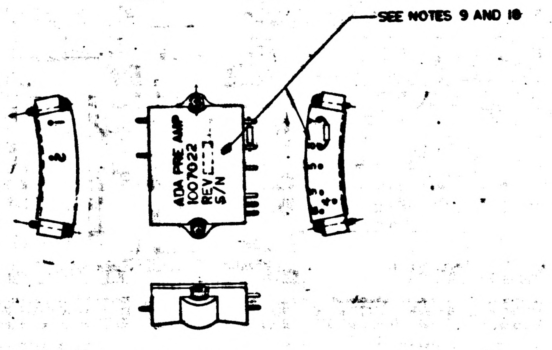
REF
SPHERICAL
CENTER

SECTION A-A


SEE NOTES 9 AND 10
ADA PRE AMP
1007022
REV
S/N

MARKING VIEW

SCALE 1/1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NO. 19 TO FIND NO. 1 PER ND-1002004
5. BOND FIND NO. 21 TO FIND NO. 1 PER ND-1002004
6. BOND FIND NO. 20 TO FIND NO. 2 PER ND-1002004
7. BOND FIND NO. 3 TO FIND NO. 1 AND FIND NO. 2 PER ND-1002004
8. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN
9. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND 1002023
10. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
11. R14 TO BE SELECTED BY TEST FROM SELECTION CHART
12. COMPONENT LEADS (BOTH ENDS) OF R5, R6, & R7 TO BE INSULATED WITH FIND NO. 25
13. AR DENOTES AS REQUIRED
14. SOLDER PER MIL-S-6872
15. ENCAPSULATE PER ND-1002106
16. K DENOTES CATHODE SIDE OF DIODE
17. DASHED LINES ON FIND NOS. 1 & 2 INDICATE INSULATION SLEEVING.
18. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
19. INSPECT PER PS 1007022
20. TEST PER FTM 1007022

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010022	SCHEMATIC ADA PRE AMPLIFIER	REF.
2	1008001-2	RETAINER, SCREW	29
2	1008002-3	SCREW, EXTERNALLY RELIEVED BODY	28
2	MS35338-78	WASHER, LOCK	27
2	MS15795-303	WASHER, FLAT	26
AR	1006776-20	INSULATION, SLEEVING, ELECTRICAL	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	23
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	22
1	1010397	TRANSISTOR	21
1	1010345-1	TRANSISTOR	20
1	1010252	TRANSISTOR	19
2	1010265-012	DIODE	18
1	1010372-1	DIODE	17
1	1010372-20	DIODE	16
1	1010320-13	CAPACITOR	15
1	1006777-24	CAPACITOR	14
1	1010369-NE	RESISTOR SEE NOTE 11	13
2	1010312-030	RESISTOR	12
1	1006750-60	RESISTOR	11
1	1010369-98	RESISTOR	10
2	1006750-64	RESISTOR	9
1	1010369-96	RESISTOR	8
2	1006750-63	RESISTOR	7
2	1010321-398	RESISTOR	6
2	1010364-501	RESISTOR	5
8	1006784-59	TERMINAL, FEEDTHRU	4
2	1008030	SPACER	3
1	1008041	WIRING BOARD, B	2
1	1008040	WIRING BOARD, A	1

LIST OF MATERIALS

MASTER

1000203	BL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN [illegible] DATE [illegible]
CHECKED [illegible] 8 MAR 63
APPROVAL [illegible] 7 MAR 63
APPROVAL [illegible] 3-7-63
NASA APPROVAL [illegible] 1963
MIT APPROVAL [illegible]

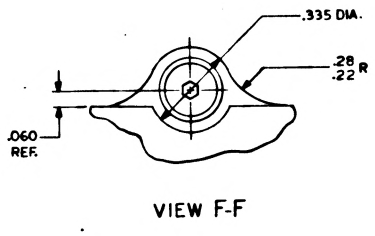
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PRE-AMPLIFIER ASS'Y
MIDDLE GIMBAL

CODE IDENT NO. SIZE E NASA DRAWING NO. 1007022
SCALE 4/1 WT SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 00579			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00669	2-27-63	
B	REVISED PER TDRR 01183	5-8-63	
C	REVISED PER TDRR 01411	5-29-63	
D	REVISED PER TDRR 05069	12-9-63	
E	REVISED PER TDRR 05327	12-9-63	
F	REVISED PER TDRR 08496	6-3-64	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.22 R
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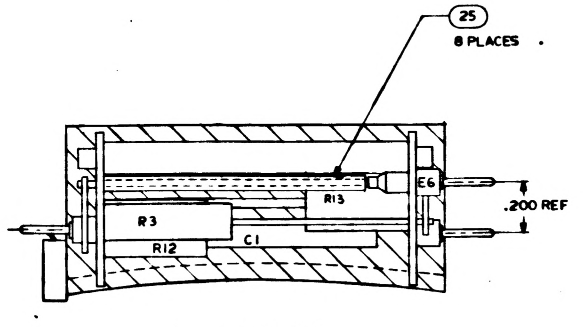
REF.

VIEW F-F


25
8 PLACES
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R13
R3
R12
C1
.200 REF

SECTION B-B

R14	
1010369-94	360K
-95	390K
-96	430K
-97	470K
-98	510K
-99	560K
-100	620K
-101	680K
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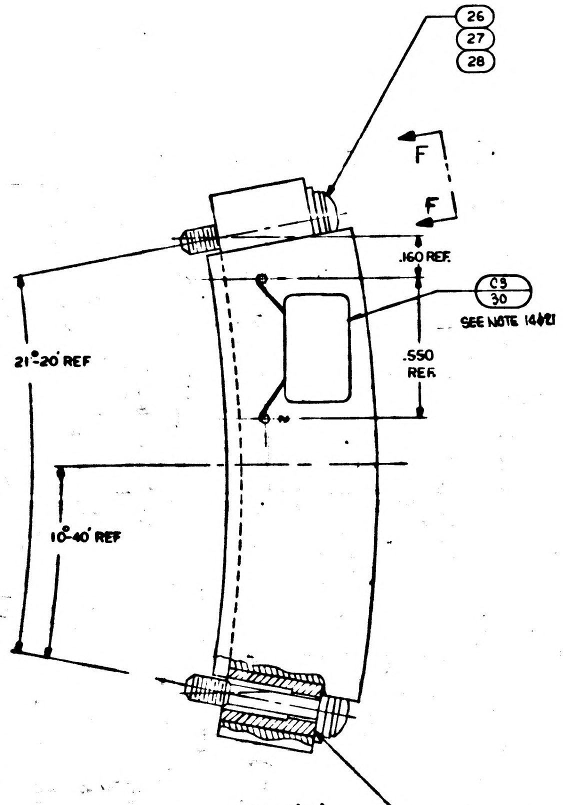
-107	1200K
-108	1300K
-109	1500K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21°20' REF
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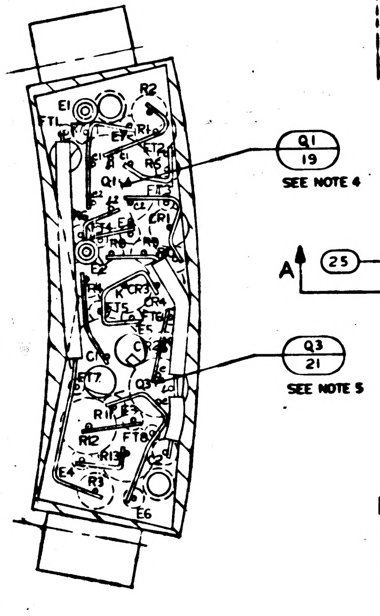
REF.
10°40' REF
29

VIEW A-A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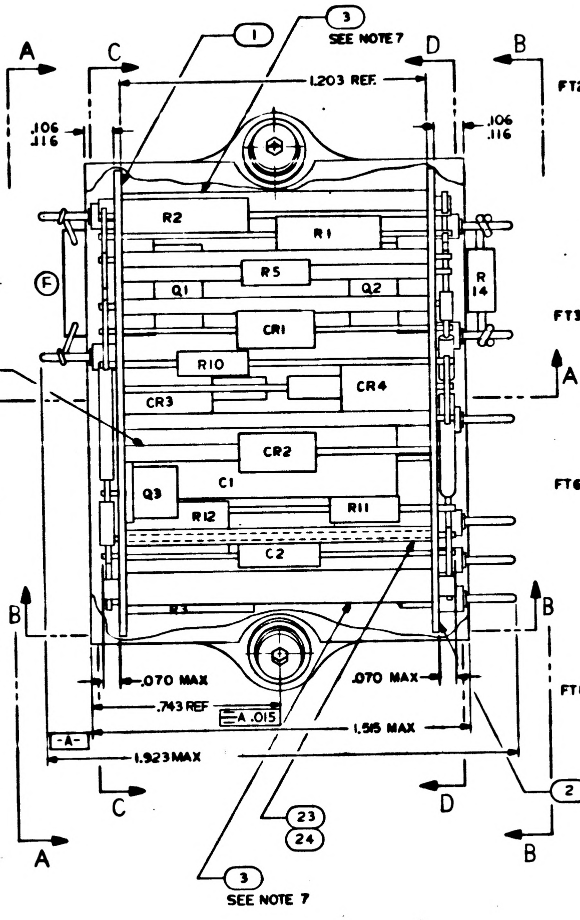
SEE NOTE 4
Q3
21
SEE NOTE 5
R11
R12
R13
FT8
E4
E6

SECTION C-C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SEE NOTE 7
A
C
D
B
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.116
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.116
R2
R1
R5
Q1
Q2
CR1
R10
CR4
CR3
CR2
Q3
C1
R12
R11
C2
R 14
F
25
A
A
B
B
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.070 MAX
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1.515 MAX
1.923 MAX
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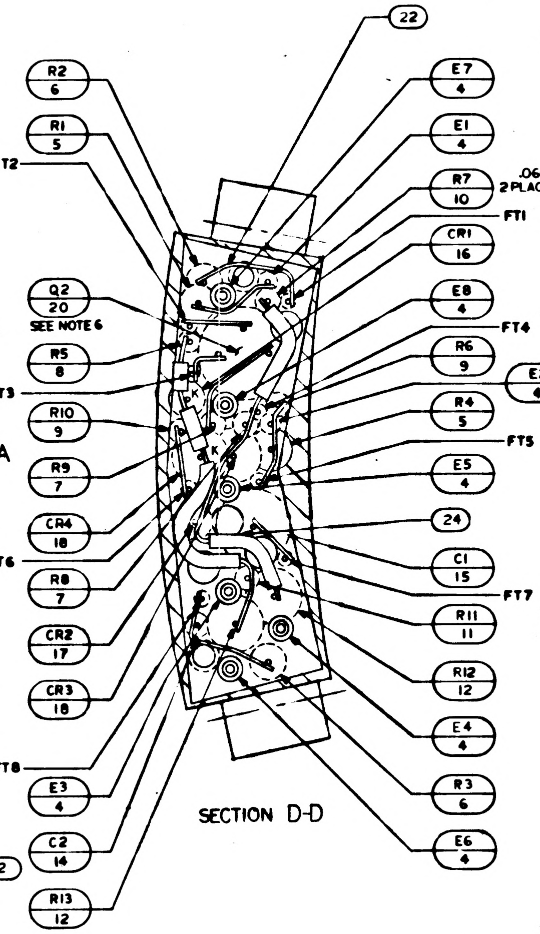
2
23
24
C
D
A
B
3
SEE NOTE 7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SEE NOTE 6
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FT6
R8
7
CR2
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CR3
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FT8
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C2
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R13
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E7
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E1
4
R7
10
CR1
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E8
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FT4
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R4
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FT5
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R3
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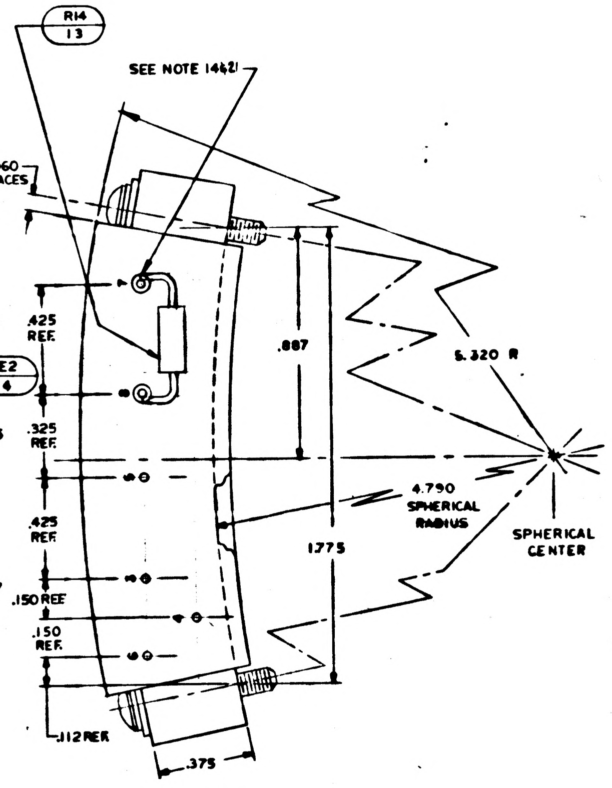
E6
4

SECTION D-D


R14
13
SEE NOTE 14&21
.060
2 PLACES
FT1
E2
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.425
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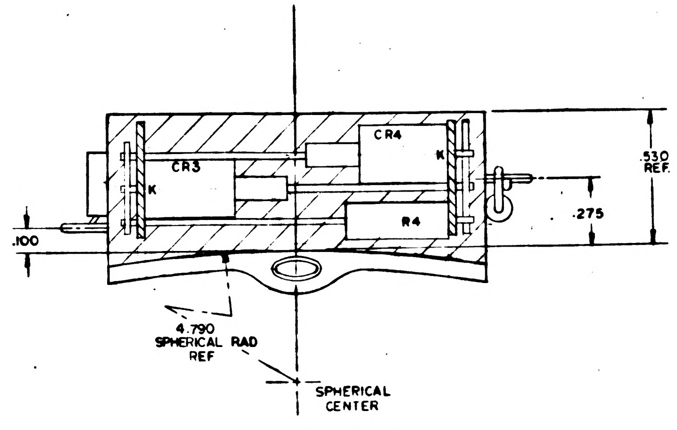
.325
REF.
5.320 R
.425
REF.
4.790
SPHERICAL
RADIUS
SPHERICAL
CENTER
1.775
.150 REF
.150
REF.
.112 REF
.375

VIEW B-B


CR3
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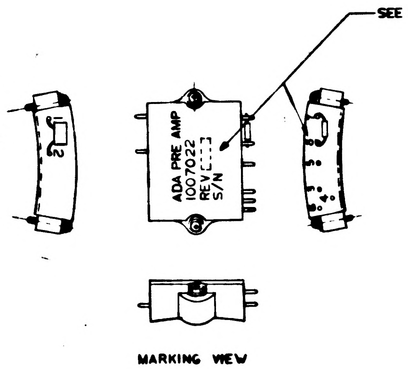
SPHERICAL RAD
REF
SPHERICAL
CENTER

SECTION A-A


SEE NOTES 9 AND 10
ADA PRE AMP
1007022
REV
S/N

MARKING VIEW

SCALE 1/1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NO. 19 TO FIND NO. 1 PER ND-1002004
5. BOND FIND NO. 21 TO FIND NO. 1 PER ND-1002004
6. BOND FIND NO. 20 TO FIND NO. 2 PER ND-1002004
7. BOND FIND NO. 3 TO FIND NO. 1 AND FIND NO. 2 PER ND-1002004
8. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN
9. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND 1002023
10. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
11. R14 TO BE SELECTED BY TEST FROM SELECTION CHART
12. COMPONENT LEADS (BOTH ENDS) OF R5, R6, / R7 TO BE INSULATED WITH FIND NO. 25
13. AR DENOTES AS REQUIRED
14. SOLDER PER MIL-S-6872
15. ENCAPSULATE PER ND-1002106
16. K DENOTES CATHODE SIDE OF DIODE
17. DASHED LINES ON FIND NOS. 1 & 2 INDICATE INSULATION SLEEVING.
18. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
19. INSPECT PER PS 1007022
20. TEST PER FTM 1007022
21. BOND FIND NO. 13 & NO. 30 TO ADJACENT SURFACE PER ND1002004.

☒	1010022	SCHEMATIC ADA PRE AMPLIFIER	REF.
1	1010359-29	CAPACITOR	30
2	1008001-2	RETAINER, SCREW	29
2	1008002-3	SCREW, EXTERNALLY RELIEVED BODY	28
2	MS35338-78	WASHER, LOCK	27
2	MS15795-303	WASHER, FLAT	26
AR	1006776-20	INSULATION, SLEEVING, ELECTRICAL	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	23
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	22
1	1010397	TRANSISTOR	21
1	1010345-1	TRANSISTOR	20
1	1010252	TRANSISTOR	19
2	1010265-012	DIODE	18
1	1010372-1	DIODE	17
1	1010372-20	DIODE	16
1	1010320-13	CAPACITOR	15
1	1006777-24	CAPACITOR	14
1	1010369-NE	RESISTOR SEE NOTE 11	13
2	1010312-030	RESISTOR	12
1	1006750-60	RESISTOR	11
1	1010369-98	RESISTOR	10
2	1006750-64	RESISTOR	9
1	1010369-96	RESISTOR	8
2	1006750-63	RESISTOR	7
2	1010321-398	RESISTOR	6
2	1010364-501	RESISTOR	5
8	1006784-59	TERMINAL, FEEDTHRU	4
2	1008030	SPACER	3
1	1008C41	WIRING BOARD, B	2
1	1008040	WIRING BOARD, A	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1000203	DL 1000201
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN E.G. Barkley DATE 2-18-63
CHECKED 5 Mar 63
APPROVAL 7 Mar 63
APPROVAL 3-7-63
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

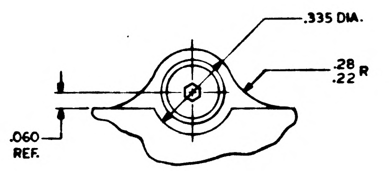
ADA PRE-AMPLIFIER ASS'Y
MIDDLE GIMBAL

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007022
SCALE 4/1 WT SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TDRR 00579

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00669	3-1963	WK
B	REVISED PER TDRR 01183	5-8-63	WK
C	REVISED PER TDRR 0 [illegible]	5-20-63	WK
D	REVISED PER TDRR 05069	12-9-63	WK
E	REVISED PER TDRR 05327	12-9-63	
F	REVISED PER TDRR 08496	6-2-64	AU
G	REVISED PER TDRR 11000	31 Jul 64	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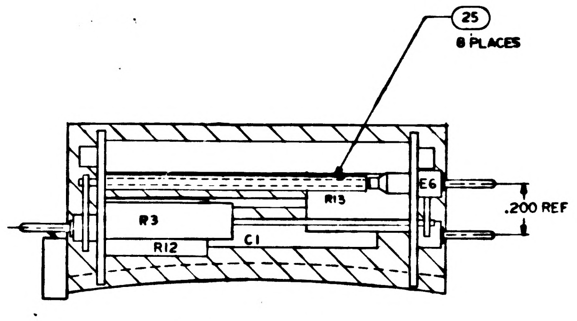
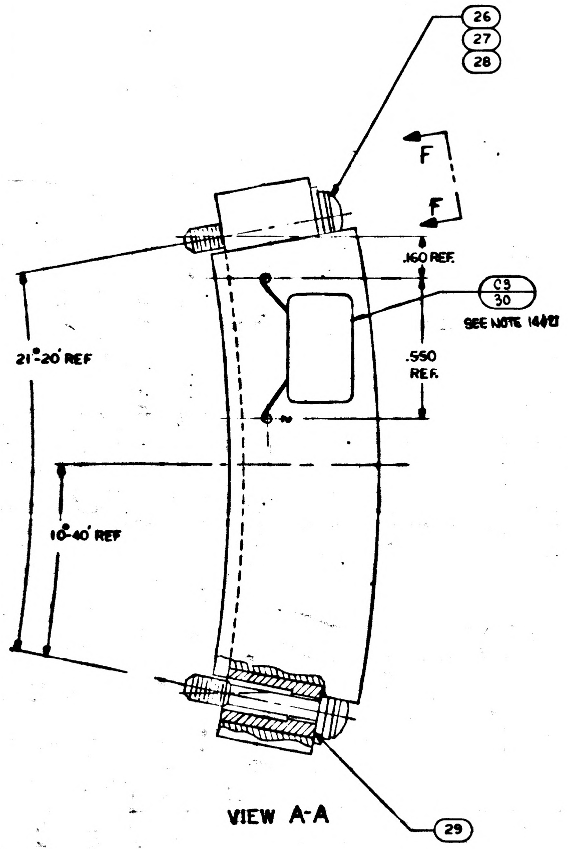
VIEW F-F


25
8 PLACES
E6
R15
.200 REF
R3
C1
R12

SECTION B-B

R14		
1010369-94		360K
	-95	390K
	-96	430K
	-97	470K
	-98	510K
	-99	560K
	-100	620K
	-101	680K
	-102	750K
	-103	820K
	-104	910K
	-105	1000K
	-106	1100K
	-107	1200K
	-108	1300K
	-109	1500K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SEE NOTE 14&21
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21°-20' REF
10°-40' REF
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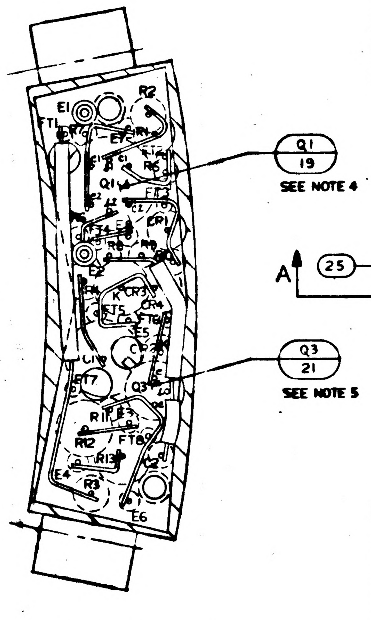
VIEW A-A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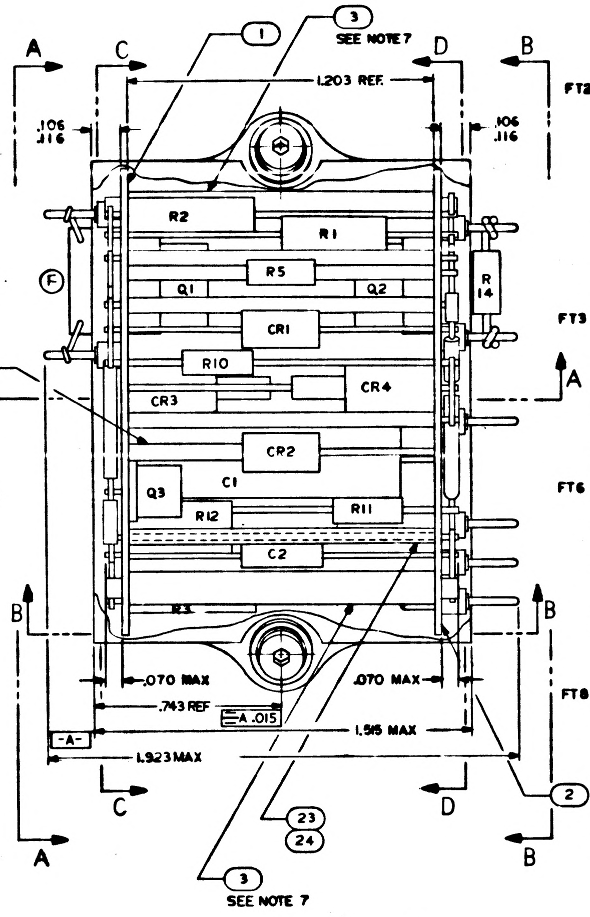
E6

SECTION C-C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.070 MAX
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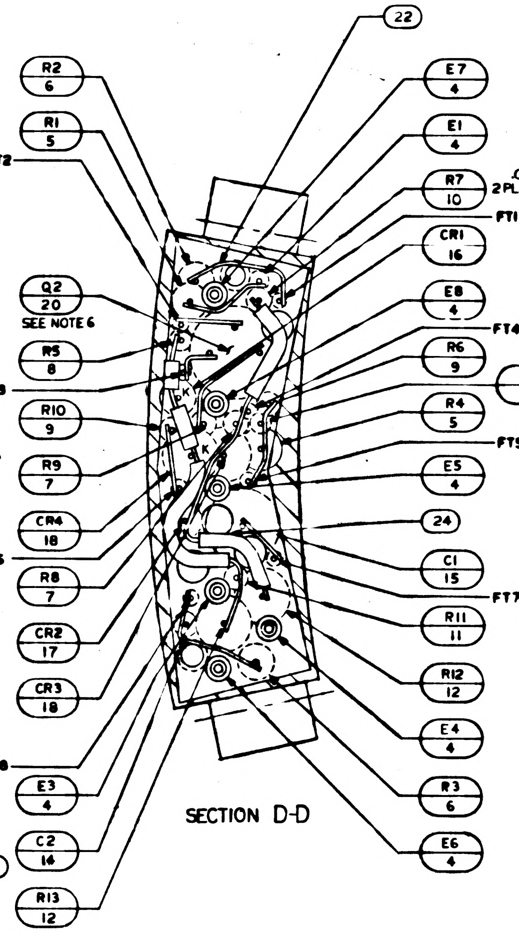
SEE NOTE 7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CR3
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FT8
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C2
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R13
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E1
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R7
10
FT1
CR1
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E8
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FT4
R6
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R4
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FT5
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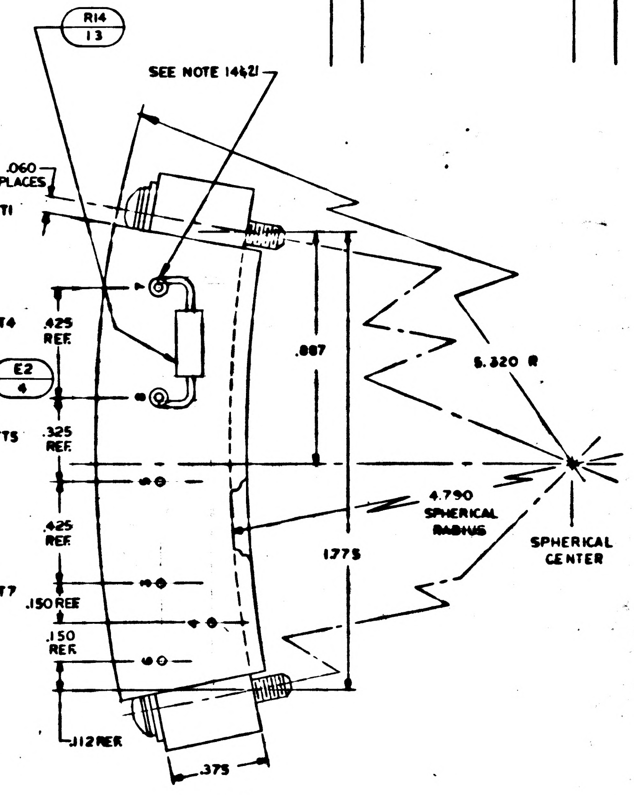
SECTION D-D


R14
13
SEE NOTE 14&21
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2 PLACES
E2
4
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REF
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5.320 R
.325
REF
4.790
SPHERICAL
RADIUS
SPHERICAL
CENTER
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REF
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.150 REF
.150
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.112 REF
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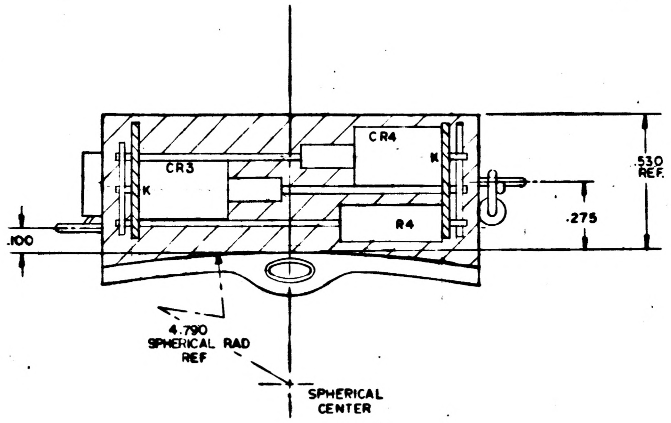
VIEW B-B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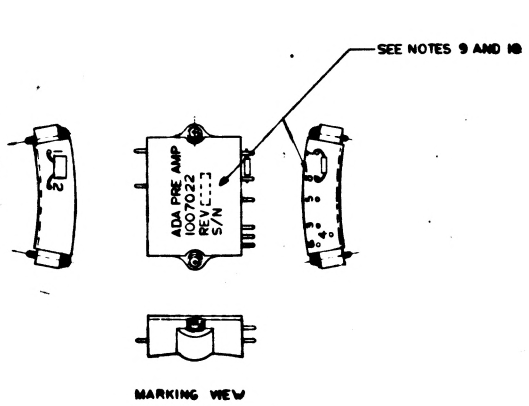
R4
4.790
SPHERICAL RAD
REF
SPHERICAL
CENTER

SECTION A-A


SEE NOTES 9 AND 10
ADA PRE AMP
1007022
REV
S/N

MARKING VIEW

SCALE 1/1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NO. 19 TO FIND NO. 1 PER ND-1002004
5. BOND FIND NO. 21 TO FIND NO. 1 PER ND-1002004
6. BOND FIND NO. 20 TO FIND NO. 2 PER ND-1002004
7. BOND FIND NO. 3 TO FIND NO. 1 AND FIND NO. 2 PER ND-1002004
8. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN
9. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND 1002023
10. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
11. R14 TO BE SELECTED BY TEST FROM SELECTION CHART ATP 1007022.
12. COMPONENT LEADS (BOTH ENDS) OF R5, R6, & R7 TO BE INSULATED WITH FIND NO. 25
13. AR DENOTES AS REQUIRED
14. SOLDER PER MIL-S-6872
15. ENCAPSULATE PER ND-1002106
16. K DENOTES CATHODE SIDE OF DIODE
17. DASHED LINES ON FIND NOS. 1 & 2 INDICATE INSULATION SLEEVING.
18. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
19. INSPECT PER PS 1007022
20. TEST PER FTM 1007022
21. BOND FIND NO. 13 & NO. 30 TO ADJACENT SURFACE PER ND1002004.

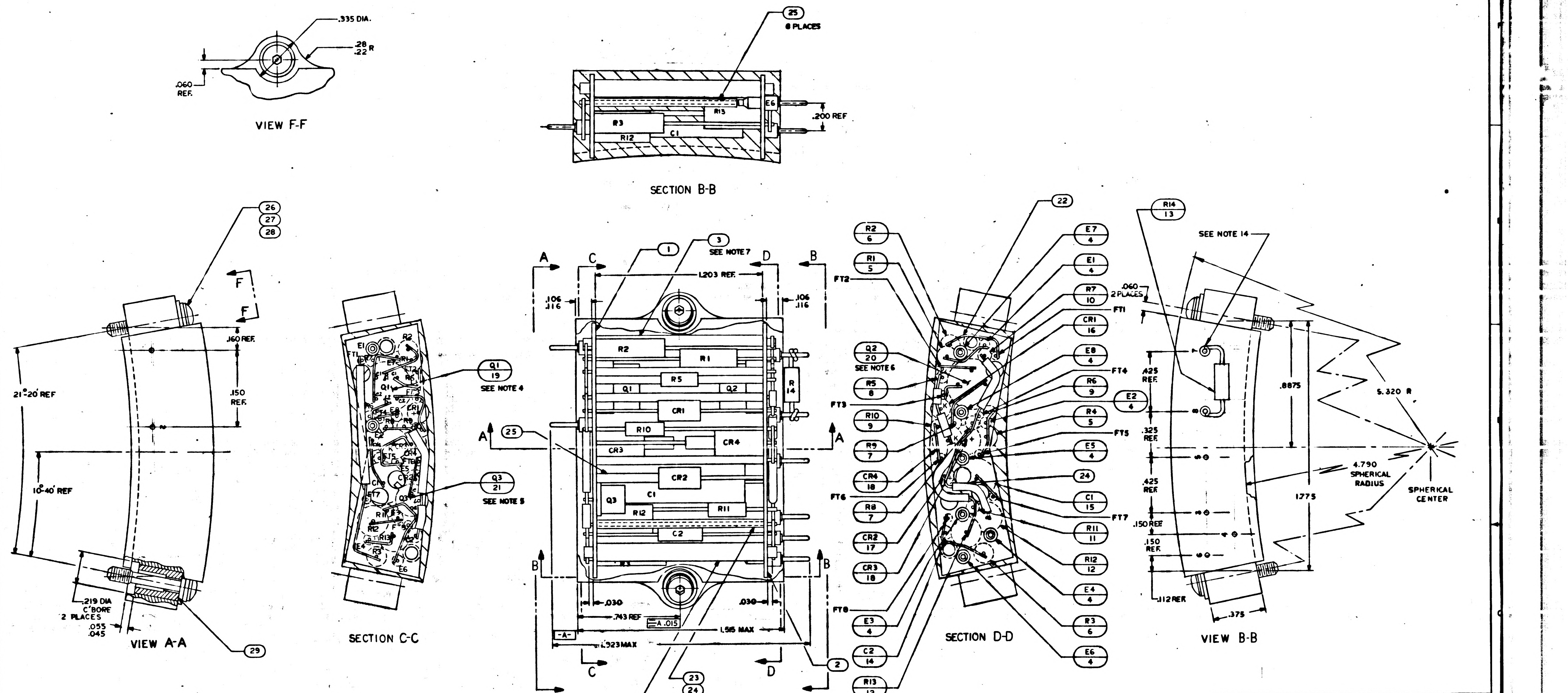
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010022	SCHEMATIC ADA PRE AMPLIFIER	REF.
1	1010359-29	CAPACITOR	30
2	1008001-2	RETAINER, SCREW	29
2	1008002-3	SCREW, EXTERNALLY RELIEVED BODY	28
2	MS35338-78	WASHER, LOCK	27
2	MS15795-303	WASHER, FLAT	26
AR	1006776-20	INSULATION, SLEEVING, ELECTRICAL	25
AR	1006776-22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	23
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	22
1	1010397	TRANSISTOR	21
1	1010345-1	TRANSISTOR	20
1	1010252	TRANSISTOR	19
2	1010265-012	DIODE	18
1	1010372-1	DIODE	17
1	1010372-20	DIODE	16
1	1010320-13	CAPACITOR	15
1	1006777-24	CAPACITOR	14
1	1010369-NE	RESISTOR SEE NOTE 11	13
2	1010312-030	RESISTOR	12
1	1006750-60	RESISTOR	11
1	1010369-98	RESISTOR	10
2	1006750-64	RESISTOR	9
1	1010369-96	RESISTOR	8
2	1006750-63	RESISTOR	7
2	1010321-398	RESISTOR	6
2	1010364-501	RESISTOR	5
8	1006784-59	TERMINAL, FEEDTHRU	4
2	1008030	SPACER	3
1	1008C41	WIRING BOARD, B	2
1	1008040	WIRING BOARD, A	1

LIST OF MATERIALS

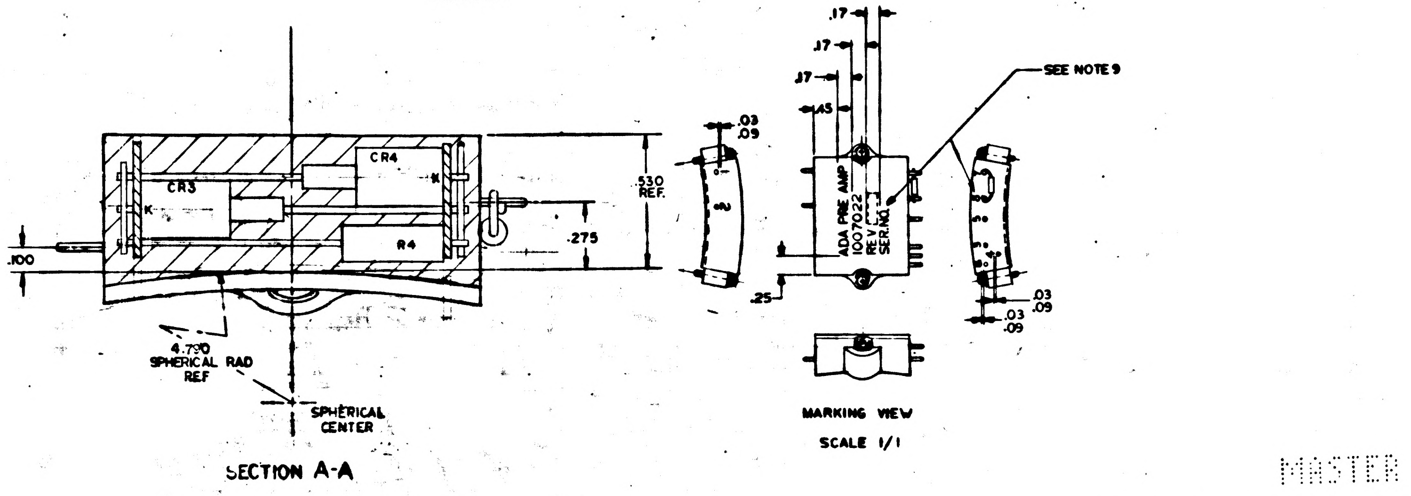
1000203	DL 1000201	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± — DECIMALS ±.005 ANGLES ± — DO NOT SCALE THIS DRAWING	M I T INSTRUMENTATION LAB Cambridge Mass	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
NEXT ASSY	USED ON	MATERIAL —	DRAWN [illegible] DATE [illegible] CHECKED [illegible] 5 Mar 63 APPROVAL [illegible] 7 Mar 63 APPROVAL [illegible] 3-7-63	ADA PRE-AMPLIFIER ASS'Y MIDDLE GIMBAL	
APPLICATION		HEAT TREATMENT —	NASA APPROVAL [illegible] 63	CODE IDENT NO.	SIZE E — NASA DRAWING NO. 1007022
		FINAL FINISH —	MIT APPROVAL [illegible]	SCALE 4/1	WT — SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS	DRR 00579		
SYM	DESCRIPTION	DATE	APPROVAL



.335 DIA.
.28
.22 R
.060 REF.
VIEW F-F
25
8 PLACES
R3
R13
E6
.200 REF
R12
C1
SECTION B-B
26
27
28
F
.160 REF.
21°20' REF
.150 REF.
10°40' REF
.219 DIA C'BORE 2 PLACES
.055
.045
VIEW A-A
29
E1
FT1
R2
Q1
19
SEE NOTE 4
Q3
21
SEE NOTE 5
SECTION C-C
1
3
SEE NOTE 7
A
C
D
B
1.203 REF.
.106
.116
R1
R5
Q2
R14
CR1
R10
CR3
CR4
CR2
R11
C2
.030
.743 REF
A .015
1.515 MAX
1.923 MAX
-A-
2
23
24
SEE NOTE 7
22
R2 6
R1 5
FT2
Q2 20
SEE NOTE 6
R5 8
FT3
R10 9
R9 7
CR4 18
FT6
R8 7
CR2 17
CR3 18
FT8
E3 4
C2 14
R13 12
E7 4
E1 4
R7 10
CR1 16
E8 4
FT4
R6 9
E2 4
R4 5
FT5
E5 4
24
C1 15
FT7
R11 11
R12 12
E4 4
R3 6
E6 4
SECTION D-D
R14 13
SEE NOTE 14
.060 2 PLACES
FT1
.425 REF
.8875
5.320 R
.325 REF
4.790 SPHERICAL RADIUS
SPHERICAL CENTER
.425 REF
1.775
.150 REF
.150 REF
.112 REF
.375
VIEW B-B



CR4
CR3
K
R4
.100
.530 REF.
.275
4.790 SPHERICAL RAD REF
SPHERICAL CENTER
SECTION A-A
.17
.17
.17
.45
.03
.09
.25
ADA PRE AMP 1007022 REV SER NO.
SEE NOTE 9
.03
.09
.03
.09
MARKING VIEW
SCALE 1/1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NO. 19 TO FIND NO. 1 PER ND-1002004
5. BOND FIND NO. 21 TO FIND NO. 1 PER ND-1002004
6. BOND FIND NO. 20 TO FIND NO. 2 PER ND-1002004
7. BOND FIND NO. 3 TO FIND NO. 1 AND FIND NO. 2 PER ND-1002004
8. AFTER WELDING TRIM ALL LEADS .005/.015 BEYOND RIBBON
9. MARK .060/.100 HIGH BLACK PER ND-1002019
10. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
11. R14 TO BE SELECTED BY TEST (NOMINAL VALUE 750 K) 1010369-
12. COMPONENT LEADS (BOTH ENDS) OF R5, R6, / R7 TO BE INSULATED WITH FIND NO. 25
13. AR DENOTES AS REQUIRED
14. SOLDER PER MIL-S-6872
15. ENCAPSULATE PER ND-1002106
16. K DENOTES CATHODE SIDE OF DIODE

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010022	SCHEMATIC ADA PRE AMPLIFIER	REF.
2	1008001-2	RETAINER, SCREW	29
2	1008002-3	SCREW, EXTERNALLY RELIEVED BODY	28
2	MS35338-78	WASHER, LOCK	27
2	MS15795-303	WASHER, FLAT	26
AR	1002074 NO. 20	INSULATION, SLEEVING, ELECTRICAL	25
AR	1002074 NO. 22	INSULATION, SLEEVING, ELECTRICAL	24
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	23
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	22
1	1010397	TRANSISTOR	21
1	1010396	TRANSISTOR	20
1	1010252	TRANSISTOR	19
2	1010265-012	DIODE	18
1	1010372-1	DIODE	17
1	1010372-20	DIODE	16
1	1010320-	CAPACITOR	15
1	1006777-24	CAPACITOR	14
1	1010369-NE	RESISTOR SEE NOTE 11	13
2	1010312-030	RESISTOR	12
1	1006750-60	RESISTOR	11
1	1010369-98	RESISTOR	10
2	1006750-64	RESISTOR	9
1	1010369-96	RESISTOR	8
2	1006750-63	RESISTOR	7
2	1010321-	RESISTOR	6
2	1010364-501	RESISTOR	5
8	1006784-59	TERMINAL, FEEDTHRU	4
2	1008030	SPACER	3
1	1008041	WIRING BOARD, B	2
1	1008040	WIRING BOARD, A	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000203	DL 1000201

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL — —
HEAT TREATMENT — —
FINAL FINISH — —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG NO CONTRACT
DRAWN E.O. Burkley DATE 2-18-63
CHECKED [illegible] 5 Mar. 3
APPROVAL [illegible] 7 Mar 63
APPROVAL [illegible] 3-7-63
NASA APPROVAL [illegible] 7 March 63
MIT APPROVAL [illegible] 13 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PRE-AMPLIFIER ASS'Y
MIDDLE GIMBAL

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007022
SCALE 4/1
WT
SHEET 1 OF 1

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly shall be used in the Gimbal Mounted Electronics to amplify the signal from the ADA and apply the signal to the Gimbal Servo Amplifier.

3.3 FUNCTIONAL REQUIREMENTS. The assembly shall be capable of meeting functional requirements for an assembly temperature range of 35° to 60° C.

3.3.1 Electrical Inputs. The assembly shall perform as specified herein with the following electrical inputs:

a. DC Supply Voltage: 25 to 30 vdc, plus and minus
b. DC signal:0 to 30 mv dc, plus and minus
c. AC signal:0.2 to 1000 cps sine wave, 0 to 3.5 V rms

3.3.2 DC Offset. With the input shorted, the DC output shall be less than ± 0.5 volt DC.

3.3.3 Gain. The gain shall be as follows:

a. DC Gain - the dc gain with both ± 30 mv dc signals applied to the input shall be 68 ± 5.
b. AC Gain - the ac gain with 3.5 mv rms input signals applied, shall be 1200 ± 150 at frequencies from 2 cps to 800 cps and not less than 740 at 0.2 and 1000 cps.

3.3.4 Phase Shift. With 27.5 vdc ± 5 percent supply voltages applied and a 3.5 mv rms ± 5 percent, 100 cps ± 5 percent signal applied to the input, the phase shift of the signal through the assembly shall be $180^\circ \pm 10^\circ$.

3.3.5 Dynamic Range. With a 100 cps ± 5 percent input signal of 11 mv rms, the output voltage shall be 11 V rms minimum and have a harmonic distortion $< 5\%$.

3.3.6 Residual Noise. With the input terminals shorted to signal ground, the output noise shall be less than 5 mv rms.

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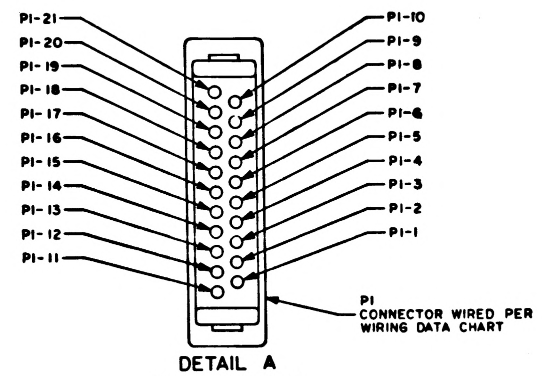
REVISIONS TDRR00668

④

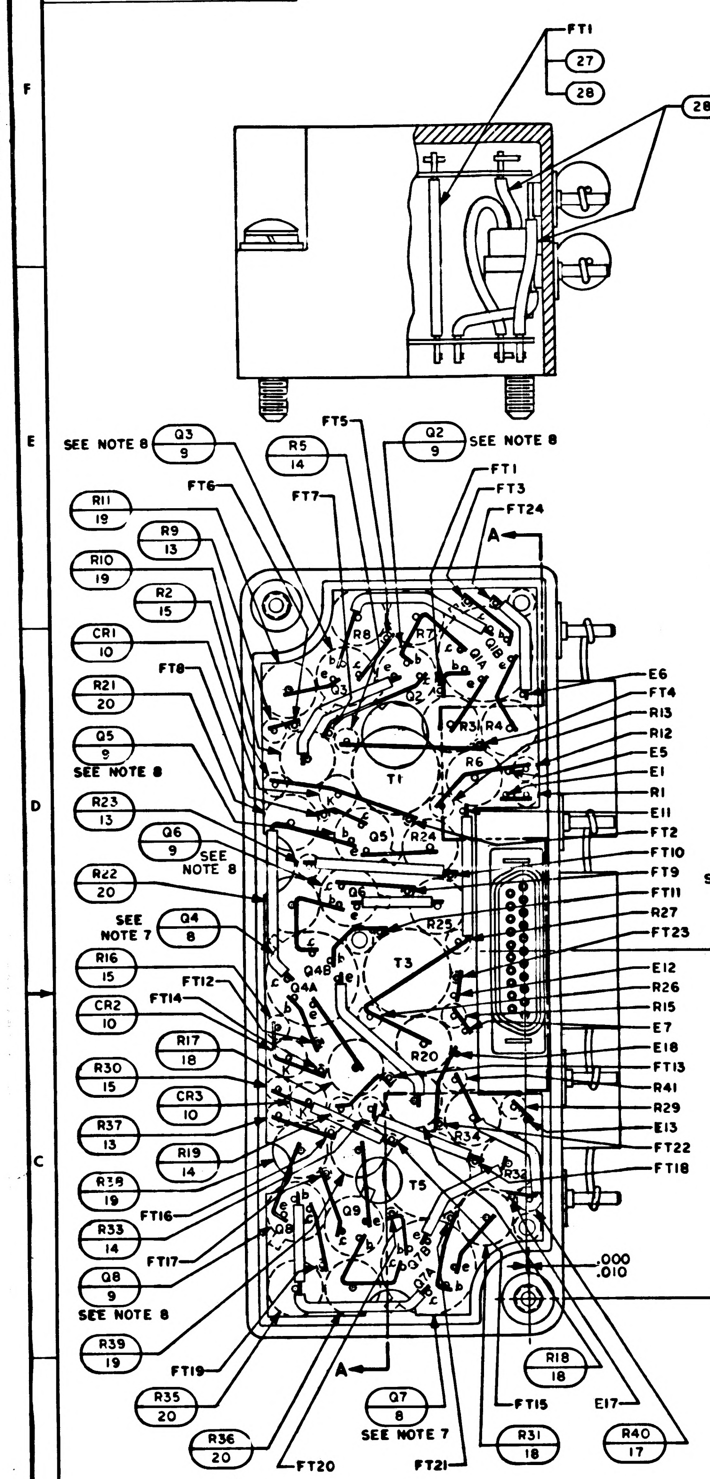
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR01169	5-6-63	SCS WR

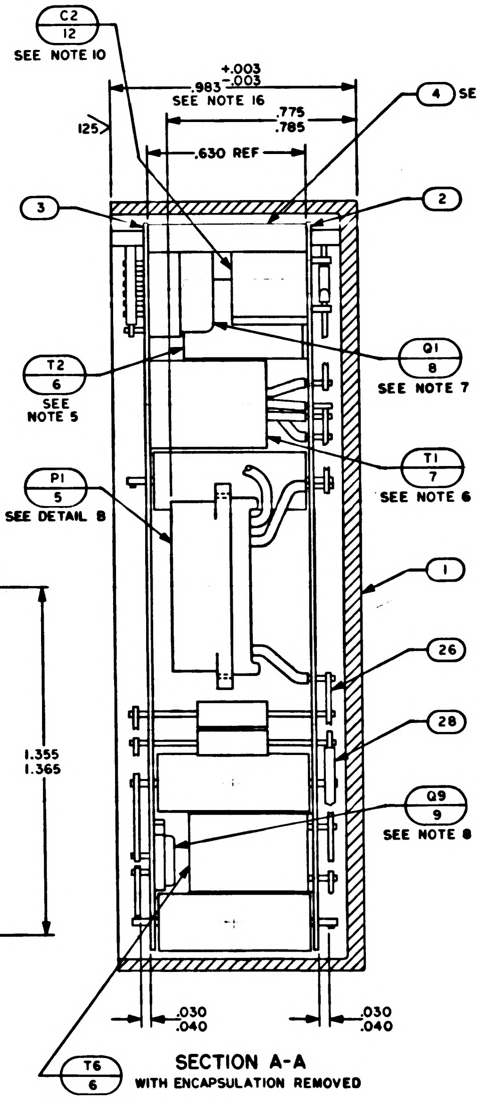
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E13	GYRO INPUT
P1-2	E16	GYRO ERROR SIG
P1-3	E9	GYRO ERROR SIG
P1-4	E10	GYRO ERROR SIG
P1-5	E7	GYRO INPUT
P1-6	E8	GYRO INPUT
P1-7	E4	GYRO ERROR SIG
P1-8	E19	27.5V DC, COMMON
P1-9	E2	GYRO INPUT
P1-10	E1	GYRO INPUT
P1-11	E14	GYRO INPUT
P1-12	E15	GYRO ERROR SIG
P1-13	SPARE	SPARE
P1-14	SPARE	SPARE
P1-15	SPARE	SPARE
P1-16	SPARE	SPARE
P1-17	SPARE	SPARE
P1-18	SPARE	SPARE
P1-19	SPARE	SPARE
P1-20	E20	0 V DC, COMMON
P1-21	E3	GYRO ERROR SIG

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
2	E5	EXTERNAL SELECT
1	E6	EXTERNAL SELECT
6	E12	EXTERNAL SELECT
5	E11	EXTERNAL SELECT
4	E17	EXTERNAL SELECT
3	E18	EXTERNAL SELECT

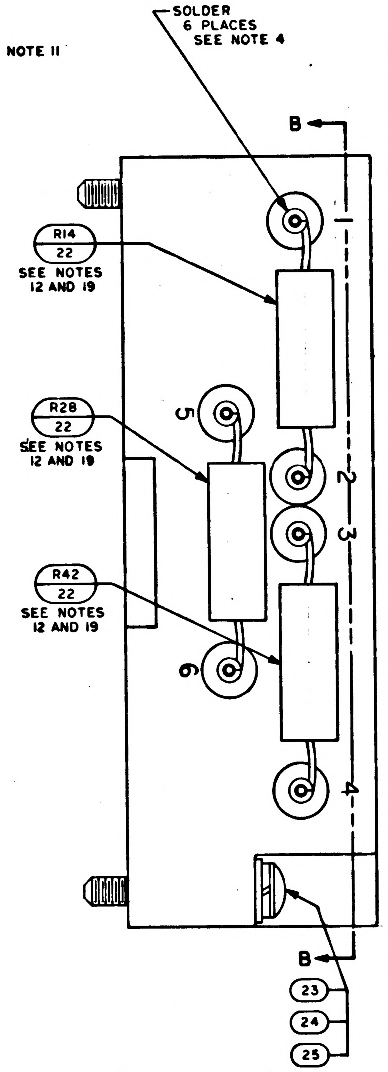

P1-21
P1-20
P1-19
P1-18
P1-17
P1-16
P1-15
P1-14
P1-13
P1-12
P1-11
P1-10
P1-9
P1-8
P1-7
P1-6
P1-5
P1-4
P1-3
P1-2
P1-1
P1 CONNECTOR WIRED PER WIRING DATA CHART

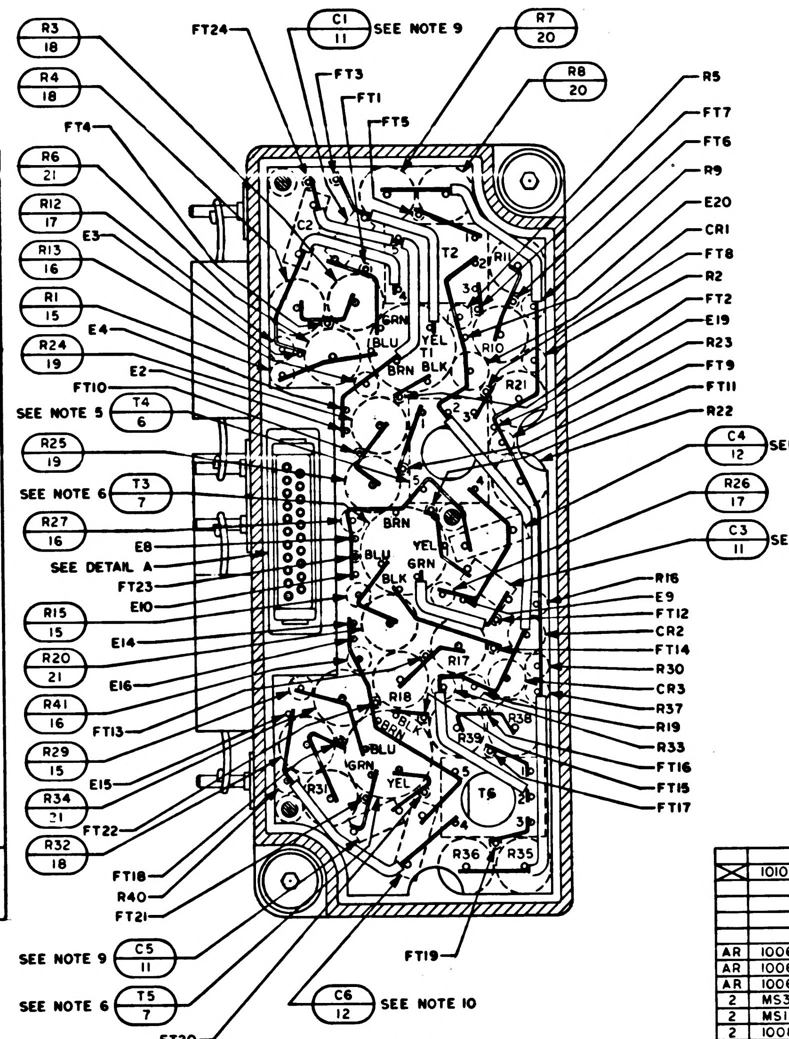
DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
SCALE: NONE


FT1
27
28
28
SEE NOTE 8
Q3 9
R5 14
FT5
Q2 9
SEE NOTE 8
FT1
FT3
FT24
A
R11 19
FT6
FT7
R9 13
R10 19
R2 15
CR1 10
R21 20
FT8
Q5 9
SEE NOTE 8
R23 13
Q6 9
SEE NOTE 8
R22 20
SEE NOTE 7
Q4 8
R16 15
FT12
CR2 10
FT14
R17 18
R30 15
CR3 10
R37 13
R19 14
R38 19
FT16
R33 14
FT17
Q8 9
SEE NOTE 8
R39 19
FT19
R35 20
R36 20
FT20
Q7 8
SEE NOTE 7
FT21
A
FT15
R31 18
R18 18
E17
R40 17
E6
FT4
R13
R12
E5
E1
R1
E11
FT2
FT10
FT9
FT11
R27
FT23
E12
R26
R15
E7
E18
FT13
R41
R29
E13
FT22
FT18
1.355
1.365
.000
.010
T1
T3
T5
Q2
Q5
Q9
R3
R4
R6
R7
R8
R20
R24
R25
R32
R34


C2 12
SEE NOTE 10
+.003
-.003
.983
SEE NOTE 16
.775
.785
.630 REF
.125
4
SEE NOTE 11
3
2
T2 6
SEE NOTE 5
Q1 8
SEE NOTE 7
T1 7
SEE NOTE 6
P1 5
SEE DETAIL B
1
26
28
Q9 9
SEE NOTE 8
T6 6
SEE NOTE 5
.030
.040
.030
.040

SECTION A-A
WITH ENCAPSULATION REMOVED

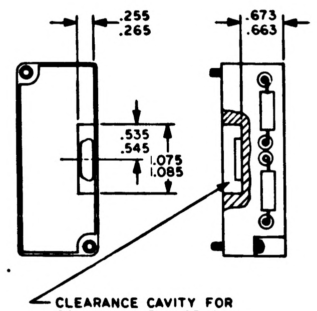

SOLDER 6 PLACES SEE NOTE 4
B
R14 22
SEE NOTES 12 AND 19
R28 22
SEE NOTES 12 AND 19
R42 22
SEE NOTES 12 AND 19
1
2
3
4
5
6
B
23
24
25


R3 18
FT24
C1 11
SEE NOTE 9
R7 20
R4 18
FT3
FT1
FT5
R8 20
R5
FT4
FT7
FT6
R9
R6 21
E20
R12 17
E3
CR1
R13 16
FT8
R2
R1 15
E4
FT2
E19
R24 19
E2
R23
FT9
FT10
FT11
T4 6
SEE NOTE 5
R22
C4 12
SEE NOTE 10
R25 19
T3 7
SEE NOTE 6
R26 17
R27 16
E8
C3 11
SEE NOTE 9
SEE DETAIL A
FT23
E10
R16
E9
R15 15
FT12
E14
CR2
R20 21
FT14
E16
R30
CR3
R41 16
FT13
R37
R19
R29 15
R33
E15
FT16
R34 21
FT15
FT22
FT17
R32 18
FT18
R40
FT21
C5 11
SEE NOTE 9
FT19
T5 7
SEE NOTE 6
C6 12
SEE NOTE 10
FT20
C2
T2
T6
R10
R11
R17
R18
R21
R31
R35
R36
R38
R39
GRN
BLU
YEL
BRN
BLK

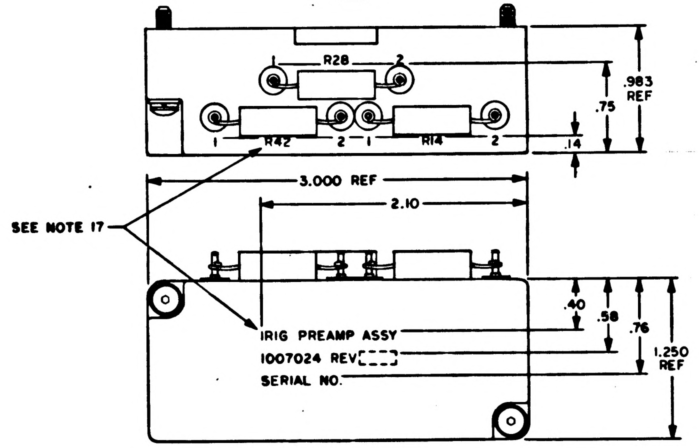
SECTION B-B

SELECTION CHART FOR R14, R28 AND R42	
PART NUMBER	VALUE
1010363 - 696	205 K
- 700	215 K
- 704	226 K
- 708	237 K
- 712	243 K
- 716	261 K
- 720	274 K
- 724	287 K
- 728	301 K
- 732	316 K
- 736	332 K
- 740	348 K
- 744	365 K
- 748	383 K
- 752	402 K
- 756	422 K
- 760	442 K
- 764	464 K
- 768	487 K
- 772	511 K
- 776	536 K
- 780	562 K
- 784	590 K
- 788	619 K
- 792	649 K
- 796	681 K
- 800	715 K
- 804	750 K
- 808	787 K
1010363 - 812	825 K

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND 1002003
3. ALL WELDS TO BE PER ND 1002005
4. SOLDER PER MIL-S-6872
5. BOND FIND NO. 6 TO FIND NO. 2 PER ND 1002004
6. BOND FIND NO. 7 TO FIND NO. 3 PER ND 1002004
7. BOND FIND NO. 8 TO FIND NO. 3 PER ND 1002004
8. BOND FIND NO. 9 TO FIND NO. 3 PER ND 1002004
9. BOND FIND NO. 11 TO FIND NO. 2 PER ND 1002004
10. BOND FIND NO. 12 TO FIND NO. 2 PER ND 1002004
11. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND 1002004
12. BOND FIND NO. 22 TO FIND NO. 1 PER ND 1002004
13. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
14. DIPCOAT PER ND 1002068 PRIOR TO ENCAPSULATION
15. ENCAPSULATE MODULE PER ND 1002106
16. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
17. MARK .060 TO .100 HIGH BLACK PER ND 1002019
18. AR DENOTES AS REQUIRED
19. R14, R28 AND R42 TO BE SELECTED BY ELECTRICAL TEST.
20. K DENOTES CATHODE END OF DIODE
21. SPARE LEADS FROM FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH


.255
.265
.673
.663
.535
.545
1.075
1.085
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 1:1


R28
1
2
R42
R14
.983 REF
.75
.14
3.000 REF
2.10
SEE NOTE 17
.40
.58
.76
1.250 REF
IRIG PREAMP ASSY
1007024 REV
SERIAL NO.

MARKING VIEWS
SCALE: 2:1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010021	SCHEMATIC	REF
AR	1006776-22	INSULATION, SLEEVING, ELEC	28
AR	1006787-2	WIRE, ELECTRICAL	27
AR	1006757-1	WIRE, ELECTRICAL	26
2	MS35338-78	WASHER, LOCK	25
2	MS15795-303	WASHER, FLAT	24
2	1008002-1	SCREW, EXT RELIEVED BODY	23
3	1010363	RESISTOR (SEE NOTE 19)	22
3	1010363-771	RESISTOR	21
6	1010363-459	RESISTOR	20
6	1010363-173	RESISTOR	19
6	1010363-1	RESISTOR	18
3	1006750-80	RESISTOR	17
3	1006750-69	RESISTOR	16
6	1006750-63	RESISTOR	15
3	1006750-52	RESISTOR	14
3	1006750-32	RESISTOR	13
3	1010359-23	CAPACITOR	12
3	1010359-17	CAPACITOR	11
3	1010372-15	DIODE	10
6	1010266	TRANSISTOR	9
3	1010252-001	TRANSISTOR	8
3	1010324	TRANSFORMER	7
3	1010291	TRANSFORMER	6
1	1010318-4	CONNECTOR, RECP, ELECTRICAL	5
3	1008053	SPACER	4
1	1008052	WIRING BOARD, BOTTOM	3
1	1008051	WIRING BOARD, TOP	2
1	1007026	HOUSING, INSEPARABLE ASSY	1

LIST OF MATERIALS

1007024 A

	DL 1000001
1000005	DL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± .03 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN Ken Healy DATE 3-12-63
CHECKED 3-25-63
APPROVAL D.A. 3-25-63
APPROVAL 3-26-63
NASA APPROVAL W J 3-27-63
MIT APPROVAL 27 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

IRIG PREAMP ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007024
SCALE 4:1
WT
SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

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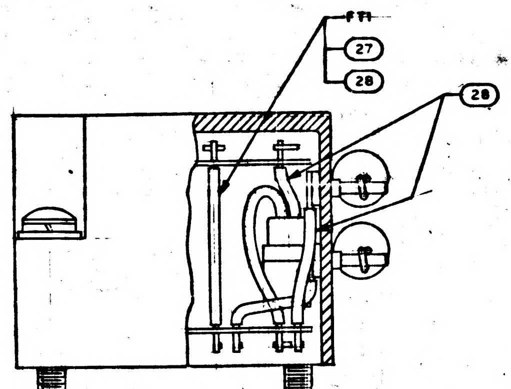
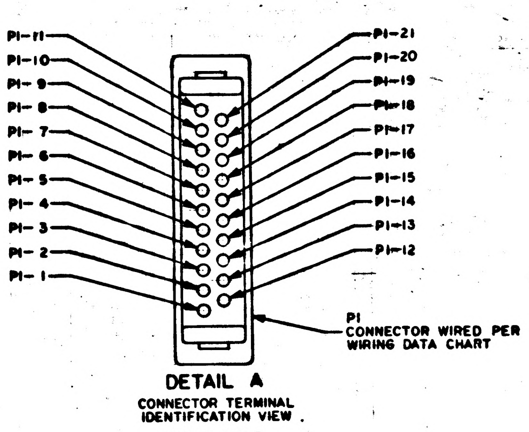
REVISIONS	YDRW00668		
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00469	5-8-63	SCS WR
B	REVISED PER TDRR 03203	8-11-63	

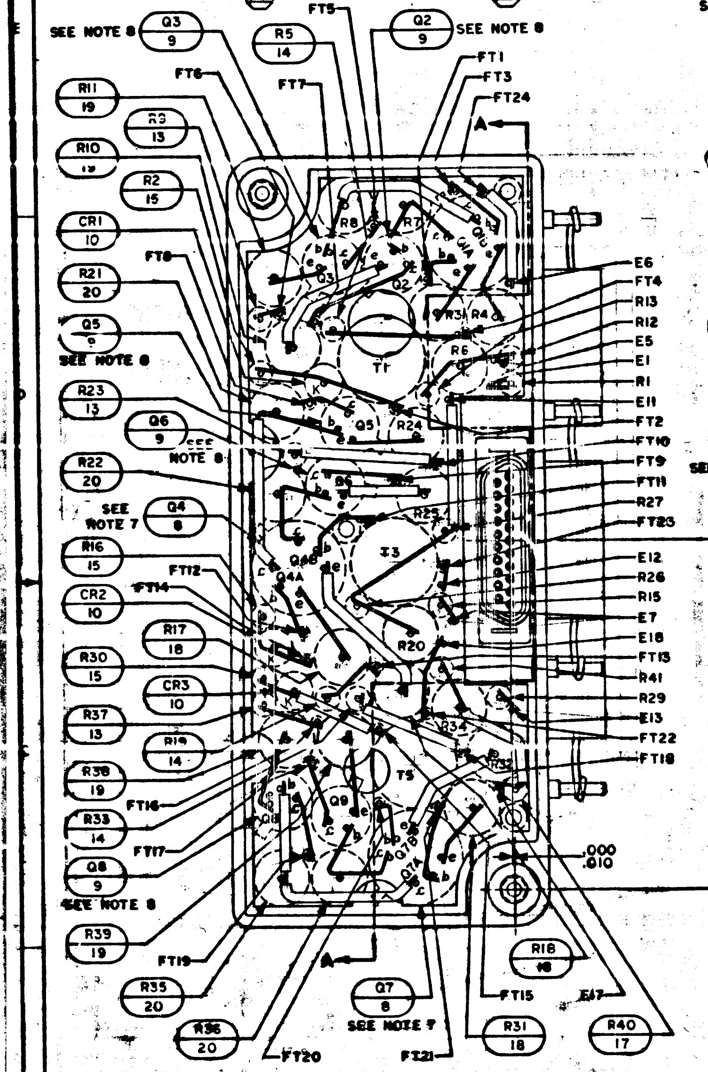
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E14	GYRO INPUT
P1-2	E15	GYRO ERROR SIG
P1-3	SPARE	SPARE
P1-4	SPARE	SPARE
P1-5	SPARE	SPARE
P1-6	SPARE	SPARE
P1-7	SPARE	SPARE
P1-8	SPARE	SP RE
P1-9	SPARE	SPARE
P1-10	E20	OV DC COMMON
P1-11	E3	GYRO ERROR SIG
P1-12	E13	GYRO INPUT
P1-13	E16	GYRO ERROR SIG
P1-14	E9	GYRO ERROR SIG
P1-15	E10	GYRO ERROR SIG
P1-16	E7	GYRO INPUT
P1-17	E8	GYRO INPUT
P1-18	E4	GYRO ERROR SIG
P1-19	E19	27.5V DC COMMON
P1-20	E2	GYRO INPUT
P1-21	E1	GYRO INPUT

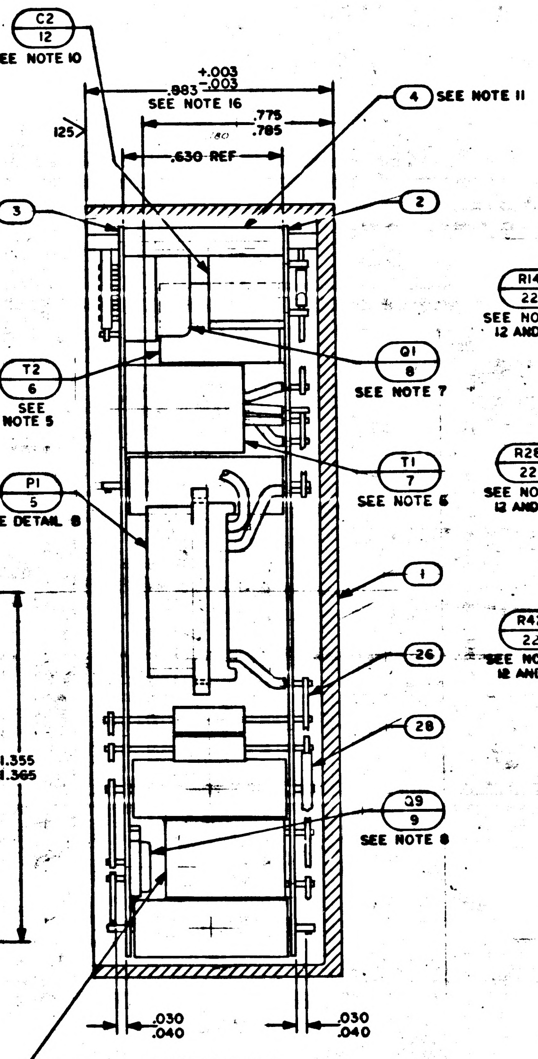
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
1	E6	EXTERNAL SELECT
2	E5	EXTERNAL SELECT
3	E18	EXTERNAL SELECT
4	E17	EXTERNAL SELECT
5	E11	EXTERNAL SELECT
6	E12	EXTERNAL SELECT




P1-11
P1-10
P1-9
P1-8
P1-7
P1-6
P1-5
P1-4
P1-3
P1-2
P1-1
P1-21
P1-20
P1-19
P1-18
P1-17
P1-16
P1-15
P1-14
P1-13
P1-12
P1
CONNECTOR WIRED PER
WIRING DATA CHART

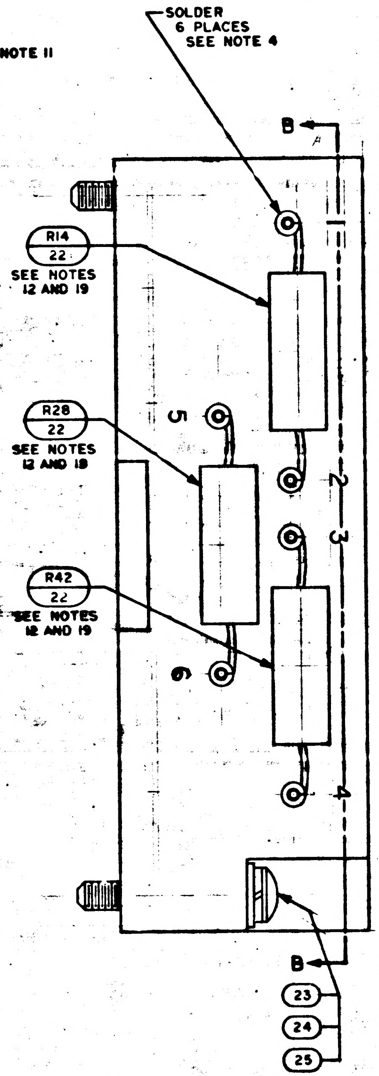
DETAIL A
CONNECTOR TERMINAL
IDENTIFICATION VIEW.
SCALE: NONE

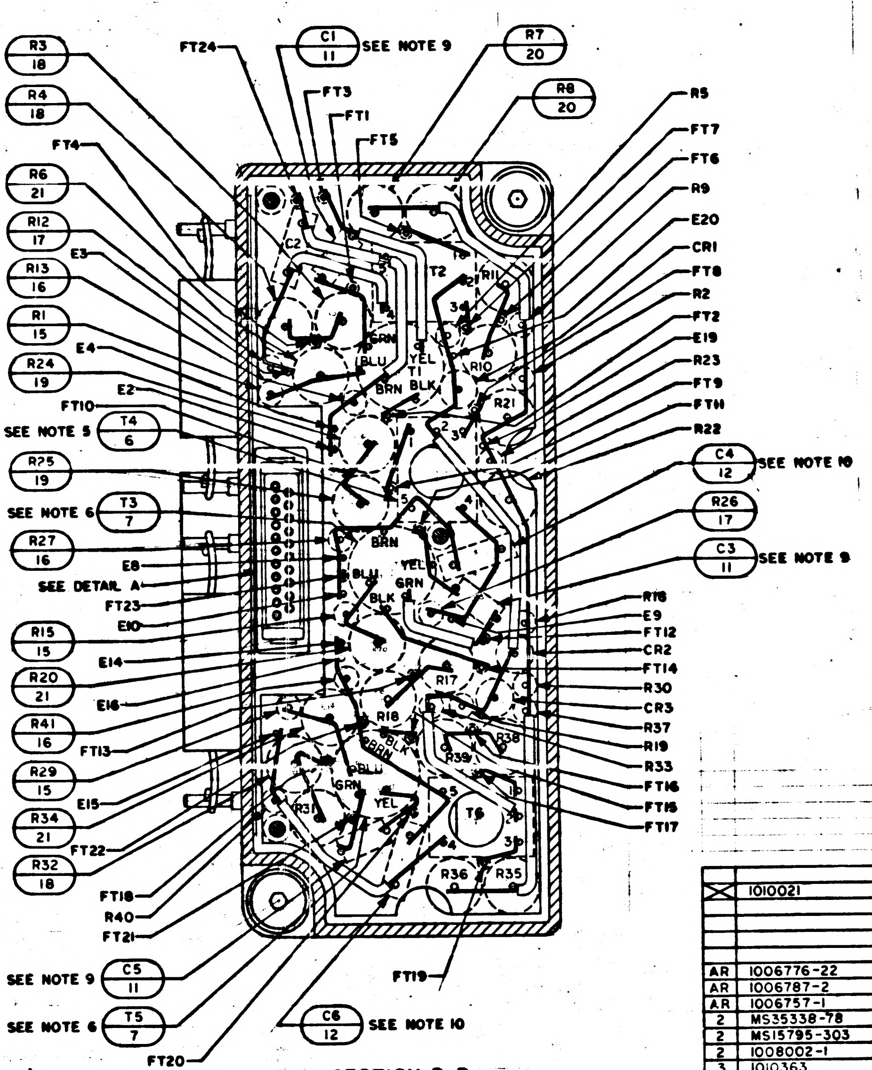

Q3 9 SEE NOTE 8
R5 14
Q2 9 SEE NOTE 8
FT5
FT1
FT3
FT24
R11 19
FT6
FT7
A
R9 13
R10 19
R2 15
CR1 10
FT8
R21 20
Q5 9
SEE NOTE 8
R23 13
Q6 9
SEE NOTE 8
R22 20
SEE NOTE 7
Q4 8
R16 15
CR2 10
FT12
FT14
R17 18
R30 15
CR3 10
R37 13
R19 15
R38 19
R33 14
FT16
FT17
Q8 9
SEE NOTE 8
R39 19
FT19
R35 20
R36 20
FT20
Q7 8
SEE NOTE 7
FT21
R31 18
R18 18
FT15
R40 17
E6
FT4
R13
R12
E5
E1
R1
E11
FT2
FT10
FT9
FT11
R27
FT23
E12
R26
E7
E18
FT13
R41
R29
E13
FT22
FT18
1.355
1.365
.000
.010
T1
T3
T5
Q1
Q9


C2 12
SEE NOTE 10
+.003
.883 -.003
SEE NOTE 16
.775
.785
.630 REF
.125
4 SEE NOTE 11
3
2
T2 6
SEE NOTE 5
Q1 8
SEE NOTE 7
T1 7
SEE NOTE 6
P1 5
SEE DETAIL B
1
26
28
Q9 9
SEE NOTE 8
.030
.040
.030
.040

SECTION A-A
WITH ENCAPSULATION REMOVED

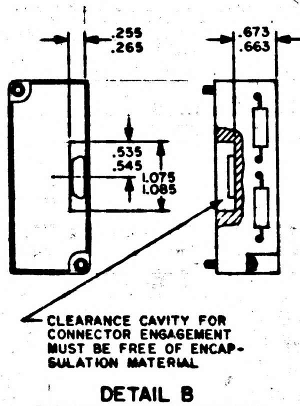
T6 6
SEE NOTE 5


SOLDER
6 PLACES
SEE NOTE 4
B
R14 22
SEE NOTES 12 AND 19
R28 22
SEE NOTES 12 AND 19
R42 22
SEE NOTES 12 AND 19
5
2
3
6
4
B
23
24
25

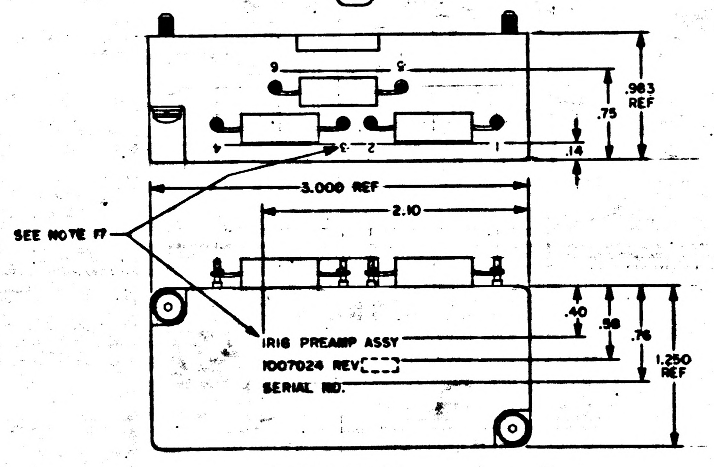

R3 18
FT24
C1 11
SEE NOTE 9
R7 20
R4 18
FT3
FT1
R8 20
FT5
R5
FT4
R6 21
FT7
FT6
R9
R12 17
E3
E20
CR1
R13 16
FT8
R1 15
E4
R2
R24 19
FT2
FT10
E2
E19
R23
SEE NOTE 5
T4 6
FT9
FTH
R22
R25 19
C4 12
SEE NOTE 10
SEE NOTE 6
T3 7
R26 17
R27 16
E8
C3 11
SEE NOTE 9
SEE DETAIL A
FT23
E10
R15 15
E14
R20 21
E16
R41 16
FT13
R29 15
E15
R34 21
FT22
R32 18
FT18
R40
FT21
R16
E9
FT12
CR2
FT14
R30
CR3
R37
R19
R33
FT16
FT15
FT17
SEE NOTE 9
C5 11
SEE NOTE 6
T5 7
FT20
FT19
C6 12
SEE NOTE 10
GRN
BLU
YEL
BRN
BLK
T1
T2
T6
R36
R35

SECTION B-B

SELECTION CHART FOR R14, P28 AND R42	
PART NUMBER	VALUE
1010363 – 696	205 K
– 700	215 K
– 704	226 K
– 708	237 K
– 712	249 K
– 716	261 K
– 720	274 K
– 724	287 K
– 728	301 K
– 732	316 K
– 736	332 K
– 740	348 K
– 744	365 K
– 748	383 K
– 752	402 K
– 756	422 K
– 760	442 K
– 764	464 K
– 768	487 K
– 772	511 K
– 776	536 K
– 780	562 K
– 784	590 K
– 788	619 K
– 792	649 K
– 796	681 K
– 800	715 K
– 804	750 K
– 808	7.7 K
1010363 – 812	825 K


.255
.265
.673
.663
.535
.545
1.075
1.085
CLEARANCE CAVITY FOR
CONNECTOR ENGAGEMENT
MUST BE FREE OF ENCAP-
SULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION
DATA
SCALE: 1:1


9
9
2
1
.983 REF
.75
.14
3.000 REF
2.10
SEE NOTE 17
IRIG PREAMP ASSY
1007024 REV
SERIAL NO.
.40
.58
.76
1.250 REF

MARKING VIEWS
SCALE: 2:1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND 1002003
3. ALL WELDS TO BE PER ND 1002005
4. SOLDER PER MIL-S-6872
5. BOND FIND NO. 6 TO FIND NO. 2 PER ND 1002004
6. BOND FIND NO. 7 TO FIND NO. 3 PER ND 1002004
7. BOND FIND NO. 8 TO FIND NO. 3 PER ND 1002004
8. BOND FIND NO. 9 TO FIND NO. 3 PER ND 1002004
9. BOND FIND NO. 11 TO FIND NO. 2 PER ND 1002004
10. BOND FIND NO. 12 TO FIND NO. 2 PER ND 1002004
11. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND 1002004
12. BOND FIND NO. 22 TO FIND NO. 1 PER ND 1002004
13. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
14. DIPCOAT PER ND 1002068 PRIOR TO ENCAPSULATION
15. ENCAPSULATE MODULE PER ND 1002106
16. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
17. MARK .060 TO .100 HIGH BLACK PER ND 1002019
18. AR DENOTES AS REQUIRED
19. R14, R28 AND R42 TO BE SELECTED BY ELECTRICAL TEST.
20. K DENOTES CATHODE END OF DIODE
21. SPARE LEADS FROM FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010021	SCHEMATIC	REF
AR	1006776-22	INSULATION, SLEEVING, ELEC	28
AR	1006787-2	WIRE, ELECTRICAL	27
AR	1006757-1	WIRE, ELECTRICAL	26
2	MS35338-78	WASHER, LOCK	25
2	MS15795-303	WASHER, FLAT	24
2	1008002-1	SCREW, EXT RELIEVED BODY	23
3	1010363	RESISTOR (SEE NOTE 19)	22
3	1010363-771	RESISTOR	21
6	1010363-459	RESISTOR	20
6	1010363-173	RESISTOR	19
6	1010363-1	RESISTOR	18
3	1006750-80	RESISTOR	17
3	1006750-69	RESISTOR	16
6	1006750-63	RESISTOR	15
3	1006750-52	RESISTOR	14
3	1006750-32	RESISTOR	13
3	1010359-23	CAPACITOR	12
3	1010359-17	CAPACITOR	11
3	1010372-15	DIODE	10
6	1010266	TRANSISTOR	9
3	1010252-001	TRANSISTOR	8
3	1010324	TRANSFORMER	7
3	1010291-1	TRANSFORMER	6
1	1010472-2	CONNECTOR, RECP, ELECTRICAL	5
3	1008053	SPACER	4
1	1008052	WIRING BOARD, BOTTOM	3
1	1008051	WIRING BOARD, TOP	2
1	1007026	HOUSING, INSEPARABLE ASSY	1

LIST OF MATERIALS

	DL 1000001
1000005	DL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO
CONTRACT
DRAWN Ken Healy DATE 3-12-63
CHECKED
APPROVAL 3-25-63
APPROVAL
NASA APPROVAL W J Rhine 3-27-63
MIT APPROVAL 27 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

IRIG PREAMP ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007024
SCALE 4:1
WT
SHEET 1 OF 1

1007024 B

INCHES
PHOTOGRAPHIC SCALE ONLY

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REVISIONS TDRR00668

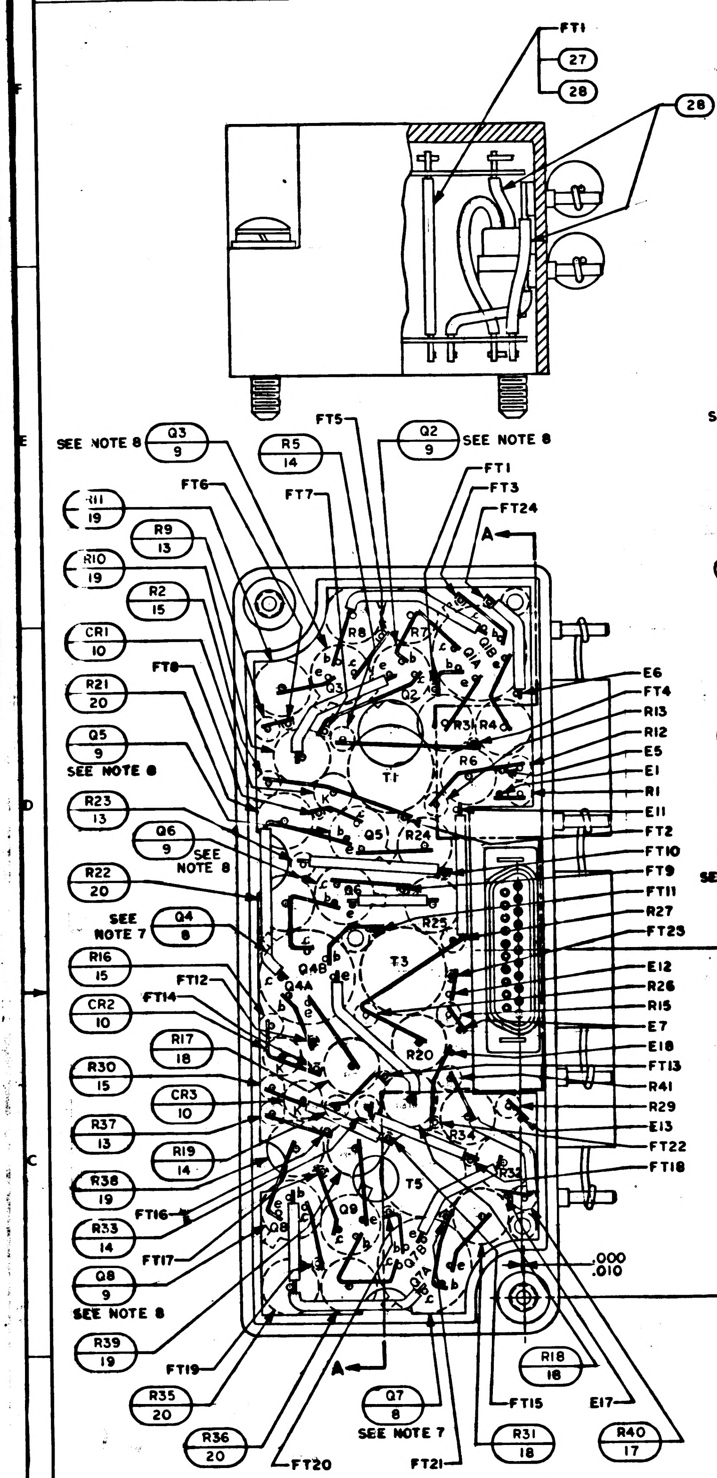
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00469	5-8-63	SCS WK
B	REVISED PER TDRR 03203	8-27-63	[illegible]
C	REVISED PER TDRR 05085	12-9-63	SAS WK

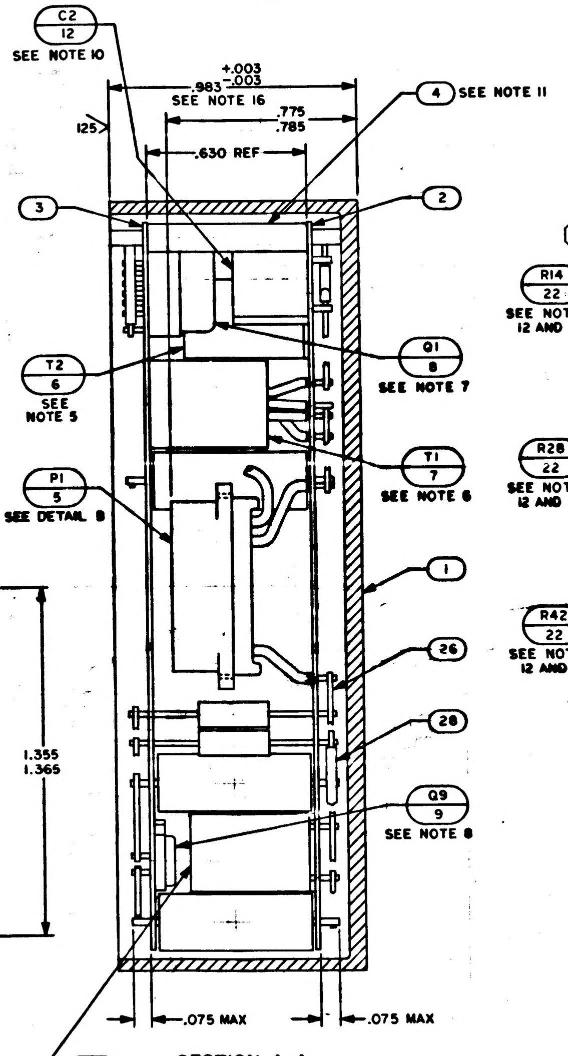
WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E14	GYRO INPUT
P1-2	E15	GYRO ERROR SIG
P1-3	SPARE	SPARE
P1-4	SPARE	SPARE
P1-5	SPARE	SPARE
P1-6	SPARE	SPARE
P1-7	SPARE	SPARE
P1-8	SPARE	SPARE
P1-9	SPARE	SPARE
P1-10	E20	0V DC, COMMON
P1-11	E3	GYRO ERROR SIG
P1-12	E13	GYRO INPUT
P1-13	E16	GYRO ERROR SIG
P1-14	E9	GYRO ERROR SIG
P1-15	E10	GYRO ERROR SIG
P1-16	E7	GYRO INPUT
P1-17	E8	GYRO INPUT
P1-18	E4	GYRO ERROR SIG
P1-19	E19	27.5V DC, COMMON
P1-20	E2	GYRO INPUT
P1-21	E1	GYRO INPUT

WIRING DATA

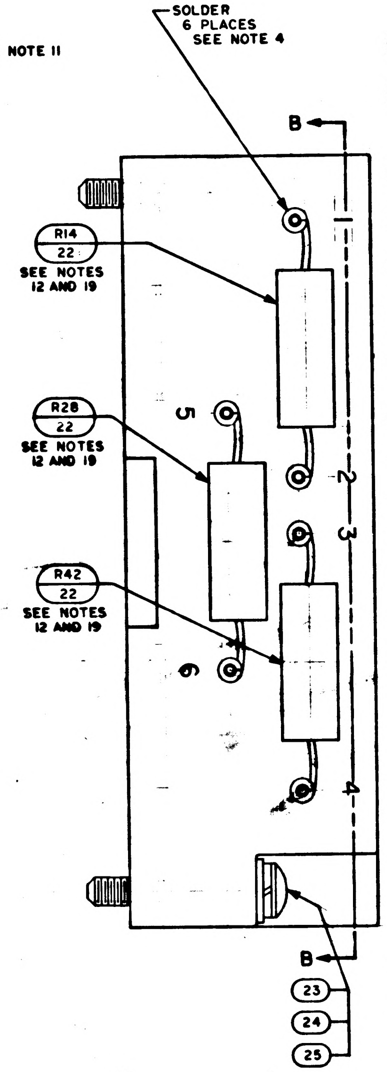
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
1	E6	EXTERNAL SELECT
2	E5	EXTERNAL SELECT
3	E18	EXTERNAL SELECT
4	E17	EXTERNAL SELECT
5	E11	EXTERNAL SELECT
6	E12	EXTERNAL SELECT

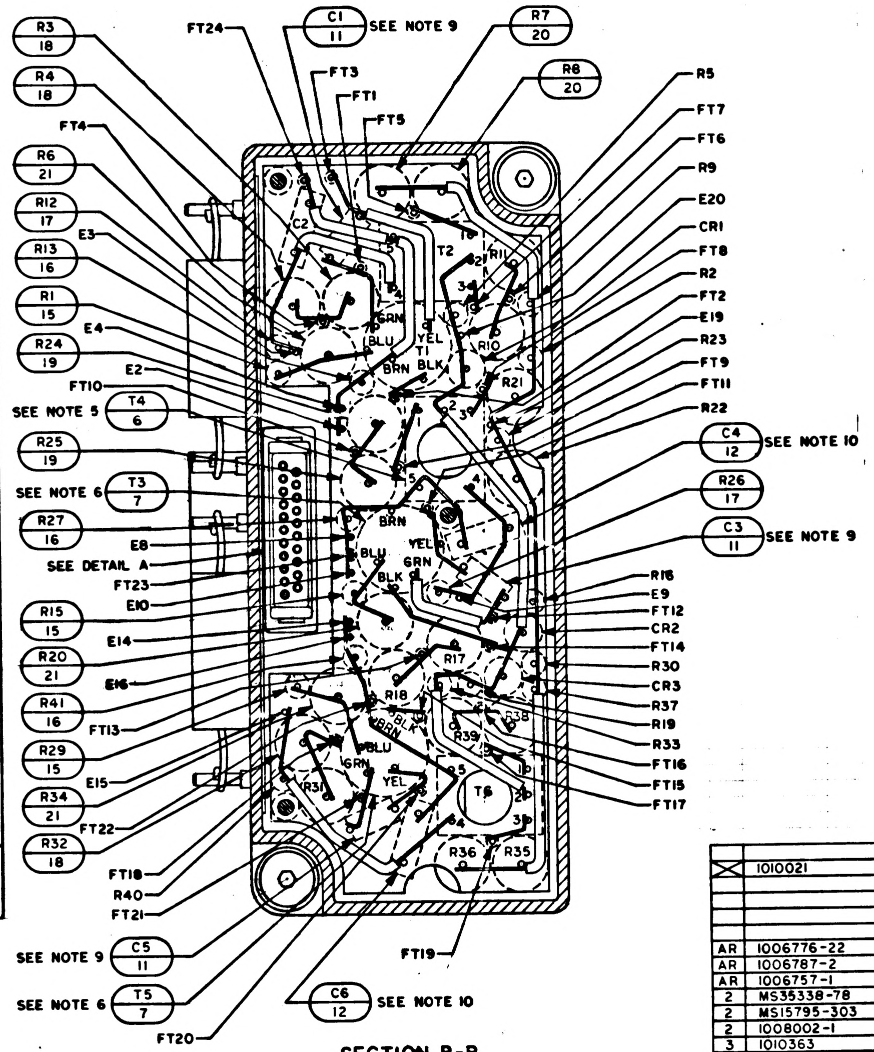

FT1
27
28
28
SEE NOTE 8
Q3 9
R5 14
FT5
Q2 9
SEE NOTE 8
FT1
FT3
FT24
FT6
FT7
A
R11 19
R9 13
R10 19
R2 15
CR1 10
FT8
R21 20
Q5 9
SEE NOTE 8
R23 13
Q6 9
SEE NOTE 8
R22 20
SEE NOTE 7
Q4 8
R16 15
FT12
FT14
CR2 10
R17 18
R30 15
CR3 10
R37 13
R19 14
R38 19
FT16
R33 14
FT17
Q8 9
SEE NOTE 8
R39 19
FT19
R35 20
R36 20
FT20
A
Q7 8
SEE NOTE 7
FT21
R31 18
R18 18
FT15
E17
R40 17
E6
FT4
R13
R12
E5
E1
R1
E11
FT2
FT10
FT9
FT11
R27
FT23
E12
R26
R15
E7
E18
FT13
R41
R29
E13
FT22
FT18
R8
R7
Q1A
Q1B
Q3
Q2
R3
R4
R6
T1
Q5
R24
Q6
R25
T3
Q4B
Q4A
R20
R34
R32
T5
Q9
Q8
Q7B
Q7A
1.355
1.365
.000
.010


C2 12
SEE NOTE 10
+.003
.983 -.003
SEE NOTE 16
.775
.785
.630 REF
125
4 SEE NOTE 11
3
2
T2 6
SEE NOTE 5
Q1 8
SEE NOTE 7
P1 5
SEE DETAIL B
T1 7
SEE NOTE 6
1
26
28
Q9 9
SEE NOTE 8
.075 MAX
.075 MAX
T6 6
SEE NOTE 5

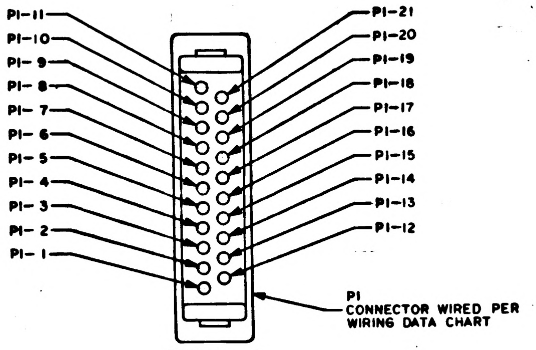
SECTION A-A

WITH ENCAPSULATION REMOVED


SOLDER
6 PLACES
SEE NOTE 4
B
R14 22
SEE NOTES 12 AND 19
R28 22
SEE NOTES 12 AND 19
R42 22
SEE NOTES 12 AND 19
1
2
3
4
5
6
B
23
24
25


R3 18
R4 18
FT24
C1 11
SEE NOTE 9
R7 20
R8 20
FT3
FT1
FT5
FT4
R6 21
R12 17
E3
R13 16
R1 15
E4
R24 19
E2
FT10
SEE NOTE 5
T4 6
R25 19
SEE NOTE 6
T3 7
R27 16
E8
SEE DETAIL A
FT23
E10
R15 15
E14
R20 21
E16
R41 16
FT13
R29 15
E15
R34 21
FT22
R32 18
FT18
R40
FT21
SEE NOTE 9
C5 11
SEE NOTE 6
T5 7
FT20
FT19
C6 12
SEE NOTE 10
R5
FT7
FT6
R9
E20
CR1
FT8
R2
FT2
E19
R23
FT9
FT11
R22
C4 12
SEE NOTE 10
R26 17
C3 11
SEE NOTE 9
R16
E9
FT12
CR2
FT14
R30
CR3
R37
R19
R33
FT16
FT15
FT17
C2
T2
R11
GRN
BLU
YEL
T1
BRN
BLK
R10
R21
BRN
YEL
BLU
GRN
BLK
R17
R18
R38
R39
BLU
GRN
YEL
R31
T6
R36
R35

SECTION B-B


P1-11
P1-10
P1-9
P1-8
P1-7
P1-6
P1-5
P1-4
P1-3
P1-2
P1-1
P1-21
P1-20
P1-19
P1-18
P1-17
P1-16
P1-15
P1-14
P1-13
P1-12
P1
CONNECTOR WIRED PER
WIRING DATA CHART

DETAIL A

CONNECTOR TERMINAL IDENTIFICATION VIEW

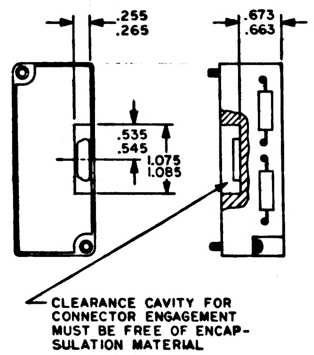
SCALE: NONE

SELECTION CHART FOR R14, R28 AND R42

PART NUMBER	VALUE
1010363 – 696	205 K
– 700	215 K
– 704	226 K
– 708	237 K
– 712	249 K
– 716	261 K
– 720	274 K
– 724	287 K
– 728	301 K
– 732	316 K
– 736	332 K
– 740	348 K
– 744	365 K
– 748	383 K
– 752	402 K
– 756	422 K
– 760	442 K
– 764	464 K
– 768	487 K
– 772	511 K
– 776	536 K
– 780	562 K
– 784	590 K
– 788	619 K
– 792	649 K
– 796	681 K
– 800	715 K
– 804	750 K
– 808	787 K
1010363 – 812	825 K

NOTES:

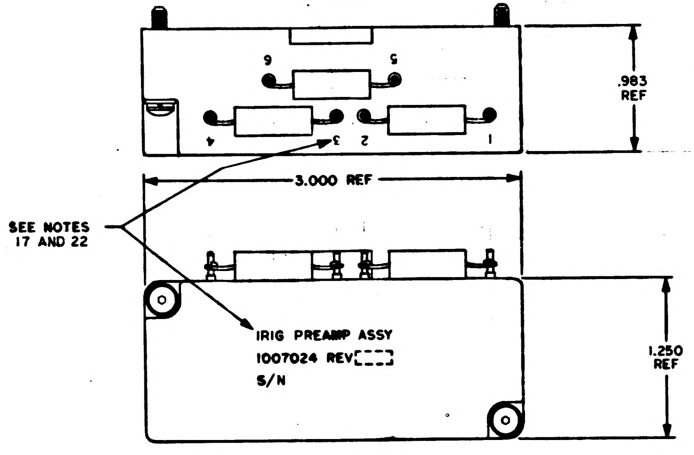
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND 1002003
3. ALL WELDS TO BE PER ND 1002005
4. SOLDER PER MIL-S-6872
5. BOND FIND NO. 6 TO FIND NO. 2 PER ND 1002004
6. BOND FIND NO. 7 TO FIND NO. 3 PER ND 1002004
7. BOND FIND NO. 8 TO FIND NO. 3 PER ND 1002004
8. BOND FIND NO. 9 TO FIND NO. 3 PER ND 1002004
9. BOND FIND NO. 11 TO FIND NO. 2 PER ND 1002004
10. BOND FIND NO. 12 TO FIND NO. 2 PER ND 1002004
11. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND 1002004
12. BOND FIND NO. 22 TO FIND NO. 1 PER ND 1002004
13. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN
14. DIPCOAT PER ND 1002068 PRIOR TO ENCAPSULATION
15. ENCAPSULATE MODULE PER ND 1002106
16. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
17. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND 1002023
18. AR DENOTES AS REQUIRED
19. R14, R28 AND R42 TO BE SELECTED BY ELECTRICAL TEST.
20. K DENOTES CATHODE END OF DIODE
21. SPARE LEADS FROM FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH
22. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
23. INSPECT PER PS 1007024
24. TEST PER FTM 1007024


.255
.265
.673
.663
.535
.545
1.075
1.085
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B

ENCAPSULATION CONFIGURATION DATA

SCALE: 1:1


.983 REF
9
5
4
2
1
3.000 REF
SEE NOTES 17 AND 22
IRIG PREAMP ASSY
1007024 REV
S/N
1.250 REF

MARKING VIEWS

SCALE: 2:1

	1010021	SCHEMATIC	REF
AR	1006776-22	INSULATION, SLEEVING, ELEC	28
AR	1006787-2	WIRE, ELECTRICAL	27
AR	1006757-1	WIRE, ELECTRICAL	26
2	MS35338-78	WASHER, LOCK	25
2	MS15795-303	WASHER, FLAT	24
2	1008002-1	SCREW, EXT RELIEVED BODY	23
3	1010363	RESISTOR (SEE NOTE 19)	22
3	1010363-771	RESISTOR	21
6	1010363-459	RESISTOR	20
6	1010363-173	RESISTOR	19
6	1010363-1	RESISTOR	18
3	1006750-80	RESISTOR	17
3	1006750-69	RESISTOR	16
6	1006750-63	RESISTOR	15
3	1006750-52	RESISTOR	14
3	1006750-32	RESISTOR	13
3	1010359-23	CAPACITOR	12
3	1010359-17	CAPACITOR	11
3	1010372-15	DIODE	10
6	1010266	TRANSISTOR	9
3	1010252-001	TRANSISTOR	8
3	1010324	TRANSFORMER	7
3	1010291-1	TRANSFORMER	6
1	1010472-2	CONNECTOR, RECP, ELECTRICAL	5
3	1008053	SPACER	4
1	1008052	WIRING BOARD, BOTTOM	3
1	1008051	WIRING BOARD, TOP	2
1	1007026	HOUSING, INSEPARABLE ASSY	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

MASTER

	DL 1000001
1000005	DL 1000201
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN Ken Healy DATE 3-12-63
CHECKED [illegible] 1 Sep 63
APPROVAL [illegible] 3-25-63
APPROVAL S.C. Smith 3-25-63
NASA APPROVAL W.J. [illegible] 3-27-63
MIT APPROVAL [illegible] 27 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

IRIG PREAMP ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007024
SCALE 4:1
WT
SHEET 1 OF 1

1007024 C

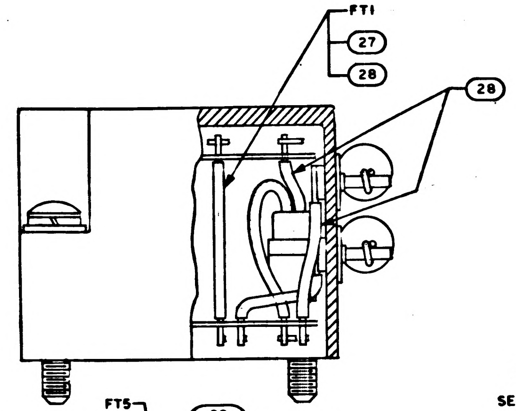
INCHES
PHOTOGRAPHIC SCALE ONLY

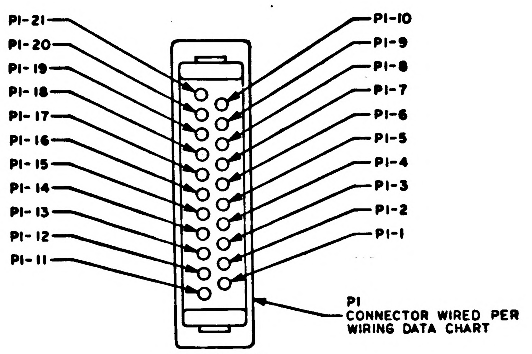
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS FRR 30668			
SYM	DESCRIPTION	DATE	APPROVAL

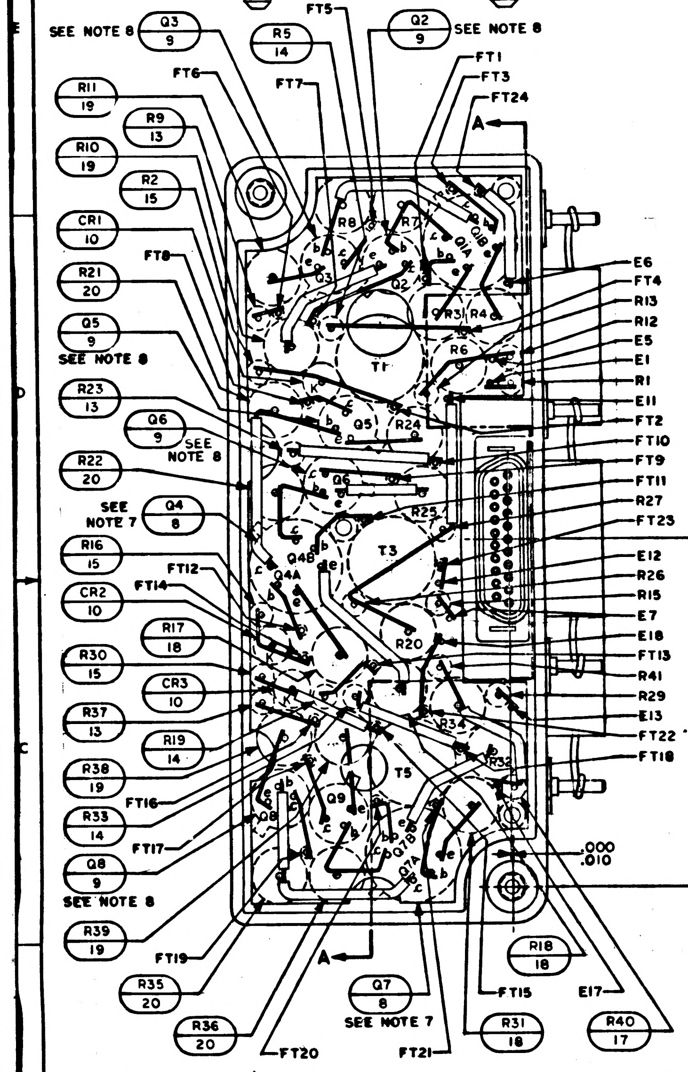
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E13	GYRO INPUT
P1-2	E16	GYRO ERROR SIG
P1-3	E9	GYRO ERROR SIG
P1-4	E10	GYRO ERROR SIG
P1-5	E7	GYRO INPUT
P1-6	E8	GYRO INPUT
P1-7	E4	GYRO ERROR SIG
P1-8	E19	27.5V DC, COMMON
P1-9	E2	GYRO INPUT
P1-10	E1	GYRO INPUT
P1-11	E14	GYRO INPUT
P1-12	E15	GYRO ERROR SIG
P1-13	SPARE	SPARE
P1-14	SPARE	SPARE
P1-15	SPARE	SPARE
P1-16	SPARE	SPARE
P1-17	SPARE	SPARE
P1-18	SPARE	SPARE
P1-19	SPARE	SPARE
P1-20	E20	0V DC, COMMON
P1-21	E3	GYRO ERROR SIG

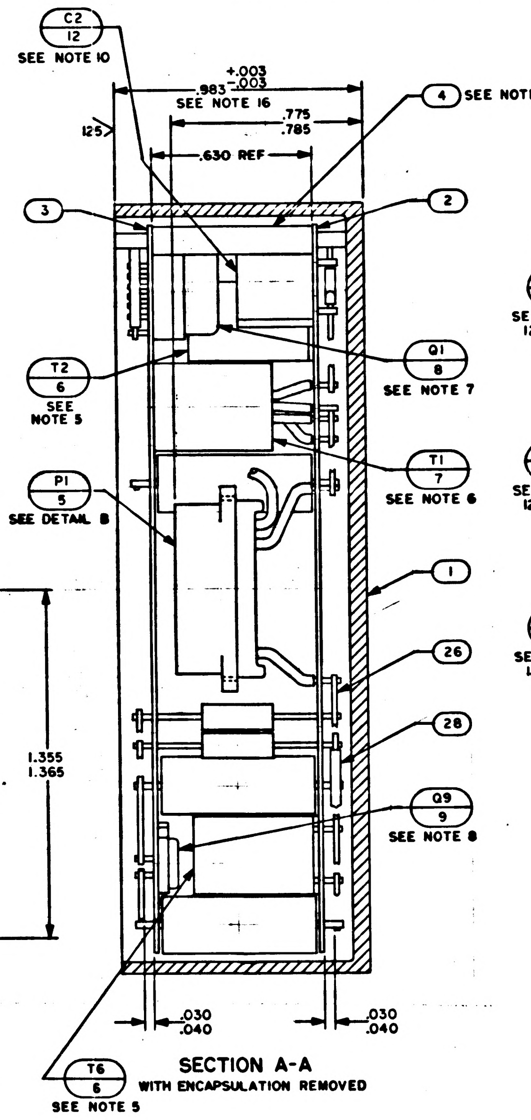
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
R14-1	E5	EXTERNAL SELECT
R14-2	E6	EXTERNAL SELECT
R28-1	E12	EXTERNAL SELECT
R28-2	E11	EXTERNAL SELECT
R42-1	E17	EXTERNAL SELECT
R42-2	E18	EXTERNAL SELECT



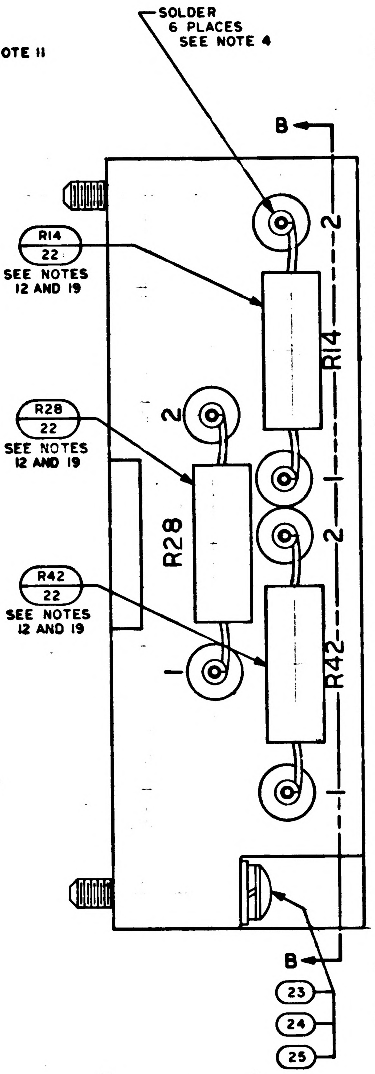

P1-21
P1-20
P1-19
P1-18
P1-17
P1-16
P1-15
P1-14
P1-13
P1-12
P1-11
P1-10
P1-9
P1-8
P1-7
P1-6
P1-5
P1-4
P1-3
P1-2
P1-1
P1
CONNECTOR WIRED PER WIRING DATA CHART

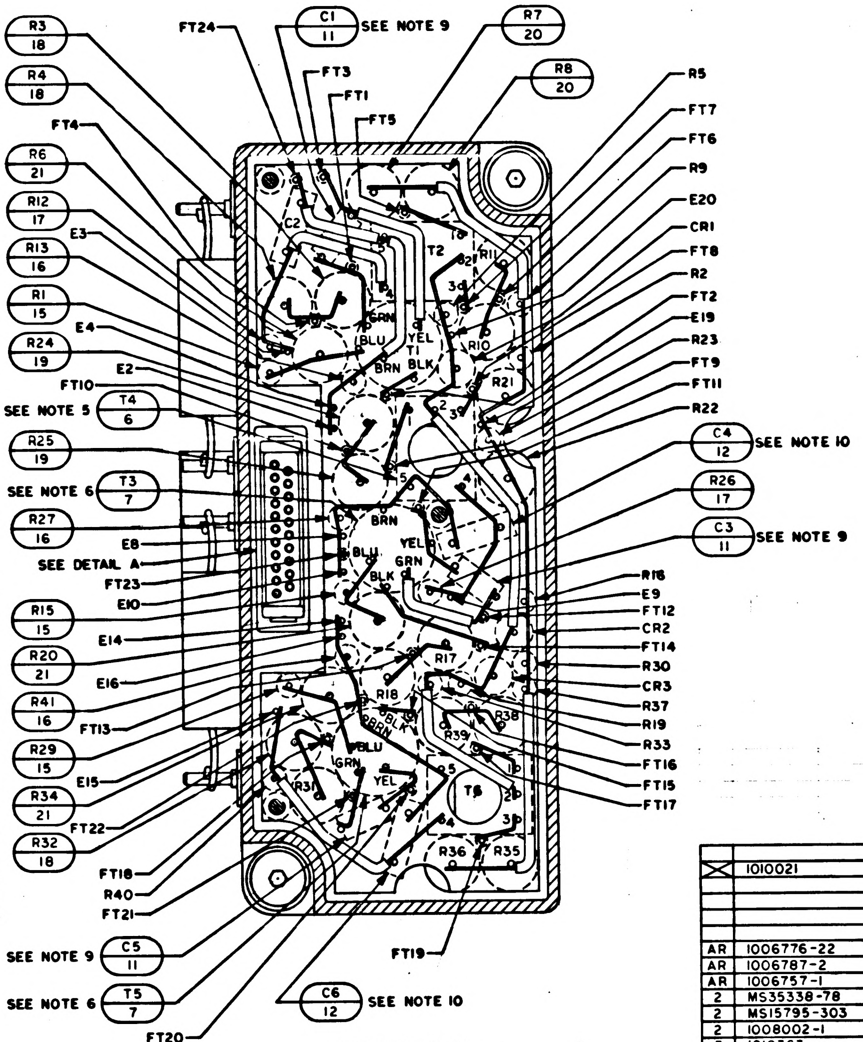
DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
SCALE: NONE


SEE NOTE 8
Q3 9
R5 14
FT5
Q2 9
SEE NOTE 8
FT1
FT3
FT24
A
FT6
FT7
R11 19
R9 13
R10 19
R2 15
CR1 10
FT8
R21 20
Q5 9
SEE NOTE 8
R23 13
Q6 9
SEE NOTE 8
R22 20
SEE NOTE 7
Q4 8
R16 15
FT14
FT12
CR2 10
R17 18
R30 15
CR3 10
R37 13
R19 14
R38 19
FT16
R33 14
FT17
Q8 9
SEE NOTE 8
R39 19
FT19
R35 20
R36 20
FT20
A
Q7 8
SEE NOTE 7
FT21
R31 18
FT15
R18 18
E17
R40 17
E6
FT4
R13
R12
E5
E1
R1
E11
FT2
FT10
FT9
FT11
R27
FT23
E12
R26
R15
E7
E18
FT13
R41
R29
E13
FT22
FT18
1.355
1.365
.000
.010
T1
T3
T5


C2 12
SEE NOTE 10
+.003
-.003
.983
SEE NOTE 16
.775
.785
.630 REF
125
4
SEE NOTE 11
3
2
T2 6
SEE NOTE 5
Q1 8
SEE NOTE 7
P1 5
SEE DETAIL B
T1 7
SEE NOTE 6
1
26
28
Q9 9
SEE NOTE 8
.030
.040
.030
.040
T6 6
SEE NOTE 5

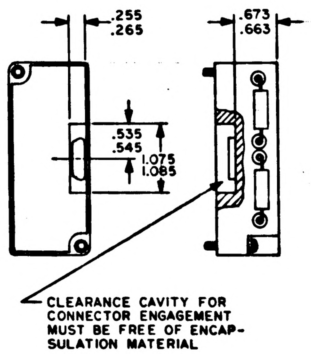
SECTION A-A
WITH ENCAPSULATION REMOVED


SOLDER
6 PLACES
SEE NOTE 4
B
R14 22
SEE NOTES 12 AND 19
R28 22
SEE NOTES 12 AND 19
R42 22
SEE NOTES 12 AND 19
R14
R28
R42
2
1
B
23
24
25

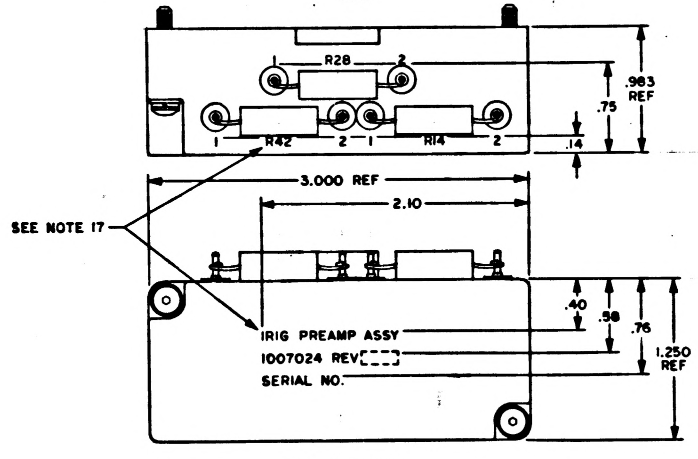

R3 18
R4 18
FT24
C1 11
SEE NOTE 9
R7 20
R8 20
FT3
FT1
FT5
FT4
R6 21
R12 17
E3
R13 16
R1 15
E4
R24 19
E2
FT10
SEE NOTE 5
T4 6
R25 19
SEE NOTE 6
T3 7
R27 16
E8
SEE DETAIL A
FT23
E10
R15 15
E14
R20 21
E16
R41 16
FT13
R29 15
E15
R34 21
FT22
R32 18
FT18
R40
FT21
SEE NOTE 9
C5 11
SEE NOTE 6
T5 7
FT20
FT19
C6 12
SEE NOTE 10
R5
FT7
FT6
R9
E20
CR1
FT8
R2
FT2
E19
R23
FT9
FT11
R22
C4 12
SEE NOTE 10
R26 17
C3 11
SEE NOTE 9
R16
E9
FT12
CR2
FT14
R30
CR3
R37
R19
R33
FT16
FT15
FT17
BRN
YEL
BLU
GRN
BLK
T1
T2
T5

SECTION B-B

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND 1002003
3. ALL WELDS TO BE PER ND 1002005
4. SOLDER PER MIL-S-6872
5. BOND FIND NO. 6 TO FIND NO. 2 PER ND 1002004
6. BOND FIND NO. 7 TO FIND NO. 3 PER ND 1002004
7. BOND FIND NO. 8 TO FIND NO. 3 PER ND 1002004
8. BOND FIND NO. 9 TO FIND NO. 3 PER ND 1002004
9. BOND FIND NO. 11 TO FIND NO. 2 PER ND 1002004
10. BOND FIND NO. 12 TO FIND NO. 2 PER ND 1002004
11. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND 1002004
12. BOND FIND NO. 22 TO FIND NO. 1 PER ND 1002004
13. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
14. DIPCOAT PER ND 1002068 PRIOR TO ENCAPSULATION
15. ENCAPSULATE MODULE PER ND 1002106
16. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
17. MARK .060 TO .100 HIGH BLACK PER ND 1002019
18. AR DENOTES AS REQUIRED
19. R14, R28 AND R42 TO BE SELECTED
20. K DENOTES CATHODE END OF DIODE
21. SPARE LEADS FROM FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH


.255
.265
.673
.663
.535
.545
1.075
1.085
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 1:1


R28
R42
R14
1
2
.983 REF
.75
.14
3.000 REF
2.10
SEE NOTE 17
.40
.58
.76
1.250 REF
IRIG PREAMP ASSY
1007024 REV
SERIAL NO.

MARKING VIEWS
SCALE: 2:1

☒	1010021	SCHEMATIC	REF
AR	1006776-22	INSULATION, SLEEVING, ELEC	28
AR	1006787-2	WIRE, ELECTRICAL	27
AR	1006757-1	WIRE, ELECTRICAL	26
2	MS35338-78	WASHER, LOCK	25
2	MS15795-303	WASHER, FLAT	24
2	1008002-1	SCREW, EXT RELIEVED BODY	23
3	1010363	RESISTOR (SEE NOTE 19)	22
3	1010363-771	RESISTOR	21
6	1010363-459	RESISTOR	20
6	1010363-173	RESISTOR	19
6	1010363-1	RESISTOR	18
3	1006750-80	RESISTOR	17
3	1006750-69	RESISTOR	16
6	1006750-63	RESISTOR	15
3	1006750-52	RESISTOR	14
3	1006750-32	RESISTOR	13
3	1010359-23	CAPACITOR	12
3	1010359-17	CAPACITOR	11
3	1010372-15	DIODE	10
6	1010266	TRANSISTOR	9
3	1010252-001	TRANSISTOR	8
3	1010324	TRANSFORMER	7
3	1010291	TRANSFORMER	6
1	1010318-4	CONNECTOR, RECP, ELECTRICAL	5
3	1008053	SPACER	4
1	1008052	WIRING BOARD, BOTTOM	3
1	1008051	WIRING BOARD, TOP	2
1	1007026	HOUSING, INSEPARABLE ASSY	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

MASTER

	DL 1000001
1000005	DL 1000201
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ±.03 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN Ken Healy DATE 3-12-63
CHECKED C.P. Kreg 15 ... 63
APPROVAL D.A. ... 3-25-63
APPROVAL S.C. Smith 3-26-63
NASA APPROVAL W. J. ... 3-27-63
MIT APPROVAL ... 27 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

IRIG PREAMP ASSY

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	E	1007024

SCALE 4:1 WT SHEET 1 OF 1

1007024

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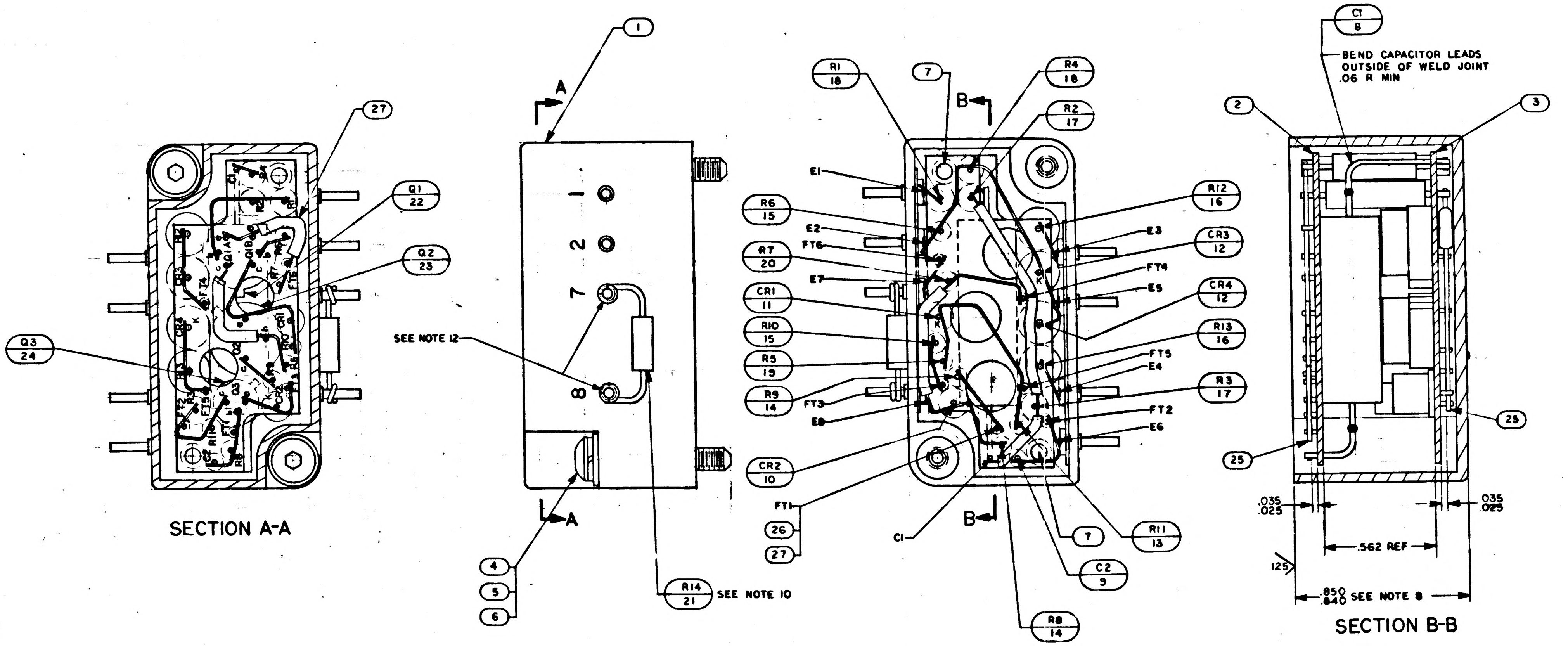
REVISIONS TDRR 0058

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01182	5/2/63	SCS. WK



27
Q1 22
Q2 23
Q3 24
1
A
A
1
2
7
8
SEE NOTE 12
4
5
6
R14 21
SEE NOTE 10
R1 18
7
B
R4 18
R2 17
E1
R6 15
E2
FT6
R7 20
E7
CR1 11
R10 15
R5 19
R9 14
FT3
E8
CR2 10
FT1
26
27
C1
B
7
C2 9
R11 13
R8 14
R12 16
E3
CR3 12
FT4
E5
CR4 12
R13 16
FT5
E4
R3 17
FT2
E6
C1 8
BEND CAPACITOR LEADS OUTSIDE OF WELD JOINT .06 R MIN
2
3
25
25
.035 .025
.035 .025
.562 REF
.125
.850 .840 SEE NOTE 8

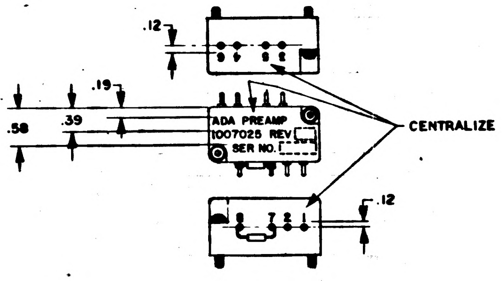
SECTION A-A

SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIRE PER ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NUMBERS 22,23,AND 24 TO FIND NO. 3 PER ND-1002004
5. AFTER WELDING TRIM ALL LEADS .005/.015 BEYOND RIBBON
6. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
7. CENTRALIZE MODULE IN HOUSING, WELD E1 THRU E8, AND ENCAPSULATE PER ND-1002106
8. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
9. MARK CHARACTERS .060/.100 HIGH BLACK PER ND-1002019
10. R14 TO BE SELECTED BY ELECTRICAL TEST FROM SELECTION CHART.
11. AR DENOTES AS REQUIRED
12. SOLDER PER MIL-S-6872
13. K DENOTES CATHODE SIDE OF DIODE
14. DASHED LINES ON FIND NOS.2&3 INDICATE INSULATION SLEEVING.

R14		
1010369-94		360K
	-95	390K
	-96	430K
	-97	470K
	-98	510K
	-99	560K
	-100	620K
	-101	680K
	-102	750K
	-103	820K
	-104	910K
	-105	1000K
	-106	1100K
	-107	1200K
	-108	1300K
	-109	1500K



.12
.19
.58
.39
ADA PREAMP
1007025 REV
SER NO.
CENTRALIZE
.12

SEE NOTE 9
MARKING VIEW
SCALE 1/1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010022	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING ELECTRICAL	27
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	26
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	25
1	1010397	TRANSISTOR	24
1	1010396	TRANSISTOR	23
1	1010252	TRANSISTOR	22
1	SEE NOTE 10	RESISTOR	21
1	1010369-98	RESISTOR	20
1	1010369-96	RESISTOR	19
2	1010364-501	RESISTOR	18
2	1010321-398	RESISTOR	17
2	1010312-030	RESISTOR	16
2	1006750-64	RESISTOR	15
2	1006750-63	RESISTOR	14
1	1006750-60	RESISTOR	13
2	1010265-012	DIODE	12
1	1010372-20	DIODE	11
1	1010372-1	DIODE	10
1	1006777-24	CAPACITOR	9
1	1010320-1	CAPACITOR	8
2	1008043	SPACER	7
2	MS35338-78	WASHER, LOCK	6
2	MS15795-303	WASHER, FLAT	5
2	1008002-1	SCREW, EXTERNALLY RELIEVED BODY	4
1	1008048	WIRING BOARD B	3
1	1008047	WIRING BOARD A	2
1	1007023	HOUSING ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
	DL1000201
1000005	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± // DECIMALS ± .03 ANGLES ± //
DO NOT SCALE THIS DRAWING
MATERIAL //
HEAT TREATMENT //
FINAL FINISH //

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN R. Sitrak DATE 25FEB63
CHECKED [illegible]
APPROVAL [illegible] 5 MAR 63
APPROVAL [illegible] 3/5/63
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 13 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PREAMP ASSY —
(STABLE MEMBER)

CODE IDENT NO. SIZE E NASA DRAWING NO 1007025
SCALE 4/1 WT SHEET 1 OF 1

1007025 A

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REVISIONS TDRR 0058			
SYM	DESCRIPTION	DATE	APPROVAL
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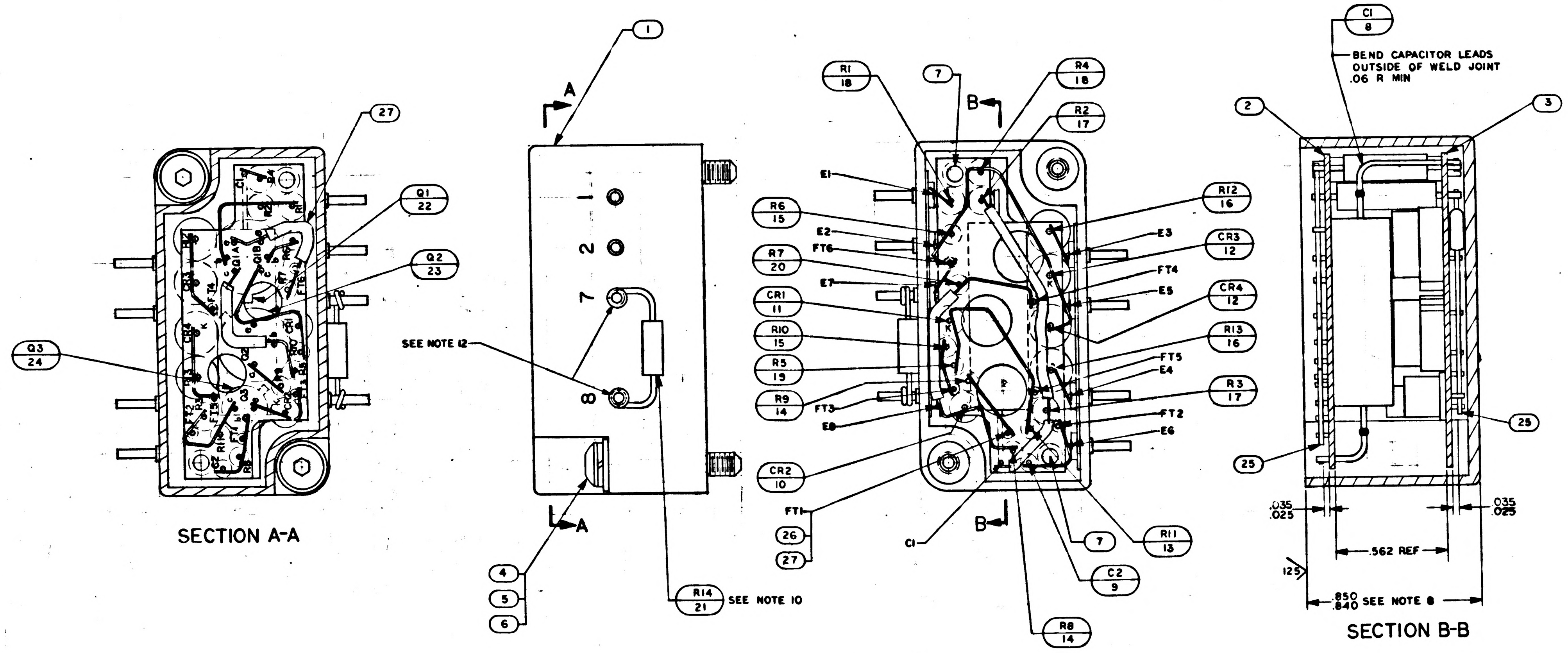
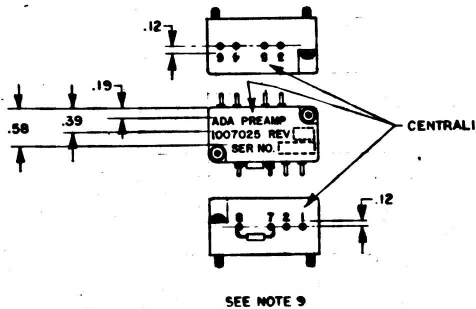
B	REVISED PER TDRR 01412	5-29-63	


SECTION A-A
27
Q1 22
Q2 23
Q3 24
1
A
A
7
2
1
8
SEE NOTE 12
4
5
6
R14 21 SEE NOTE 10
R1 18
7
B
R4 18
R2 17
E1
R6 15
E2
FT6
R7 20
E7
CR1 11
R10 15
R5 19
R9 14
FT3
E8
CR2 10
FT1
26
27
C1
B
R12 16
E3
CR3 12
FT4
E5
CR4 12
R13 16
FT5
E4
R3 17
FT2
E6
R11 13
7
C2 9
R8 14
C1 8
BEND CAPACITOR LEADS OUTSIDE OF WELD JOINT .06 R MIN
2
3
25
25
.035 .025
.035 .025
.562 REF
.125
.850 .840 SEE NOTE 8
SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIRE PER ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NUMBERS 22,23,AND 24 TO FIND NO. 3 PER ND-1002004
5. AFTER WELDING TRIM ALL LEADS .005/.015 BEYOND RIBBON
6. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
7. CENTRALIZE MODULE IN HOUSING, WELD E1 THRU E8,AND ENCAPSULATE PER ND-1002106
8. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
9. MARK CHARACTERS .060/.100 HIGH BLACK PER ND-1002019
10. R14 TO BE SELECTED BY ELECTRICAL TEST FROM SELECTION CHART.
11. AR DENOTES AS REQUIRED
12. SOLDER PER MIL-S-6872
13. K DENOTES CATHODE SIDE OF DIODE
14. DASHED LINES ON FIND NOS.2&3 INDICATE INSULATION SLEEVING.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.19
.39
.58
ADA PREAMP
1007025 REV
SER NO.
CENTRALIZE
.12

SEE NOTE 9
MARKING VIEW
SCALE 1/1

R14	
1010369-94	360K
-95	390K
-96	430K
-97	470K
-98	510K
-99	560K
-100	620K
-101	680K
-102	750K
-103	820K
-104	910K
-105	1000K
-106	1100K
-107	1200K
-108	1300K
-109	1500K

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010022	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING ELECTRICAL	27
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	26
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	25
1	1010397	TRANSISTOR	24
1	1010396	TRANSISTOR	23
1	1010252	TRANSISTOR	22
1	SEE NOTE 10	RESISTOR	21
1	1010369-98	RESISTOR	20
1	1010369-96	RESISTOR	19
2	1010364-501	RESISTOR	18
2	1010321-398	RESISTOR	17
2	1010312-030	RESISTOR	16
2	1006750-64	RESISTOR	15
2	1006750-63	RESISTOR	14
1	1006750-60	RESISTOR	13
2	1010265-012	DIODE	12
1	1010372-20	DIODE	11
1	1010372-1	DIODE	10
1	1006777-24	CAPACITOR	9
1	1010320-13	CAPACITOR	8
2	1008043	SPACER	7
2	MS35338-78	WASHER, LOCK	6
2	MS15795-303	WASHER, FLAT	5
2	1008002-1	SCREW, EXTERNALLY RELIEVED BODY	4
1	1008048	WIRING BOARD B	3
1	1008047	WIRING BOARD A	2
1	1007023	HOUSING ASSY	1

LIST OF MATERIALS

	DL1000201
1000005	DL1000001
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN DATE 25FEB63
CHECKED
APPROVAL 5 MAR
APPROVAL 3/5/63
NASA APPROVAL
MIT APPROVAL 8 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

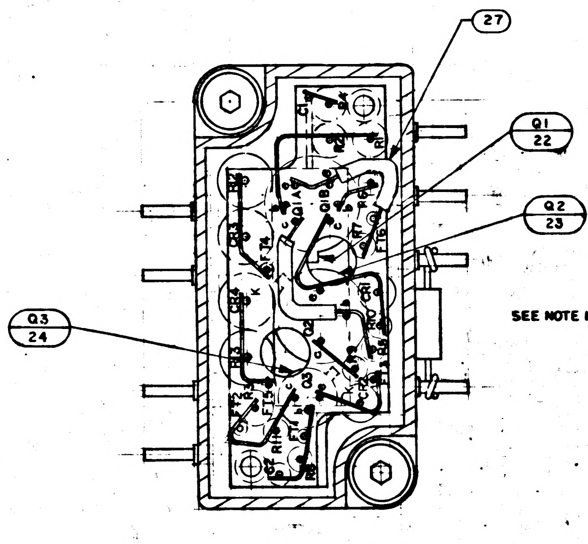
ADA PREAMP ASSY (STABLE MEMBER)

CODE IDENT NO. | SIZE E | NASA DRAWING NO. 1007025
SCALE 4/1 | WT | SHEET 1 OF 1

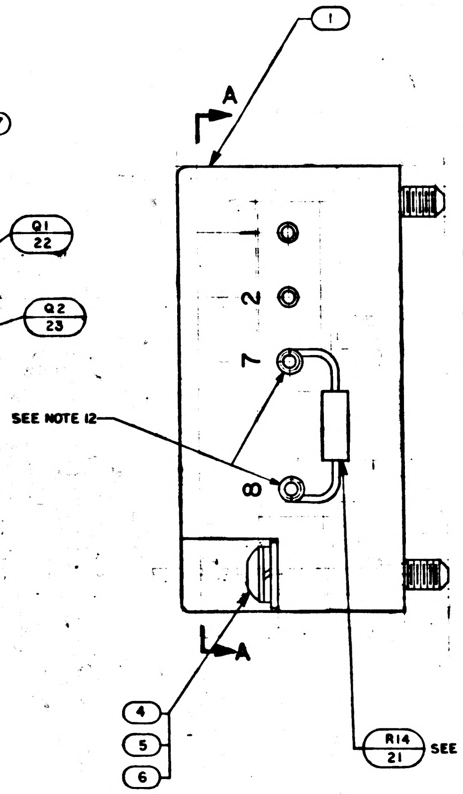
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 0056

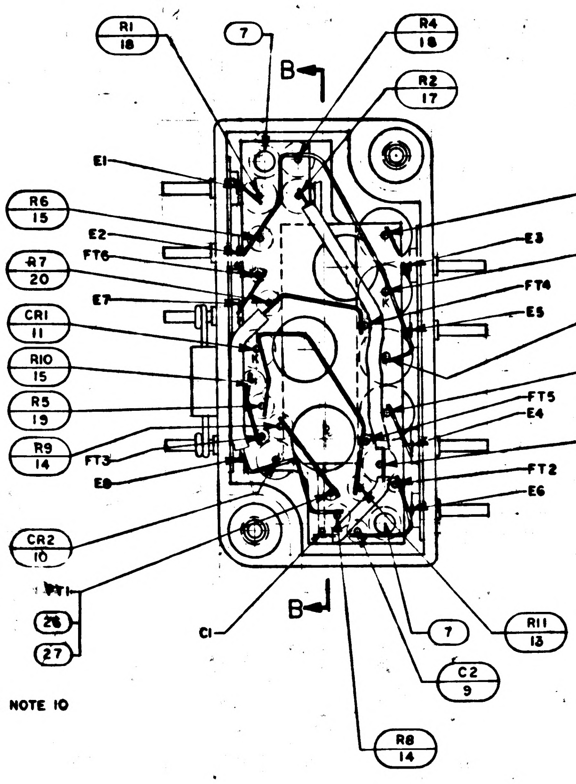
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01182	5/2/63	SCS. WR
B	REVISED PER TDRR 01412	5-29-63	L.C.L. WR
C	REVISED PER TDRR 050 80	10 Dec 63	DL WR

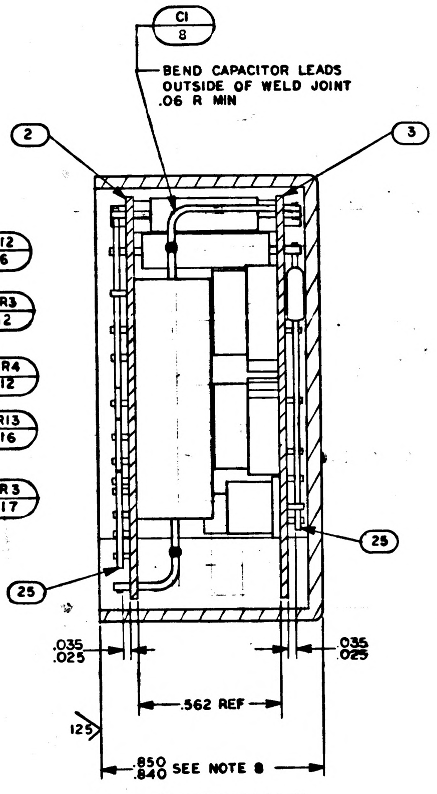


SECTION A-A



SEE NOTE 10



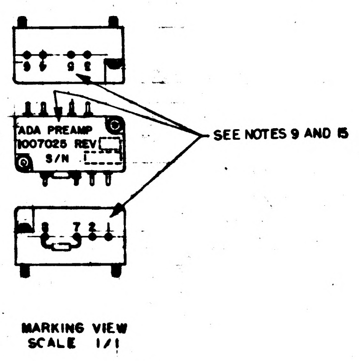


SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIRE PER ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NUMBERS 22,23,AND 24 TO FIND NO. 3 PER ND-1002004
5. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MINIMUM
6. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
7. CENTRALIZE MODULE IN HOUSING, WELD E1 THRU E8, AND ENCAPSULATE PER ND-1002106
8. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
9. SERIALIZE AND MARK CHARACTERS .100/.140 HIGH BLACK PER ND 1002023
10. R14 TO BE SELECTED BY ELECTRICAL TEST FROM SELECTION CHART.
11. AR DENOTES AS REQUIRED
12. SOLDER PER MIL-S-6872
13. ~~K DENOTES CATHODE SIDE OF DIODE~~
14. DASHED LINES ON FIND NOS.2&3 INDICATE INSULATION SLEEVING.
15. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACES INDICATED
16. INSPECT PER PS 1007025
17. TEST PER FTM 1007025

R14		
1010369-94		360K
	-95	390K
	-96	430K
	-97	470K
	-98	510K
	-99	560K
	-100	620K
	-101	680K
	-102	750K
	-103	820K
	-104	910K
	-105	1000K
	-106	1100K
	-107	1200K
	-108	1300K
	-109	1500K



SEE NOTES 9 AND 15

MARKING VIEW
SCALE 1/1

MASTER

	1010022	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING ELECTRICAL	27
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	26
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	25
1	1010397	TRANSISTOR	24
1	1010396	TRANSISTOR	23
1	1010252	TRANSISTOR	22
1	SEE NOTE 10	RESISTOR	21
1	1010369-98	RESISTOR	20
1	1010369-96	RESISTOR	19
2	1010364-501	RESISTOR	18
2	1010321-398	RESISTOR	17
2	1010312-030	RESISTOR	16
2	1006750-64	RESISTOR	15
2	1006750-63	RESISTOR	14
1	1006750-60	RESISTOR	13
2	1010265-012	DIODE	12
1	1010372-20	DIODE	11
1	1010372-1	DIODE	10
1	1006777-24	CAPACITOR	9
1	1010320-13	CAPACITOR	8
2	1008043	SPACER	7
2	MS35338-78	WASHER, LOCK	6
2	MS15795-303	WASHER, FLAT	5
2	1008002-1	SCREW, EXTERNALLY RELIEVED BODY	4
1	1008048	WIRING BOARD, BOTTOM	3
1	1008047	WIRING BOARD, TOP	2
1	1007023	HOUSING ASSY	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
	DL1000201
1000005	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± .03 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN R. Sitcrob DATE 28 FEB 63
CHECKED R.P. Kingsley
APPROVAL L.F. Sidlak 5 Mar
APPROVAL L.C. Smith 3/5/63
NASA APPROVAL E.J. Sevcik 7 March 1963
MIT APPROVAL WKeffer 13 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

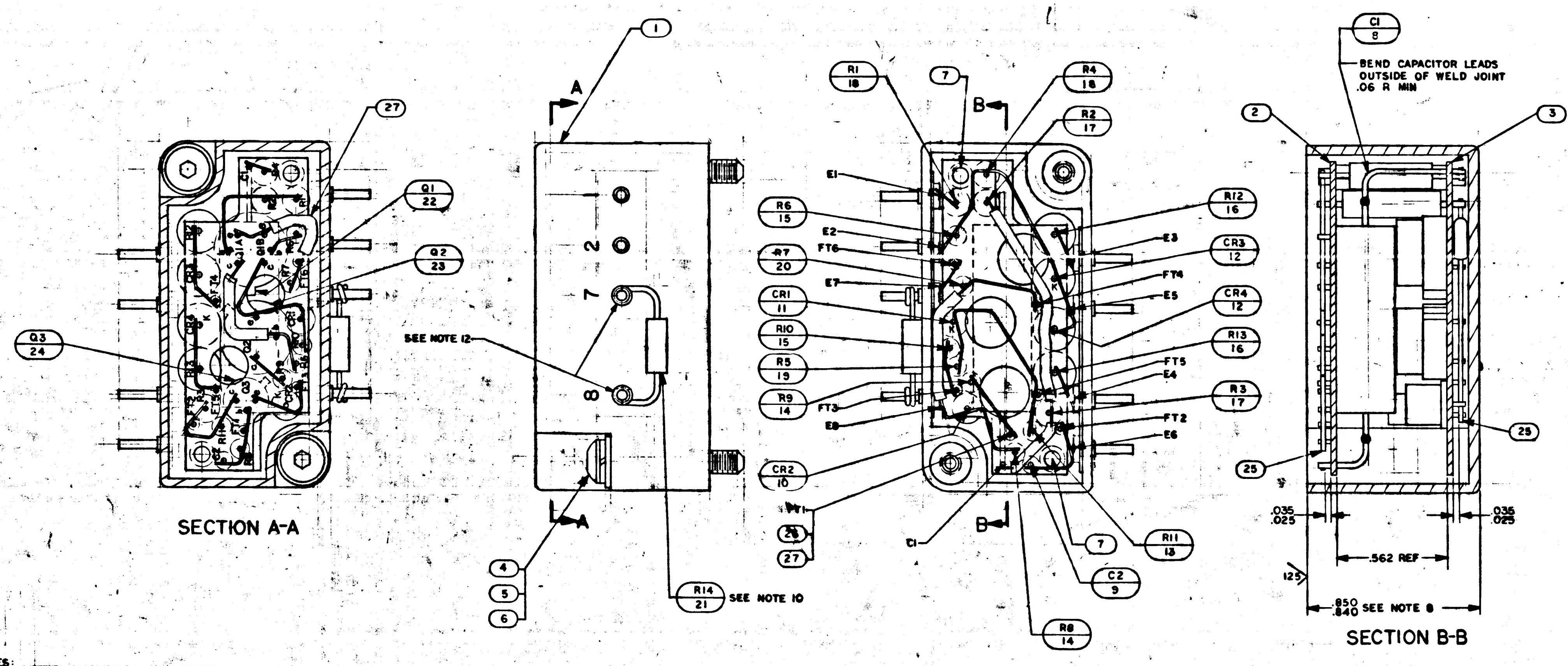
ADA PREAMP ASSY
(STABLE MEMBER)

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007025
SCALE 4/1
WT
SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

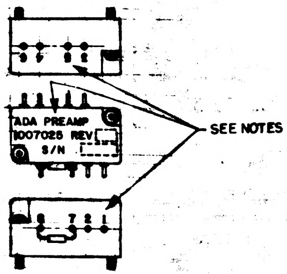
REVISIONS TDRR 0058

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 0482	5/2/63	S.C.S. WK
B	REVISED PER TDRR 01412	5-29-63	L.C.A. WK
C	REVISED PER TDRR 05080	17 Dec 63	[illegible]
D	REVISED PER TDRR 05327	12-9-63	[illegible] WK


1
27
Q1
22
Q2
23
Q3
24
SECTION A-A
A
A
1
2
7
8
SEE NOTE 12
4
5
6
R14
21
SEE NOTE 10
R1
18
7
B
R4
18
R2
17
E1
R6
15
E2
FT6
R7
20
E7
CR1
11
R10
15
R5
19
R9
14
FT3
E8
CR2
10
FT1
26
27
C1
B
7
C2
9
R8
14
R11
13
R12
16
E3
CR3
12
FT4
E5
CR4
12
R13
16
FT5
E4
R3
17
FT2
E6
C1
8
BEND CAPACITOR LEADS OUTSIDE OF WELD JOINT .06 R MIN
2
3
25
25
.035
.025
.036
.025
.562 REF
125
.850
.840 SEE NOTE 8
SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIRE PER ND-1002088
3. WELD PER ND-1002005
4. BOND FIND NUMBERS 22,23,AND 24 TO FIND NO. 3 PER ND-1002004
5. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MINIMUM
6. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
7. CENTRALIZE MODULE IN HOUSING, WELD E1 THRU E8, AND ENCAPSULATE PER ND-1002106
8. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
9. SERIALIZE AND MARK CHARACTERS .100/.140 HIGH BLACK PER ND 1002023
10. R14 TO BE SELECTED BY ELECTRICAL TEST FROM SELECTION CHART.
11. AR DENOTES AS REQUIRED
12. SOLDER PER MIL-S-6872
13. K DENOTES CATHODE SIDE OF DIODE
14. DASHED LINES ON FIND NOS. 2 & 3 INDICATE INSULATION SLEEVING.
15. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACES INDICATED
16. INSPECT PER PS 1007025
17. TEST PER FTM 1007025


ADA PREAMP
1007026 REV
S/N
SEE NOTES 9 AND 15

MARKING VIEW
SCALE 1/1

R14	
1010369-94	360K
-95	390K
-96	430K
-97	470K
-98	510K
-99	560K
-100	620K
-101	680K
-102	750K
-103	820K
-104	910K
-105	1000K
-106	1100K
-107	1200K
-108	1300K
-109	1500K

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010022	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING ELECTRICAL	27
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	26
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	25
1	1010397	TRANSISTOR	24
1	1010345-1	TRANSISTOR	23
1	1010252	TRANSISTOR	22
1	SEE NOTE 10	RESISTOR	21
1	1010369-98	RESISTOR	20
1	1010369-96	RESISTOR	19
2	1010364-501	RESISTOR	18
2	1010321-398	RESISTOR	17
2	1010312-030	RESISTOR	16
2	1006750-64	RESISTOR	15
2	1006750-63	RESISTOR	14
1	1006750-60	RESISTOR	13
2	1010265-012	DIODE	12
1	1010372-20	DIODE	11
1	1010372-1	DIODE	10
1	1006777-24	CAPACITOR	9
1	1010320-13	CAPACITOR	8
2	1008043	SPACER	7
2	MS35338-78	WASHER, LOCK	6
2	MS15795-303	WASHER, FLAT	5
2	1008002-1	SCREW, EXTERNALLY RELIEVED BODY	4
1	1008048	WIRING BOARD, BOTTOM	3
1	1008047	WIRING BOARD, TOP	2
1	1007023	HOUSING ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
	DL1000201
1000005	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± // DECIMALS ± .03 ANGLES ± //
DO NOT SCALE THIS DRAWING
MATERIAL //
HEAT TREATMENT //
FINAL FINISH //

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO.
CONTRACT
DRAWN R. [illegible] DATE 25FEB63
CHECKED R. P. Kingsbury [illegible]
APPROVAL [illegible] 5 Mar 63
APPROVAL [illegible] 3/5/63
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 13 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PREAMP ASSY
(STABLE MEMBER)

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007029
SCALE 4/1
WT
SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

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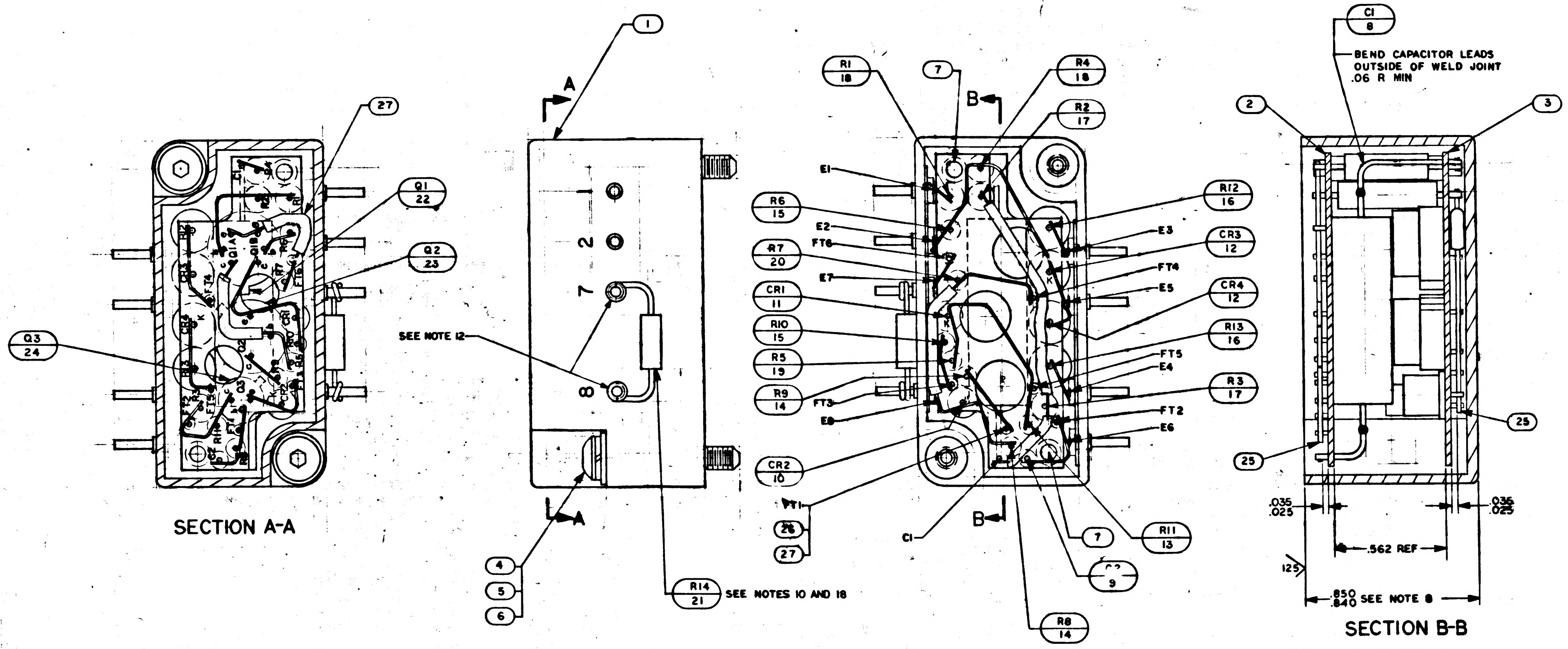
REVISIONS TDRR 0056

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01182	5/2/63	SCS WK
B	REVISED PER TDRR 01412	5-20-63	WK
C	REVISED PER TDRR 05080		WK
D	REVISED PER TDRR 05327	12-9-63	WK
E	REVISED PER TDRR 06264	Feb 64	WK



SECTION A-A

SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIRE PER ND-1002008
3. WELD PER ND-1002005
4. BOND FIND NUMBERS 22,23,AND 24 TO FIND NO. 3 PER ND-1002004
5. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MINIMUM
6. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
7. CENTRALIZE MODULE IN HOUSING, WELD E1 THRU E8,AND ENCAPSULATE PER ND-1002106
8. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
9. SERIALIZE AND MARK CHARACTERS .100/.140 HIGH BLACK PER ND 1002023
10. R14 TO BE SELECTED BY ELECTRICAL TEST FROM SELECTION CHART.
11. AR DENOTES AS REQUIRED
12. SOLDER PER MIL-S-6872
13. ✱ DENOTES CATHODE SIDE OF DIODE
14. DASHED LINES ON FIND NOS.2&3 INDICATE INSULATION SLEEVING.
15. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACES INDICATED
16. INSPECT PER PS 1007025
17. TEST PER FTM 1007025
18. BOND FIND NO.21 TO FIND NO.1 PER ND 1002004

R14	
1010369-94	360K
-95	390K
-96	430K
-97	470K
-98	510K
-99	560K
-100	620K
-101	680K
-102	750K
-103	820K
-104	910K
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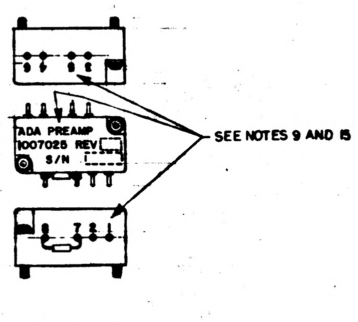
-107	1200K
-108	1300K
-109	1500K



MARKING VIEW
SCALE 1/1

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1010022	SCHEMATIC	REF
AR	1006776-22	INSULATION SLEEVING ELECTRICAL	27
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	26
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	25
1	1010397	TRANSISTOR	24
1	1010345-1	TRANSISTOR	23
1	1010252	TRANSISTOR	22
1	SEE NOTE 10	RESISTOR	21
1	1010369-98	RESISTOR	20
1	1010369-96	RESISTOR	19
2	1010364-501	RESISTOR	18
2	1010321-398	RESISTOR	17
2	1010312-030	RESISTOR	16
2	1006750-64	RESISTOR	15
2	1006750-63	RESISTOR	14
1	1006750-60	RESISTOR	13
2	1010265-012	DIODE	12
1	1010372-20	DIODE	11
1	1010372-1	DIODE	10
1	1006777-24	CAPACITOR	9
1	1010320-13	CAPACITOR	8
2	1008043	SPACER	7
2	MS35338-78	WASHER, LOCK	6
2	MS15795-303	WASHER, FLAT	5
2	1008002-1	SCREW, EXTERNALLY RELIEVED BODY	4
1	1008048	WIRING BOARD, BOTTOM	3
1	1008047	WIRING BOARD, TOP	2
1	1007023	HOUSING ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
	DL1000201
1000005	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± // DECIMALS ±.03 ANGLES ± //
DO NOT SCALE THIS DRAWING
MATERIAL //
HEAT TREATMENT //
FINAL FINISH //

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN R. Tilton DATE 25FEB63
CHECKED R.P. Kingsley
APPROVAL C.F. Sindale 5 March
APPROVAL L.C. Smith 3/5/63
NASA APPROVAL
MIT APPROVAL 13 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PREAMP ASSY
(STABLE MEMBER)

CODE IDENT NO. | SIZE E | NASA DRAWING NO. 1007025
SCALE 4/1 | WT | SHEET 1 OF 1

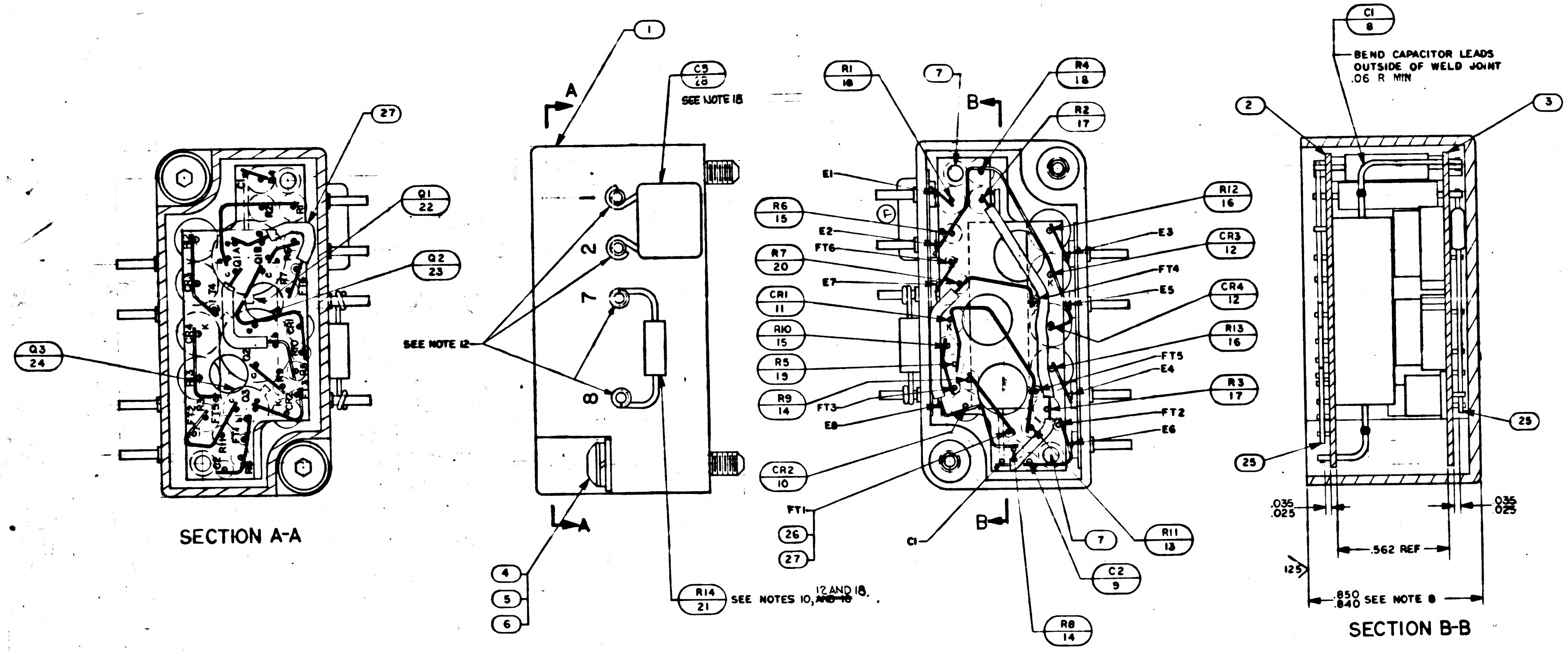
1007025 E

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 2056

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01182	5/2/63	SCS WK
B	REVISED PER TDRR 01412	[illegible]	[illegible] WK
C	REVISED PER TDRR 05080	[illegible]	[illegible]
D	REVISED PER TDRR 05327	12-9-63	[illegible]
E	REVISED PER TDRR 06264	[illegible] 64	[illegible]
F	REVISED PER TDRR 08496	23 [illegible]	[illegible] AU



A
1
C5
28
SEE NOTE 18
27
Q1
22
Q2
23
Q3
24
SEE NOTE 12
1
2
7
8
4
5
6
R14
21
SEE NOTES 10, 12 AND 18.
R1
10
7
B
R4
18
R2
17
E1
R6
15
E2
FT6
R7
20
E7
CR1
11
R10
15
R5
19
R9
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FT3
E8
CR2
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FT1
26
27
C1
R8
14
C2
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7
R11
13
R12
16
E3
CR3
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FT4
E5
CR4
12
R13
16
FT5
E4
R3
17
FT2
E6
K
C1
8
BEND CAPACITOR LEADS OUTSIDE OF WELD JOINT .06 R MIN
2
3
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25
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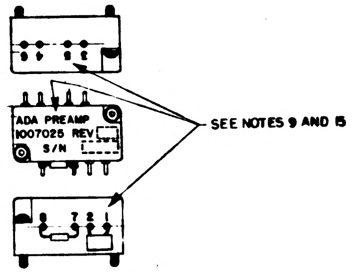
.025
.035
.025
.562 REF
125
.850
.840 SEE NOTE 8

SECTION A-A

SECTION B-B



ADA PREAMP
1007025 REV
S/N
8
7
2
1
SEE NOTES 9 AND 15

MARKING VIEW
SCALE 1/1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIRE PER ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NUMBERS 22,23,AND 24 TO FIND NO. 3 PER ND-1002004
5. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MINIMUM
6. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
7. CENTRALIZE MODULE IN HOUSING, WELD E1 THRU E8,AND ENCAPSULATE PER ND-1002106
8. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
9. SERIALIZE AND MARK CHARACTERS .100/.140 HIGH BLACK PER ND 1002023
10. R14 TO BE SELECTED BY ELECTRICAL TEST FROM SELECTION CHART.
11. AR DENOTES AS REQUIRED
12. SOLDER PER MIL-S-6872
13. K DENOTES CATHODE SIDE OF DIODE
14. DASHED LINES ON FIND NOS.2&3 INDICATE INSULATION SLEEVING.
15. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACES INDICATED
16. INSPECT PER PS 1007025
17. TEST PER FTM 1007025
18. BOND FIND NO.21 ~~TO FIND NO.1 PER ND 1002004~~ & NO. 28 TO FIND NO.1 PER ND1002004

R 14	
1010369-94	360K
-95	390K
-96	430K
-97	470K
-98	510K
-99	560K
-100	620K
-101	680K
-102	750K
-103	820K
-104	910K
-105	1000K
-106	1100K
-107	1200K
-108	1300K
-109	1500K

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1010022	SCHEMATIC	REF
1	1010359-29	CAPACITOR	28
AR	1006776-22	INSULATION SLEEVING ELECTRICAL	27
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	26
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	25
1	1010397	TRANSISTOR	24
1	1010345-1	TRANSISTOR	23
1	1010252	TRANSISTOR	22
1	SEE NOTE 10	RESISTOR	21
1	1010369-98	RESISTOR	20
1	1010369-96	RESISTOR	19
2	1010364-501	RESISTOR	18
2	1010321-398	RESISTOR	17
2	1010312-030	RESISTOR	16
2	1006750-64	RESISTOR	15
2	1006750-63	RESISTOR	14
1	1006750-60	RESISTOR	13
2	1010265-012	DIODE	12
1	1010372-20	DIODE	11
1	1010372-1	DIODE	10
1	1006777-24	CAPACITOR	9
1	1010320-13	CAPACITOR	8
2	1008043	SPACER	7
2	MS35338-78	WASHER, LOCK	6
2	MS15795-303	WASHER, FLAT	5
2	1008002-1	SCREW, EXTERNALLY RELIEVED BODY	4
1	1008048	WIRING BOARD, BOTTOM	3
1	1008047	WIRING BOARD, TOP	2
1	1007023	HOUSING ASSY	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
	DL1000201
1000005	DL1000001

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± // DECIMALS ± .03 ANGLES ± //
DO NOT SCALE THIS DRAWING
MATERIAL //
HEAT TREATMENT //
FINAL FINISH //

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN [illegible] DATE 25FEB63
CHECKED [illegible]
APPROVAL [illegible] 5 March
APPROVAL [illegible] 3/5/63
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 13 May 63

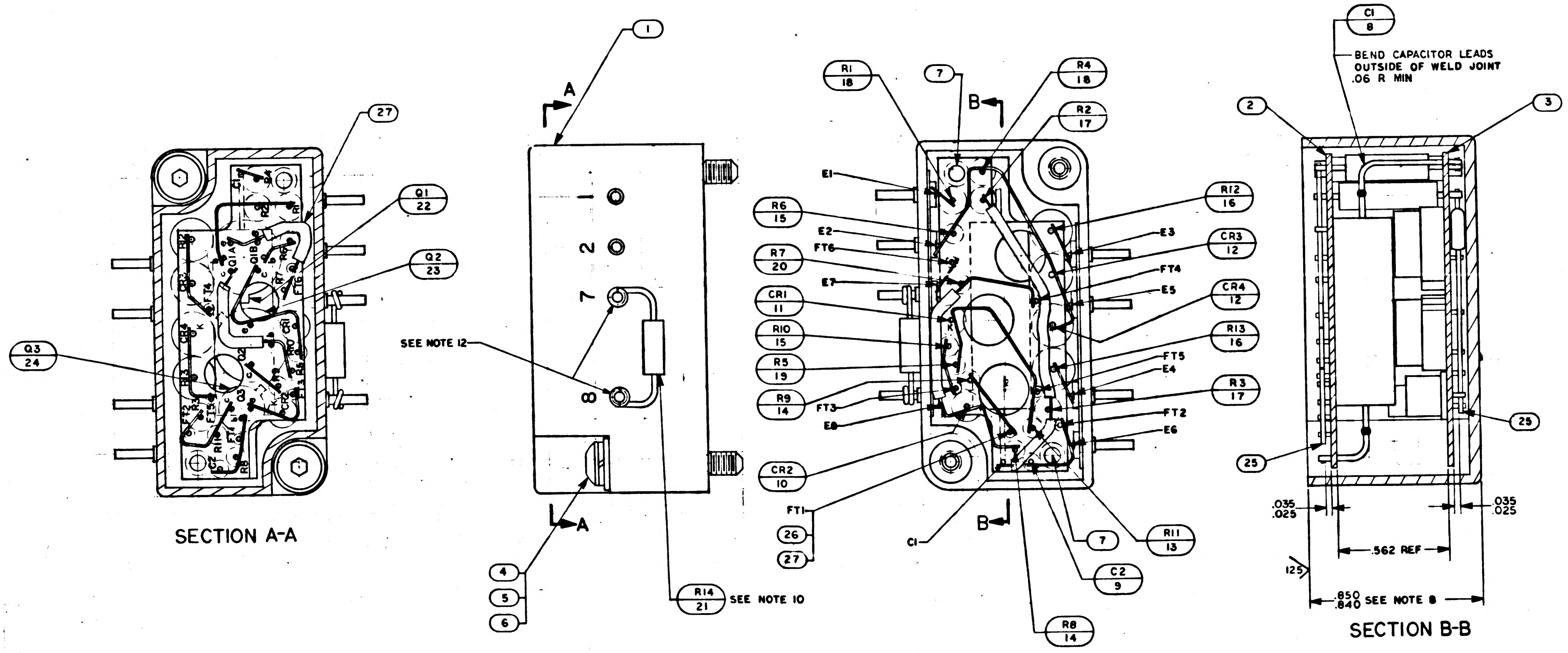
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PREAMP ASSY
(STABLE MEMBER)

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007025
SCALE 4/1
WT
SHEET 1 OF 1

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS TORR 0056			
SYM	DESCRIPTION	DATE	APPROVAL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Q1
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Q2
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Q3
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SEE NOTE 12
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R14
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SEE NOTE 10
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R4
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R7
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E7
CR1
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CR2
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C1
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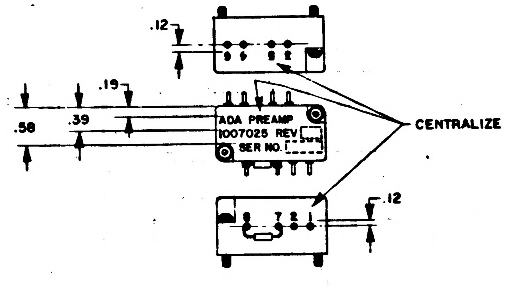
R12
16
E3
CR3
12
FT4
E5
CR4
12
R13
16
FT5
E4
R3
17
FT2
E6
7
R11
13
C2
9
R8
14
C1
8
BEND CAPACITOR LEADS
OUTSIDE OF WELD JOINT
.06 R MIN
2
3
25
25
.035
.025
.035
.025
.562 REF
125
.850
.840 SEE NOTE 8

SECTION A-A

SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. WIRE PER ND-1002003
3. WELD PER ND-1002005
4. BOND FIND NUMBERS 22,23,AND 24 TO FIND NO. 3 PER ND-1002004
5. AFTER WELDING TRIM ALL LEADS .005/.015 BEYOND RIBBON
6. DIP COAT PER ND-1002068 PRIOR TO ENCAPSULATION
7. CENTRALIZE MODULE IN HOUSING, WELD E1 THRU E8,AND ENCAPSULATE PER ND-1002106
8. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
9. MARK CHARACTERS .060/.100 HIGH BLACK PER ND-1002019
10. R14 TO BE SELECTED BY ELECTRICAL TEST (NOMINAL VALUE 750 K FIND NO. 21) SCD1010369
11. AR DENOTES AS REQUIRED
12. SOLDER PER MIL-S-6872
13. K DENOTES CATHODE SIDE OF DIODE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ADA PREAMP
1007025 REV
SER NO.
CENTRALIZE
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9
6
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2
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7
2
1

SEE NOTE 9
MARKING VIEW
SCALE 1/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1010022	SCHEMATIC	REF
AR	1002074 NO. 22	INSULATION SLEEVING ELECTRICAL	27
AR	1006787-2	WIRE, ELECTRICAL, NICKEL, IRON	26
AR	1006757-1	WIRE, ELECTRICAL, NICKEL, RECT	25
1	1010397	TRANSISTOR	24
1	1010396	TRANSISTOR	23
1	1010252	TRANSISTOR	22
1	SEE NOTE 10	RESISTOR	21
1	1010369-98	RESISTOR	20
1	1010369-96	RESISTOR	19
2	1010364-501	RESISTOR	18
2	1010321-302	RESISTOR	17
2	1010312-030	RESISTOR	16
2	1006750-64	RESISTOR	15
2	1006750-63	RESISTOR	14
1	1006750-60	RESISTOR	13
2	1010265-012	DIODE	12
1	1010372-20	DIODE	11
1	1010372-1	DIODE	10
1	1006777-24	CAPACITOR	9
1	1010320-	CAPACITOR	8
2	1008043	SPACER	7
2	MS35338-78	WASHER, LOCK	6
2	MS15795-303	WASHER, FLAT	5
2	1008002-1	SCREW, EXTERNALLY RELIEVED BODY	4
1	1008048	WIRING BOARD B	3
1	1008047	WIRING BOARD A	2
1	1007023	HOUSING ASSY	1

LIST OF MATERIALS

MASTER

	DL1000201
1000005	DL1000001
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS ± .03
ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN
DATE 25FEB63
CHECKED
APPROVAL 5 MARCH
APPROVAL 3/5/63
NASA APPROVAL
MIT APPROVAL 8 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ADA PREAMP ASSY
(STABLE MEMBER)

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007025
SCALE 4/1
WT
SHEET 1 OF 1

1007025

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G & N Specification
PS-1007025
18 February 1964
Class A Release
TDRR 06378

PROCUREMENT SPECIFICATION

FOR

ADA PREAMPLIFIER ASSEMBLY

(STABLE MEMBER)

Record of Revisions

Ⓜ

Revision Letter	TDRR No.	Pages Revised	Approvals		Date
			MIT	NASA	

This specification consists of page i to iii and 1 to 3 inclusive.

3.2 DESCRIPTION. The assembly shall be used in the Gimbal Mounted Electronics to amplify the signal from the ADA and apply the signal to the Gimbal Servo Amplifier.

3.3 FUNCTIONAL REQUIREMENTS. The assembly shall be capable of meeting functional requirements for an assembly temperature range of 35° to 60° c.

3.3.1 Electrical Inputs. The assembly shall perform as specified herein with the following electrical inputs:

a. DC Supply Voltage: 25 to 30 vdc, plus and minus
b. DC signal:0 to 30 mv dc, plus and minus
c. AC signal:0.2 to 1000 cps sine wave, 0 to 3.5 V rms.

3.3.2 DC Offset: With the input shorted,the DC output shall be less than ± 0.5 volt DC.

3.3.3 Gain. The gain shall be as follows:

a. DC Gain - The dc gain with both ± 30 mv dc signals applied to the input shall be 68 ± 5.
b. AC Gain - The ac gain with 3.5 mv rms input signals applied, shall be 1200 ± 150 at frequencies from 2 cps to 800 cps and not less than 740 at 0.2 and 1000 cps.

3.3.4 Phase Shift. With 27.5 vdc ± 5 percent supply voltages applied and a 3.5 mv rms ± 5 percent, 100 cps ± 5 percent signal applied to the input, the phase shift of the signal through the assembly shall be 180° ± 10°.

3.3.5 Dynamic Range. With a 100 cps ± 5 percent input signal of 11 mv rms, the output voltage shall be 11 V rms minimum and have a harmonic distortion < 5%.

3.3.6 Residual Noise. With the input terminals shorted to signal ground, the output noise shall be less than 5 mv rms.

3.4 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.4.1 Service Life

3.4.1.1 Operating Life. The assembly shall meet performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.4.1.2 Shelf Life. The assembly shall have a shelf life of at least 5 years, without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.4.2 Reliability. Design objectives require maximum reliability of the assembly during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 0.8 failures per million hours.

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REVISIONS TDRR 00668

SYM	DESCRIPTION	DATE	APPROVAL
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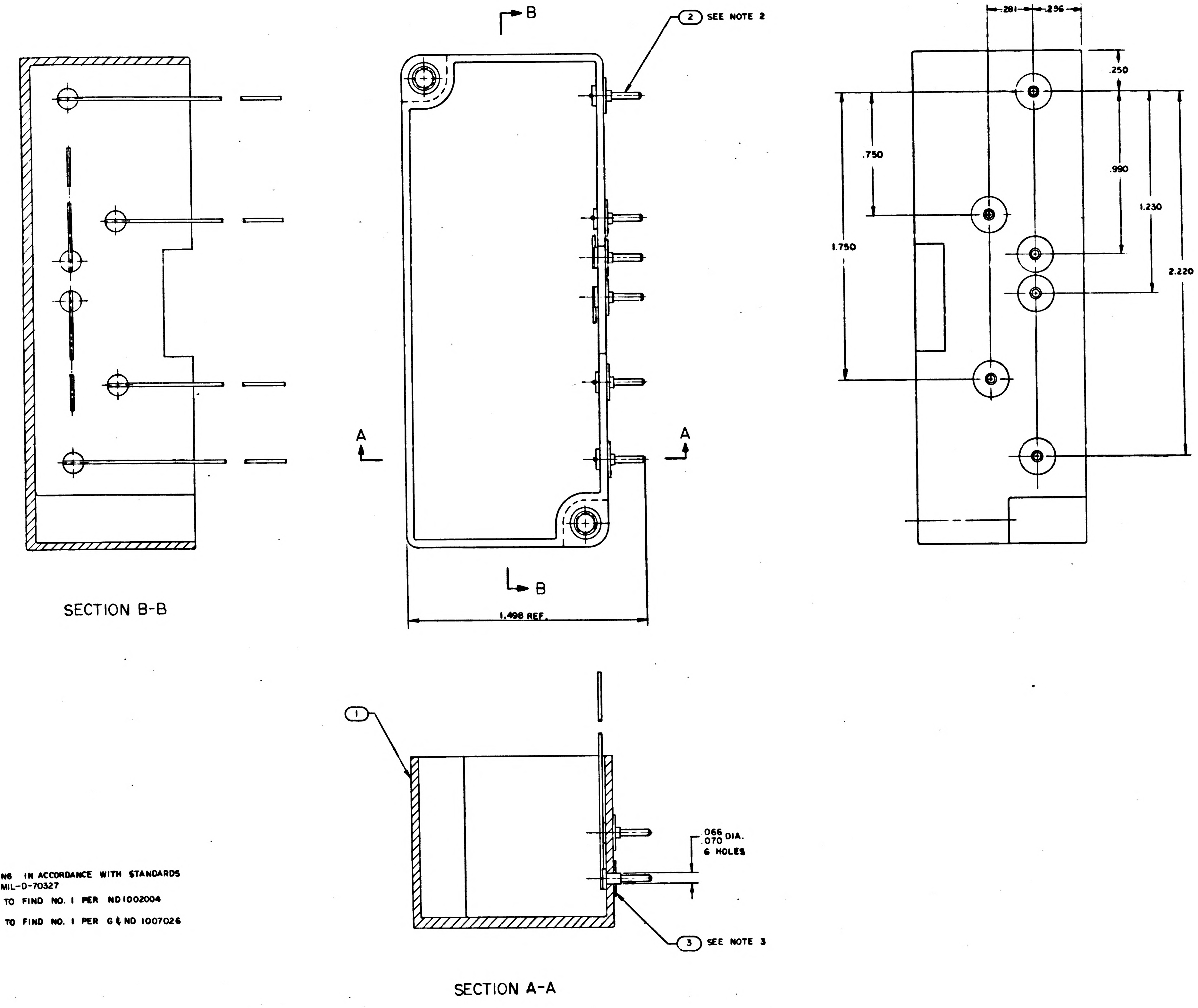


NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND FIND NO. 2 TO FIND NO. 1 PER ND1002004
3. BOND FIND NO. 3 TO FIND NO. 1 PER G&ND 1007026

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
6	1008054	DISK, INSULATOR	3
6	1007000-1	TERMINAL LUG ASSEMBLY	2
1	1007018	HOUSING MODULE IRIG PREAMP	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007024	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN Frank Miller DATE 1 MAR 63
CHECKED
APPROVAL
APPROVAL 3-25-63
NASA APPROVAL W J 3-27-63
MIT APPROVAL 27 Mar 63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

HOUSING ASSEMBLY
INSEPARABLE
IRIG PREAMP

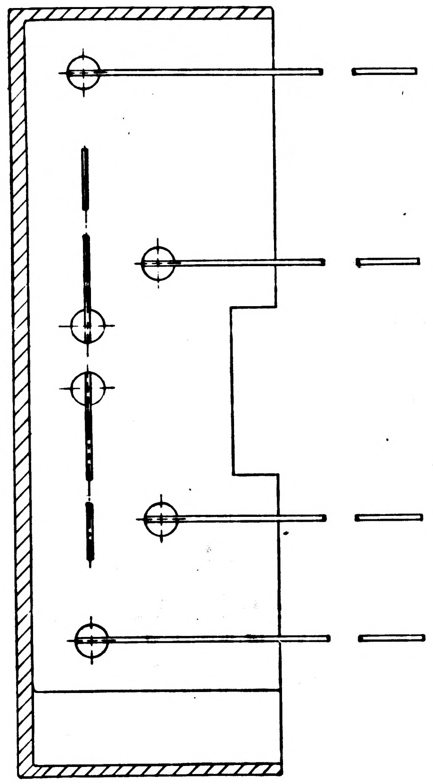
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007026
SCALE 4/1
WT
SHEET 1 OF 1

1007026 A

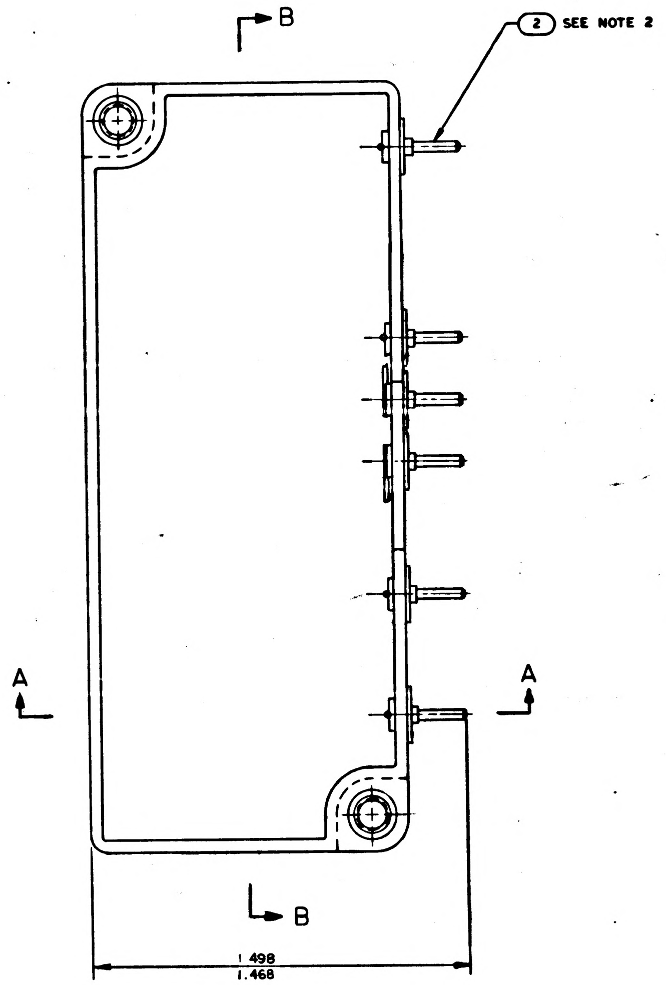
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

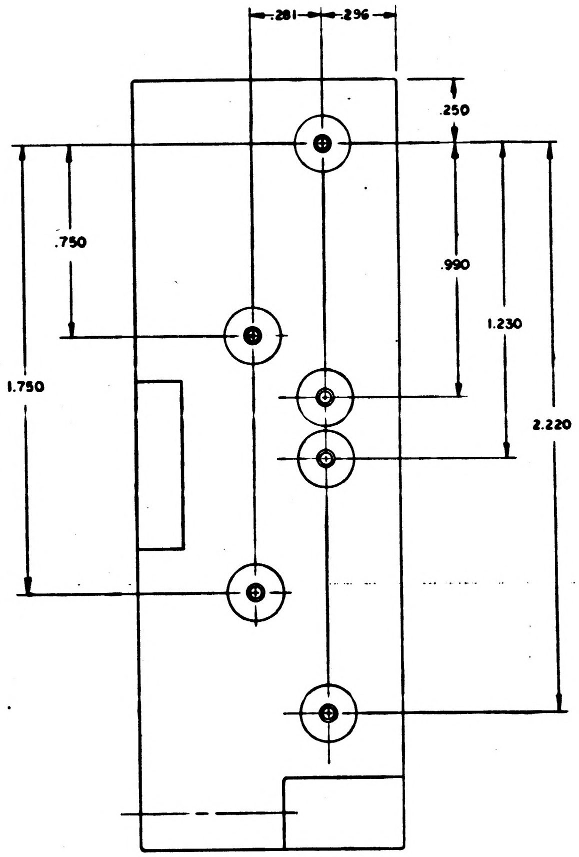
SYM	DESCRIPTION	DATE	APPROVAL

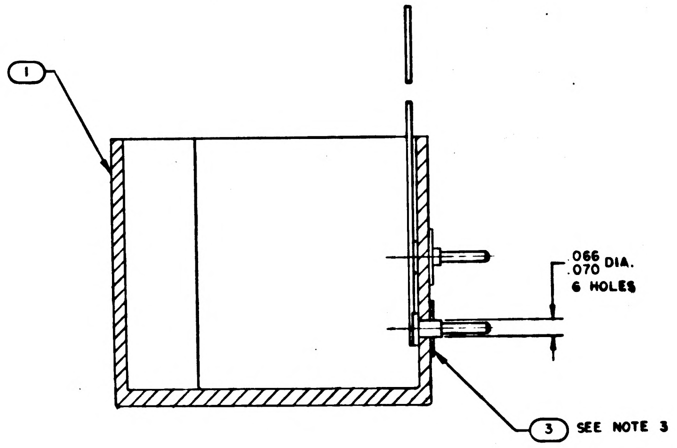
REVISIONS TDRR00669



SECTION B-B







SECTION A-A

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. BOND FIND NO. 2 TO FIND NO. 1 PER ND1002004
3. BOND FIND NO. 3 TO FIND NO. 1 USING EASTMAN 910

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
6	1008054	DISK, INSULATOR	3
6	1007000-1	TERMINAL LUG ASSEMBLY	2
1	1007018	HOUSING MODULE IRIG PREAMP	1

LIST OF MATERIALS

1007024	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG NO CONTRACT
DRAWN Frank Miller DATE 1MAR63
CHECKED
APPROVAL
APPROVAL S.C. Smith 3-25-63
NASA APPROVAL W.J. Rh 5-27-63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HOUSING ASSEMBLY
INSEPARABLE
IRIG PREAMP

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007026
SCALE 4/1
WT
SHEET 1 OF 1

1007026

1007027 A

SYM	REVISIONS DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 06007		

FOR INFORMATION ONI

CLASS B RELEASE TDR No. 00715 DAT 4-3-63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
20	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
20	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006787—2	WIRE, ELEC, .020 DIA	36
AR	1006757—1	WIRE, ELEC, .010 X .020	35
4	1008025—1	INSULATOR BUSHING	34
1	1008021—1	INSULATOR, BUSHING	33
AR	1006766—21	INSULATION SLEEVING	32
1	1010292—002	TERMINAL, FEED THRU	31
3	1010376—1	TRANSISTOR	30
1	1010269	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388—39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010390	DIODE	25
2	1010255	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393—039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755—73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777—13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750—15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750—44	RESISTOR, FIXED MF, 3.3K, 1/4W ±2%	16
2	1006750—1	RESISTOR, FIXED MF, 51Ω, 1/4W ±2%	[illegible]
1	1006750—80	RESISTOR, FIXED MF, 100K, 1/4W ±2%	14
2	1010369—92	RESISTOR, FIXED COMP, 300K, 1/8W ±5%	13
2	1006750—53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750—18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389—80	RESISTOR, FIXED WW, 10K, 3W ±1%	8
1	1010364—557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373—10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364—635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007027
SCALE 5/1 WT SHEET 1 OF 1

INCHES
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PHOTOGRAPHIC SCALE ONLY

1007027 A

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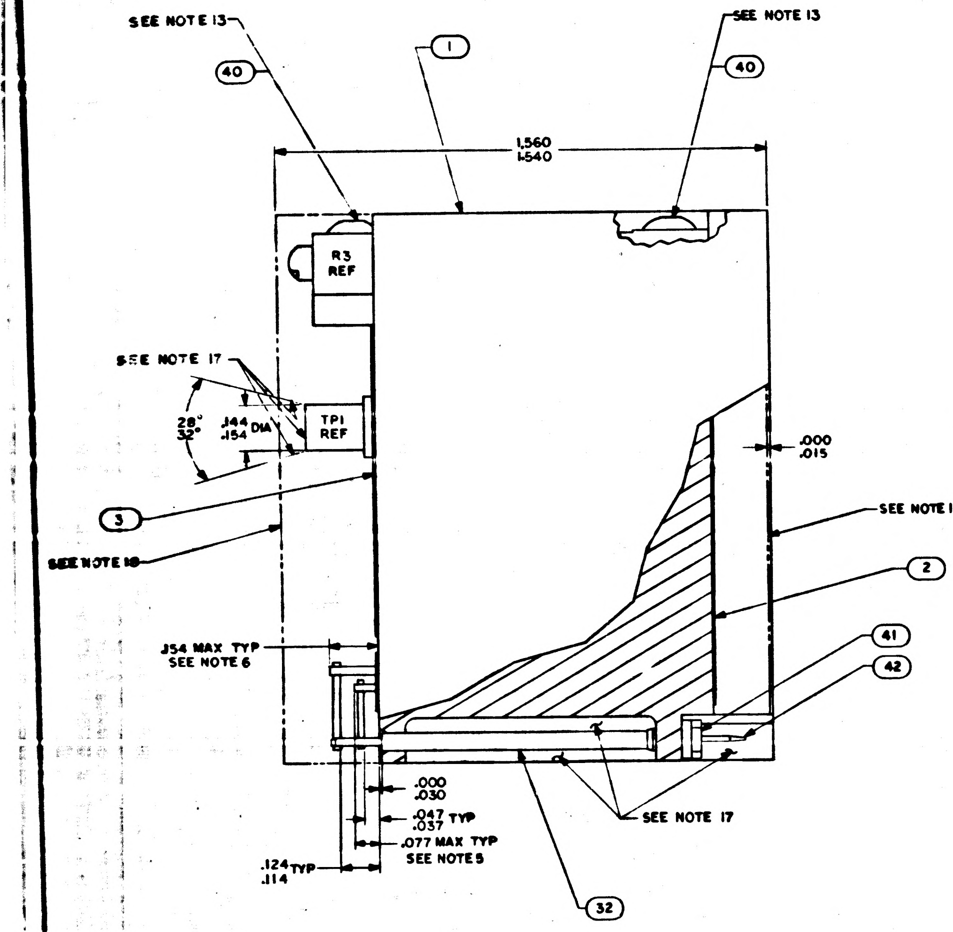
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32°
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.154 DIA
TP1
REF
.000
.015
3
SEE NOTE 18
SEE NOTE 18
2
41
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SEE NOTE 6
.000
.030
.047
.037 TYP
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SEE NOTE 5
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.114 TYP
SEE NOTE 17
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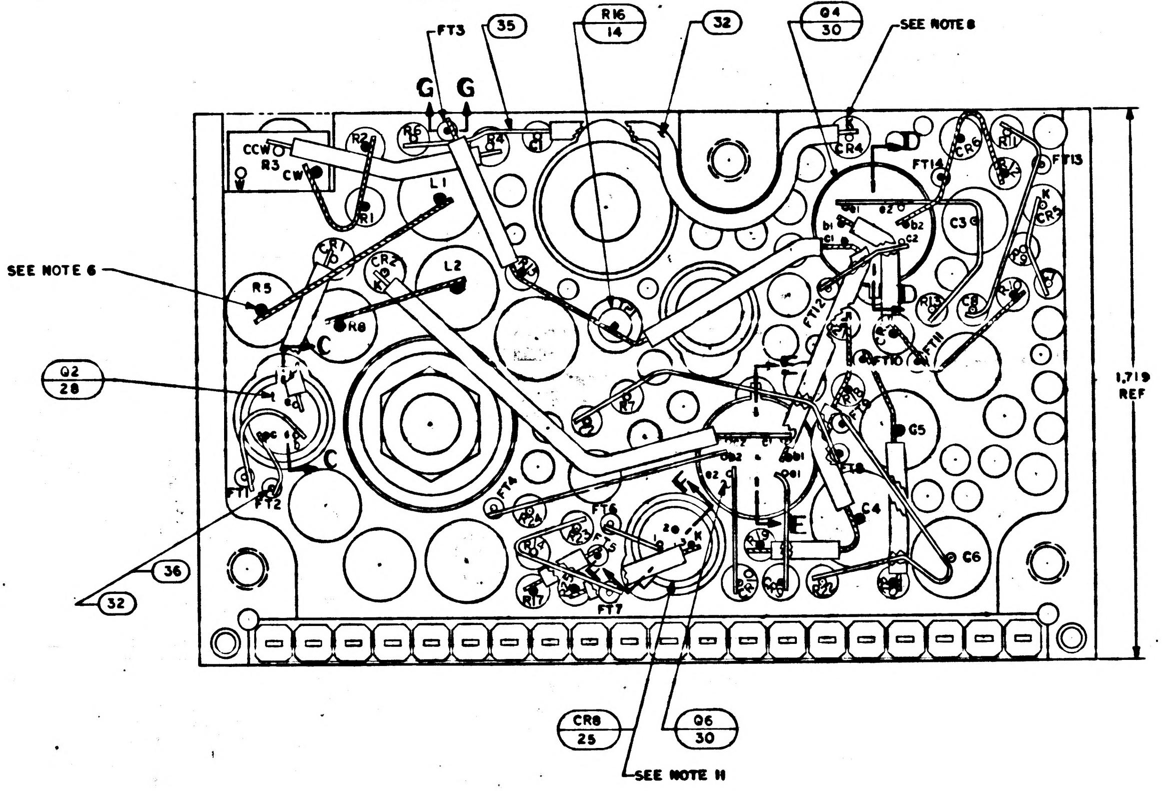
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FT15
L1
CR1
CR2
L2
SEE NOTE 6
R5
R8
C3
C
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FT4
FT5
FT6
FT7
FT8
Q5
C4
C6
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FOR INFORMATION ON

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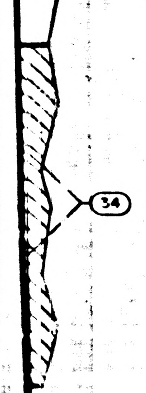

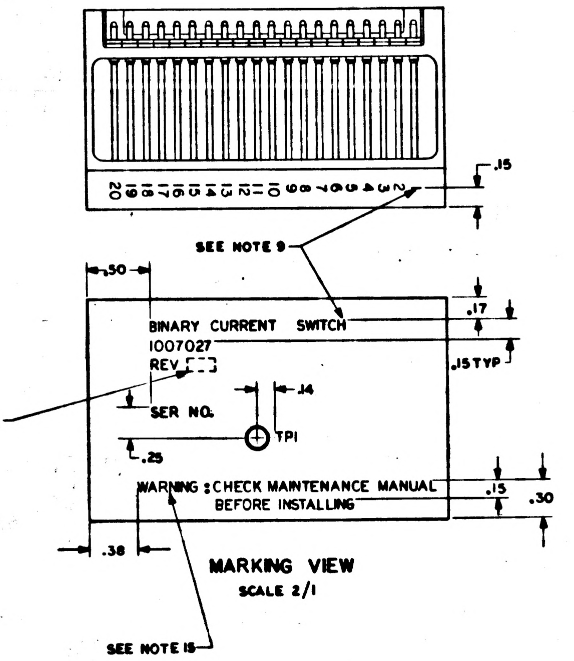
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SEE NOTE 9
.30
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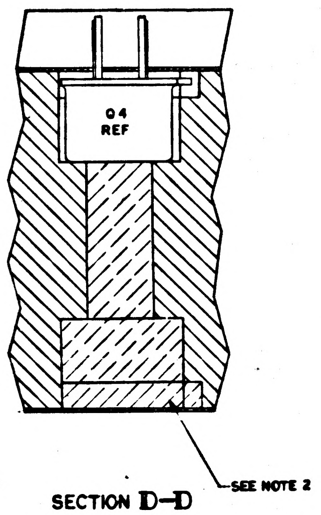
1007027
REV
.17
.15 TYP
.14
SER NO.
TP1
.25
WARNING: CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.30
.38
DWG REV LTR
SEE NOTE 15

MARKING VIEW
SCALE 2/1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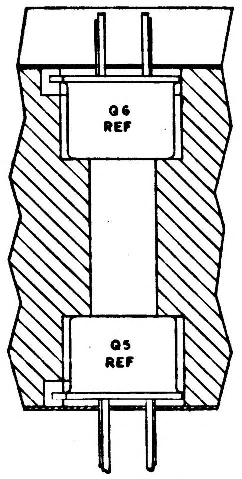
SEE NOTE 2

SECTION D-D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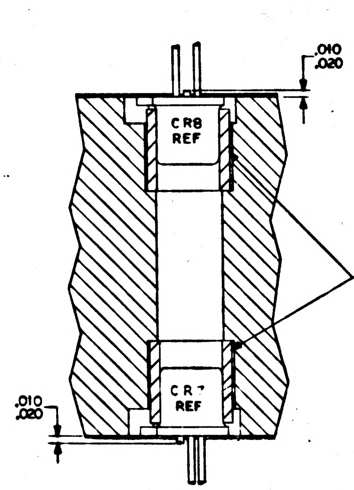
SECTION E-E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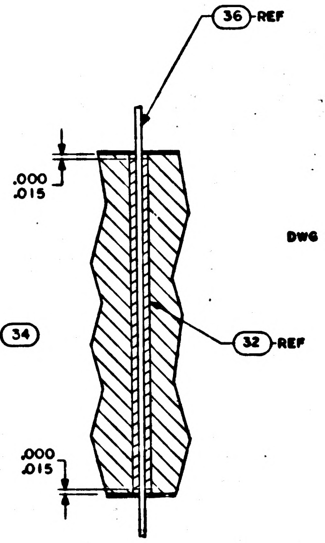
SECTION F-F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SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
☒	1010043	SCHEMATIC
20	1006782 — 4	CONTACT, WRAPPOST MALE MIN
20	1006775	INSULATOR, WRAPPOST MALE MIN
2	1000093 — 3	SCREW, BOTTON HEAD
1	MS 35650 — 104	NUT, PLAIN, HEX
1	1008020—1	WASHER, FLAT
2	1008024—1	WASHER, INSULATOR
A R	1006787—2	WIRE, ELEC, .020 DIA
A R	1006757—1	WIRE, ELEC, .OK X.020
4	1008025—1	INSULATOR BUSHING
1	1008021—1	INSULATOR, BUSHING
AR	1006766—21	INSULATION SLEEVING
1	1010292—002	TERMINAL, FEED THRU
3	1010376—1	TRANSISTOR
1	1010269	TRANSISTOR
2	1010357	TRANSISTOR
2	1010388—39	INDUCTOR, 0.0 HY 75 MA 5%
2	1010394	DIODE
2	1010390	DIODE
2	1010255	DIODE
4	1010385	DIODE
2	1006777—14	CAP, FIXED CER, 130 UUF, 100V ±10%
2	1006777—33	CAP, FIXED CER, .022UF, 100V ±10%
1	1010393—039	CAP, FIXED TANT, 6.8UF, 50V ±10%
1	1006755—73	CAP, FIXED TANT, 2.2 UF, 35V ±10%
2	1006777—13	CAP, FIXED CER, 100UUF, 100V ±10%
1	1006750—15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%
2	1006750—44	RESISTOR, FIXED MF, 3.3K, 1/4W ±2%
2	1006750—1	RESISTOR, FIXED MF, 51Ω, 1/4W ±2%
1	1006750—80	RESISTOR, FIXED MF, 100K, 1/4W ±2%
2	1010369—92	RESISTOR, FIXED COMP, 300K, 1/4W ±5%
2	1006750—53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%
1	1006750—18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%
4	1006750—67	RESISTOR, FIXED MF, 3 K, 1/4W ±2%
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%
2	1010389—80	RESISTOR, FIXED WW, 10K, 3 W ±1%
1	1010364—557	RESISTOR, FIXED MF, 32K 1 W ±1%
1	1010378—10	RESISTOR, VAR, K, W ±5%
1	1010364—635	RESISTOR, FIXED MF, 100K, W ±1%
1	1010364—683	RESISTOR, FIXED MF, 178K W ±1%
1	1008055—1	INSULATOR, TOP
1	1008055—2	INSULATOR, BOTTOM
1	1007008	HEATSINK

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —
DECIMALS ±.03
ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
Cambridge Mass
DWG NO
CONTRACT
DRAWN R. Bell DATE 27 MAR 63
CHECKED
APPROVAL 3 Apr 63
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

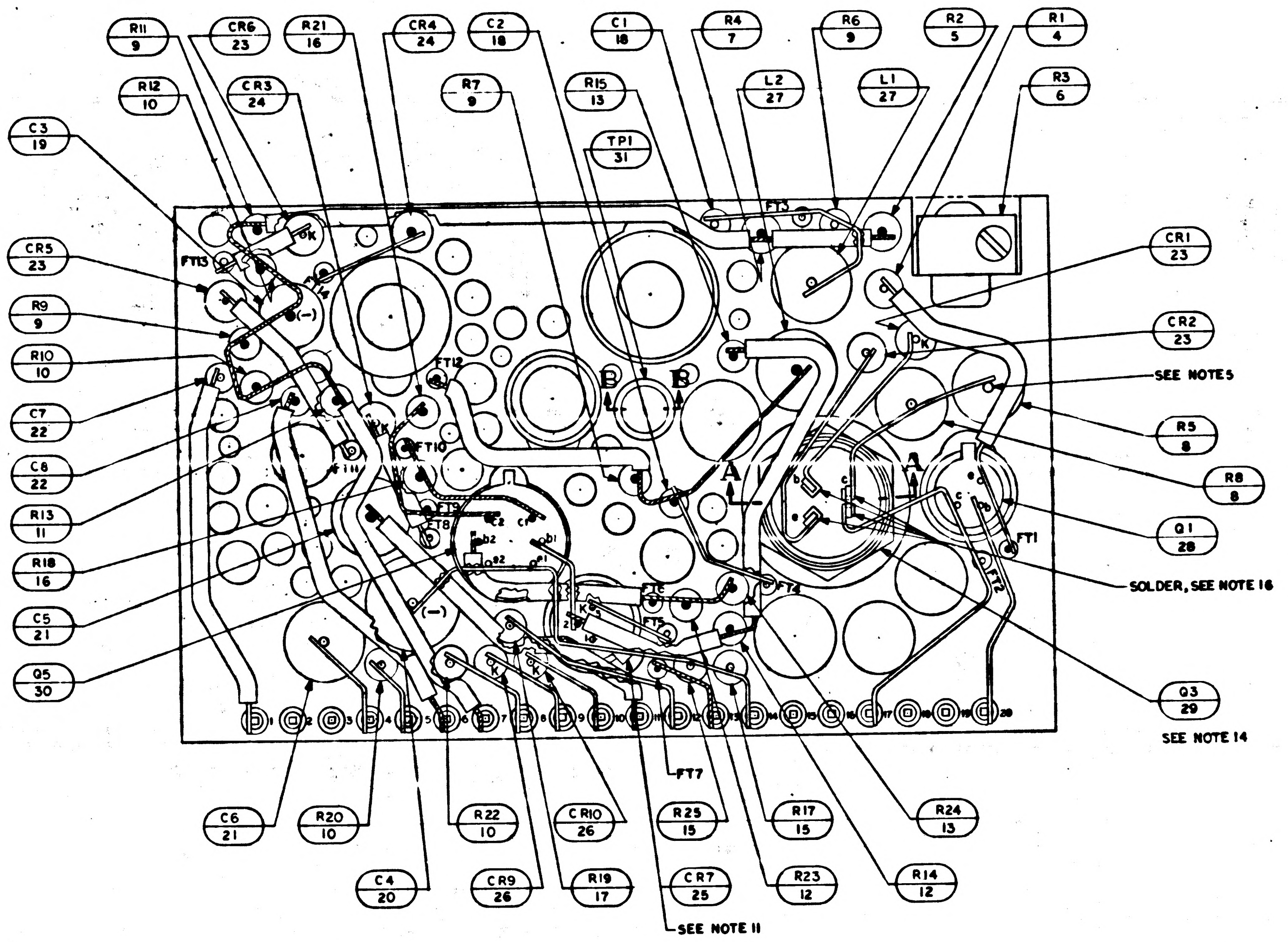
BINARY CURRENT SWITC
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007027
SCALE 5/1
WT
SHEET

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE – [illegible]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CR4 24
C2 18
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R6 9
L1 27
R2 5
R1 4
R3 6
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTE 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
C6 21
R20 10
C4 20
R22 10
CR9 26
CR10 26
R19 17
R25 15
CR7 25
SEE NOTE 11
R17 15
R23 12
R24 13
R14 12
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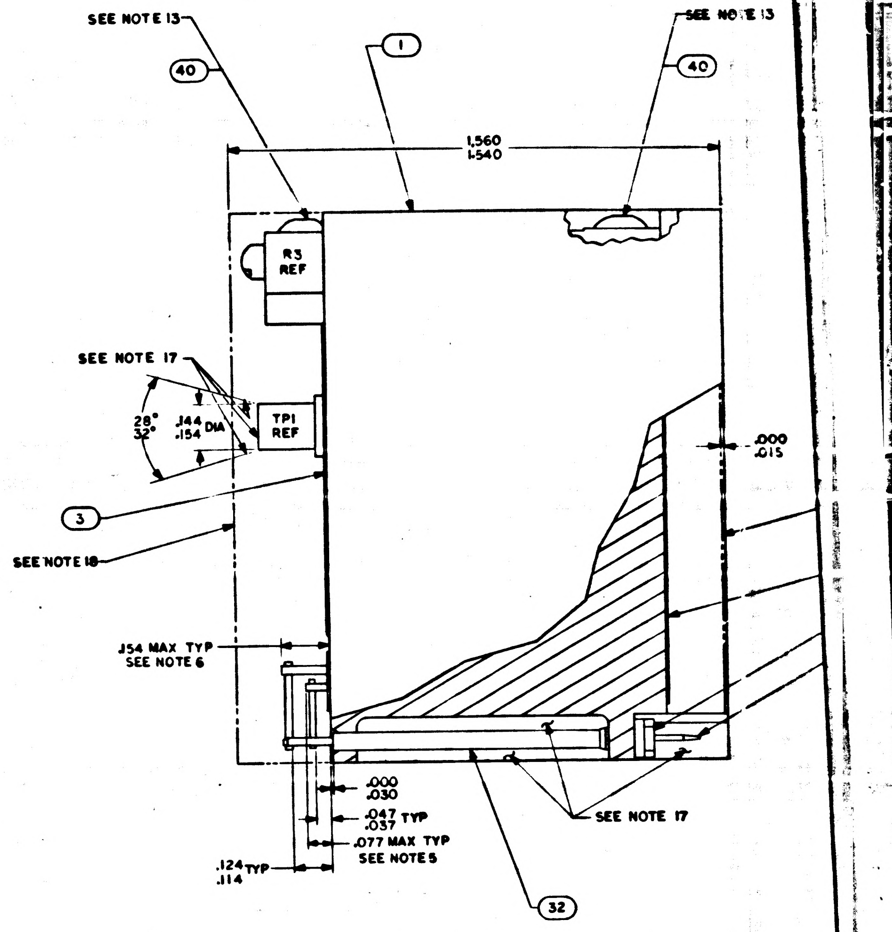
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SEE NOTE 18
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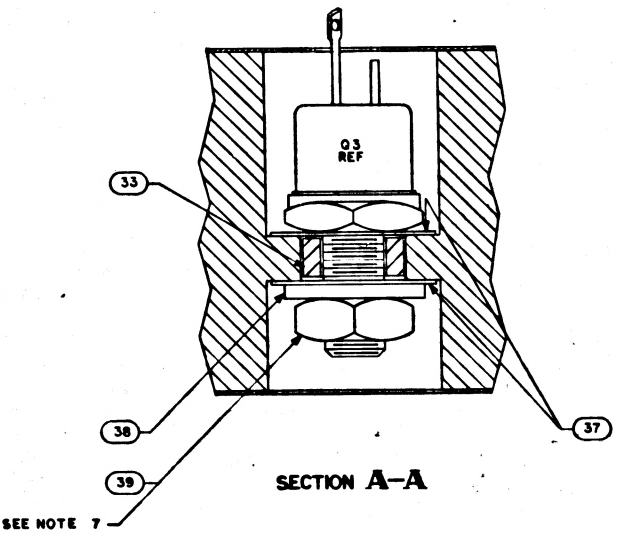
SEE NOTE 6
.000
.030
.047
.037
TYP
.077 MAX TYP
SEE NOTE 5
.124
.114
TYP
SEE NOTE 17
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
5. ○ WITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK .100/.060 HIGH WHITE PER ND 1002019
10. STAKE FIND NO. 4 THRU FIND NO. 31, FIND NO. 33 AND FIND NO. 34 PER ND 1002009
11. ON CR7 CUT PIN NO. 1, ON CR8 CUT PIN NO. 2, .010/.020 ABOVE CASE
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002003 (BLACK POLYURETHANE FOAM)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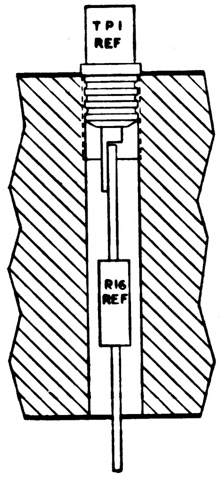
SEE NOTE 7

SECTION A–A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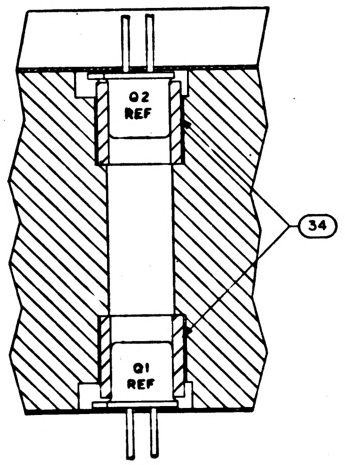
R16 REF

SECTION B–B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Q1 REF
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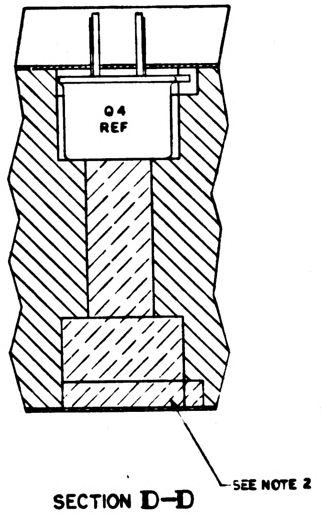
SECTION C–C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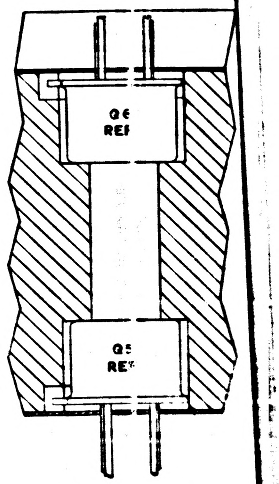
SEE NOTE 2

SECTION D–D


Q6 REF
Q5 REF

SECTION E–E

INCHES
PHOTOGRAPHIC SCALE ONLY

Class A Release
TDRR 06084

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
3/10/64	A	06813	2 and 3.	WAR	WSS

This specification consists of page i to iii and 1 to [illegible] inclusive.

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, for use in the APOLLO Guidance and Navigation Equipment.

4 Feb 64
MIT/IL DATE

2/4/64
NASA/MSC APPROVAL DATE

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

1. SCOPE

1.1 **PURPOSE.** This specification establishes the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, Drawing 1007027, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 **EFFECTIVE ISSUES.** The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007027	Final Test Method for Binary Current Switch, Computer Output Assembly

DRAWINGS

APOLLO G&N

1007027	Binary Current Switch, Computer Output Assembly
1010043	Schematic, Binary Current Switch (For Reference Only)

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007027 A
4 February 1964

Class A Release
TDRR 00084

PROCUREMENT SPECIFICATION
FOR
BINARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
[illegible]	A	1	2 and 3.	WAR	[illegible]

This specification consists of page i to iii and 1 to 4 inclusive.

APOLLO G&N Specification
PS-1007027
4 February 1964

PROCUREMENT SPECIFICATION
FOR
BINARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, for use in the APOLLO Guidance and Navigation Equipment.

4 Feb 64
MIT/IL DATE

2/4/64
NASA/MSC APPROVAL DATE

APOLLO G&N Specification
PS-1007027
4 February 1964

PREPARED BY TITLE DATE
Spec. Eng Writer 11-11-63
AC Spark Plug

EXAMINED BY TITLE DATE
Sr. Proj Engr 12-12-63
AC Spark Plug

APPROVED BY TITLE DATE
MIT/IL

APPROVED BY TITLE DATE
MIT/IL

APPROVED BY TITLE DATE
MIT/IL

APOLLO G&N Specification
PS-1007027
4 February 1964

PROCUREMENT SPECIFICATION
FOR
BINARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

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FTM-1007027	Final Test Method for Binary Current Switch, Computer Output Assembly

DRAWINGS

APOLLO G&N

1007027	Binary Current Switch, Computer Output Assembly
1010043	Schematic, Binary Current Switch (For Reference Only)

B | 1007027

REVISIONS CLASS B TDRR 00715

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 0[illegible]7	[illegible]	WK
B	REVISED PER TDRR 01257	5-15-63	A.T. WK

☒	1010043	SCHEMATIC	REF
20	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
20	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
A R	1006787—2	WIRE, ELEC, .020 DIA	36
A R	1006757—1	WIRE, ELEC, .010 X .020	35
4	1008025—1	INSULATOR BUSHING	34
1	1008021—1	INSULATOR, BUSHING	33
AR	1006766—21	INSULATION SLEEVING	32
1	1010292—002	TERMINAL, FEED THRU	31
3	1010376—1	TRANSISTOR	30
1	1010269	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010390	DIODE	25
2	1010462	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755—73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777—13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750—15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750—44	RESISTOR, FIXED MF, 3.3K, 1/4W ±2%	16
2	1006750—1	RESISTOR, FIXED MF, 51Ω, 1/4W ±2%	15
1	1006750—80	RESISTOR, FIXED MF, 100K, 1/4W ±2%	14
2	1010369—92	RESISTOR, FIXED COMP, 300K, 1/8W ±5%	13
2	1006750—53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750—18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389—80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364—557	RESISTOR, FIXED MF, 39.2K 1/8W ±1%	7
1	1010373—10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364—635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS ±.03 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

NEXT ASS'Y | USED ON
APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 [illegible] 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007027
SCALE 5/1 | WT | SHEET 1 OF 1

J | 1007027 | B

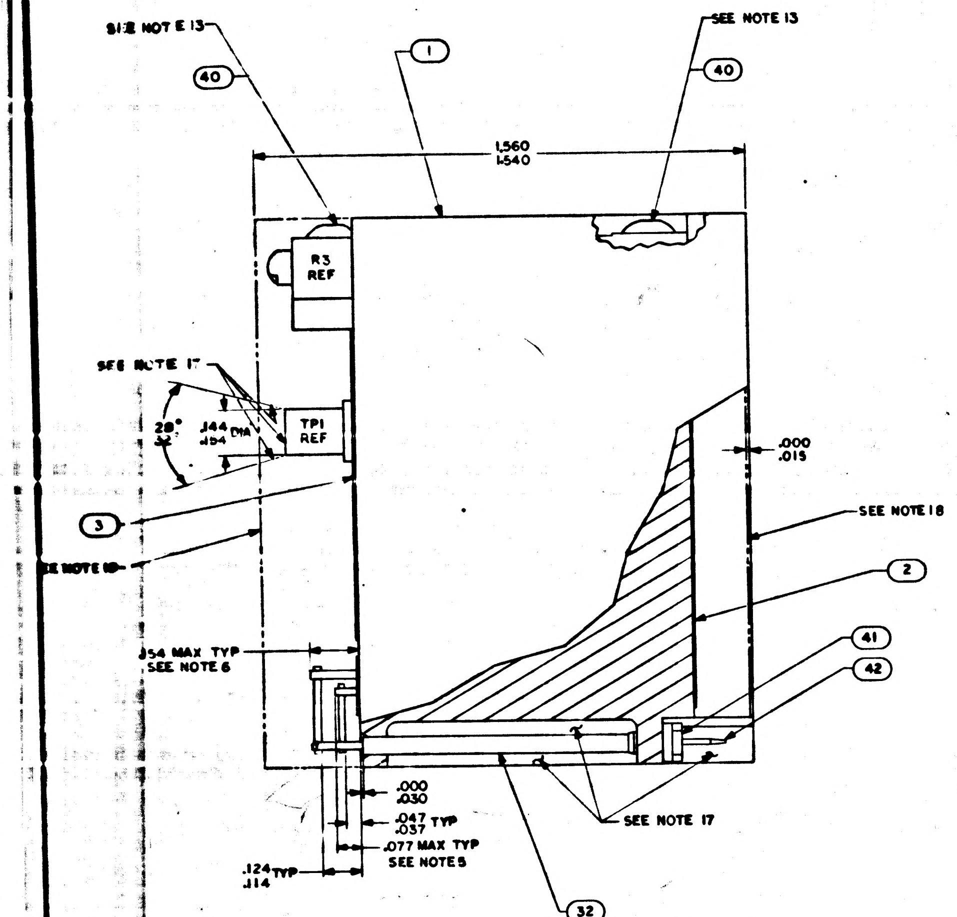
(3N)

INCHES
PHOTOGRAPHIC SCALE ONLY

1007027 B

REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
A	REVISED PER TDRR 00009		WK
B	REVISED PER TDRR 01257	5-15-63	O.T. WK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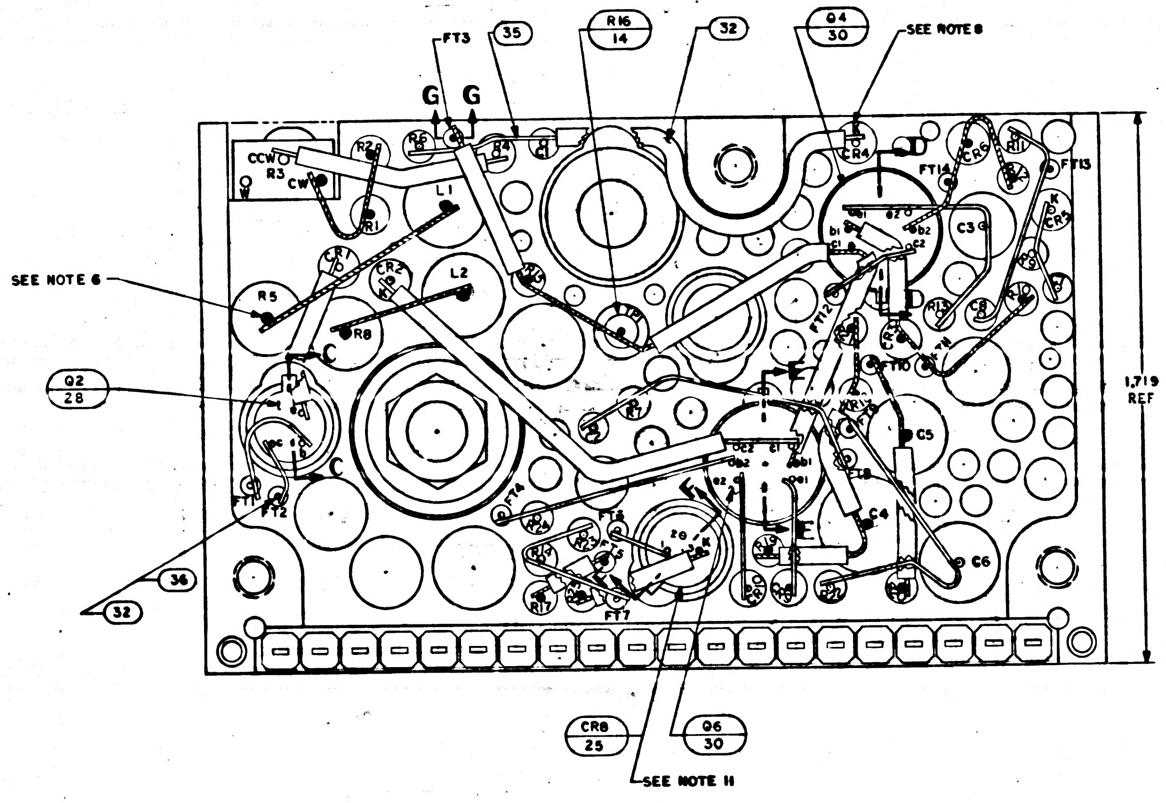
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CR5
SEE NOTE 6
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CR2
L2
R5
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FT12
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C8
R10
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R7
C2
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R24
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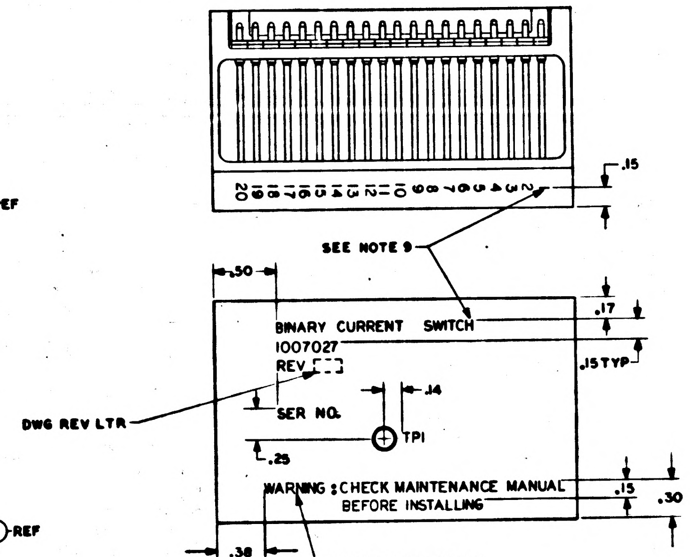
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BINARY CURRENT SWITCH
1007027
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DWG REV LTR
SER NO.
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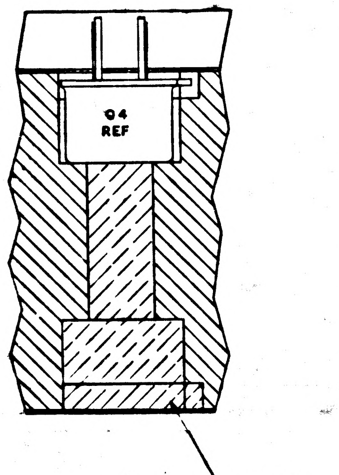
MARKING VIEW
SCALE 2/1

SEE NOTE 15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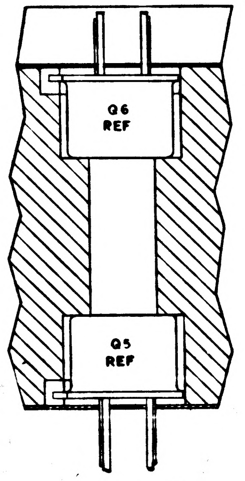
SEE NOTE 2

SECTION D-D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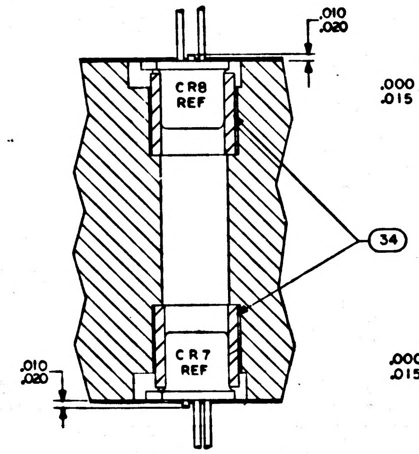
SECTION E-E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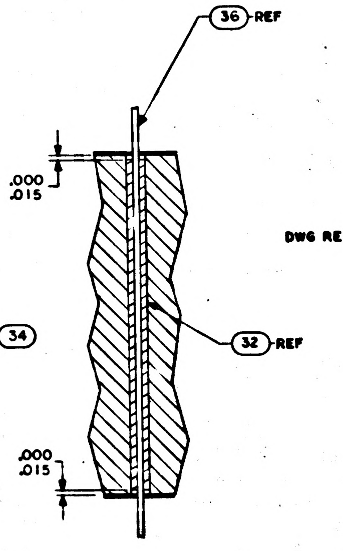
SECTION F-F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SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
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20	1006775	INSULATOR, WRAPOST MALE MIN	41
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1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006787—2	WIRE, ELEC, .020 DIA	36
AR	1006757—1	WIRE, ELEC, .010 X .020	35
4	1008025—1	INSULATOR BUSHING	34
1	1008021—1	INSULATOR, BUSHING	33
AR	1006766—21	INSULATION SLEEVING	32
1	1010292—002	TERMINAL, FEED THRU	31
3	1010376—1	TRANSISTOR	30
1	1010269	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010390	DIODE	25
2	1010462	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755 —73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777 —13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750 —15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750—44	RESISTOR, FIXED MF, 3.[illegible]K, 1/4W ±2%	16
2	1006750 —1	RESISTOR, FIXED MF, 51[illegible], 1/4W ±2%	15
1	1006750—80	RESISTOR, FIXED MF, 10[illegible]K, 1/4W ±2%	14
2	1010369—92	RESISTOR, FIXED COMP, 300K, 1/4W ±5%	13
2	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750 —18	RESISTOR, FIXED MF, 2[illegible], 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389 —80	RESISTOR, FIXED WW, 1[illegible]K, 3W ±1%	8
1	1010364 —557	RESISTOR, FIXED MF 39[illegible]K 1/8W ±1%	7
1	1010373 —10	RESISTOR, VAR, [illegible]OK, [illegible]W ±5%	6
1	1010364—835	RESISTOR, FIXED MF, 10[illegible]K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 1[illegible]K, 1/8W ±[illegible]%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055- 2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN R. Bell DATE 27
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

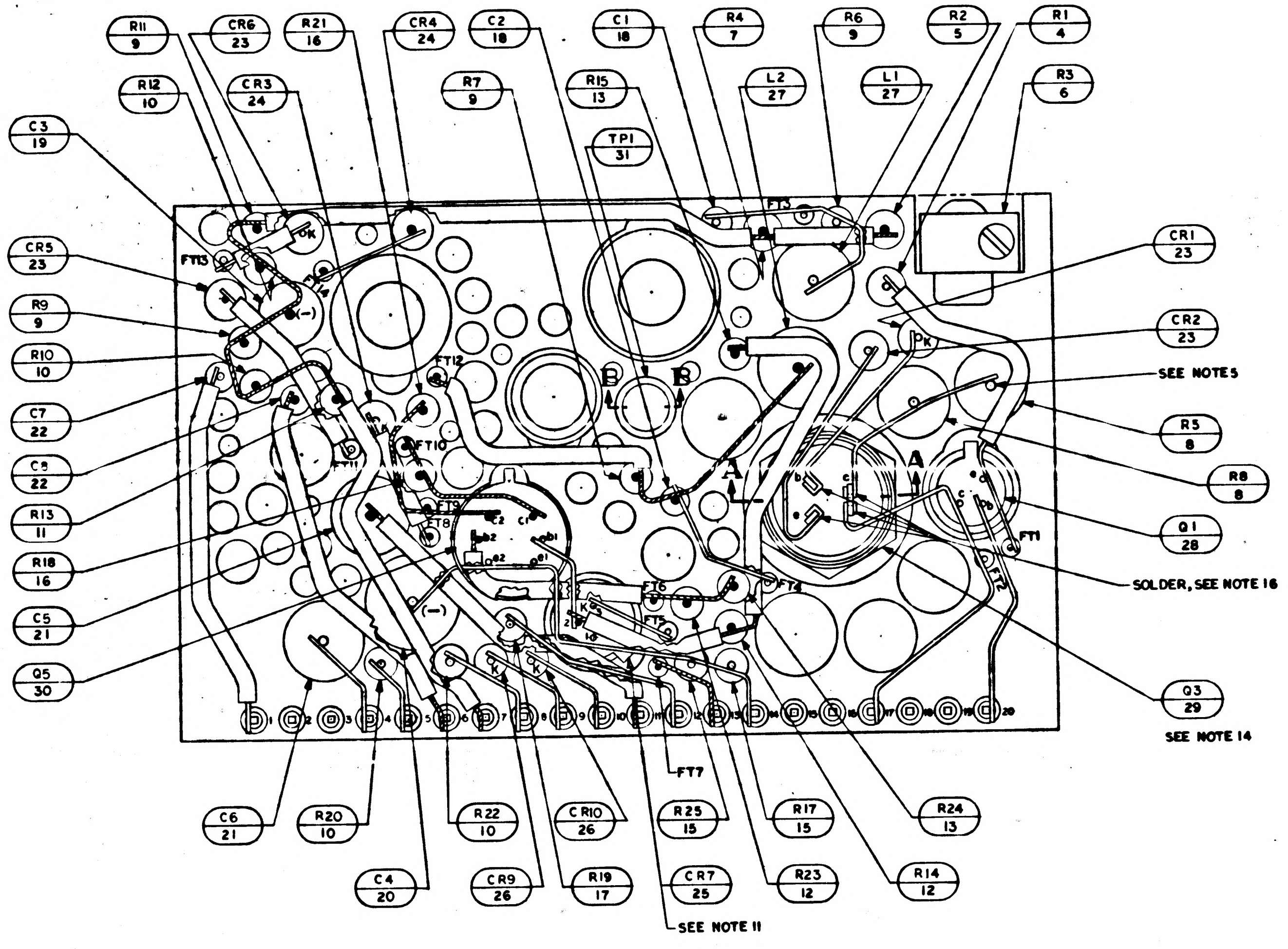
BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO.
SIZE J
DRAWING NO 1007027
SCALE 3/1
WT
SHEET 1 OF 1

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO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C1 18
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R15 13
L2 27
L1 27
R3 6
TP1 31
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTE 5
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R8 8
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SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
FT1
FT2
FT3
FT4
FT5
FT6
FT7
FT8
FT9
FT10
FT11
FT12
FT13
FT14
K
(−)
A
B
C2
C1
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b1
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b
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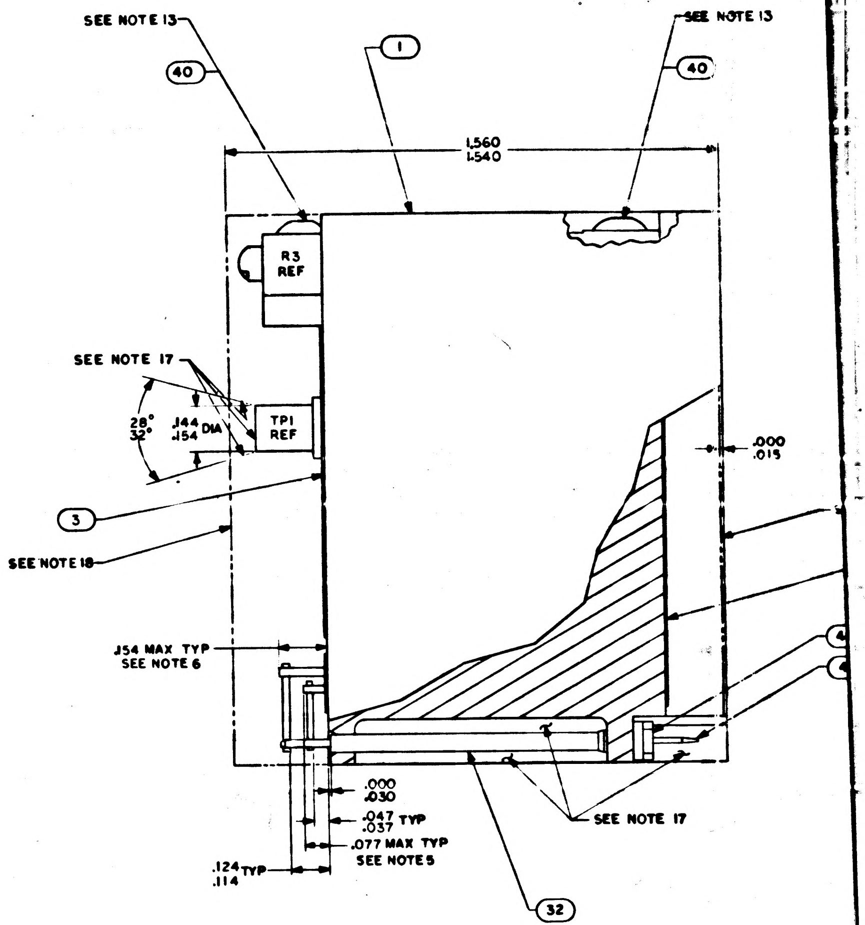
R14 12
SEE NOTE 11


SEE NOTE 13
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SEE NOTE 13
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1.540
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SEE NOTE 17
28°
32°
.144
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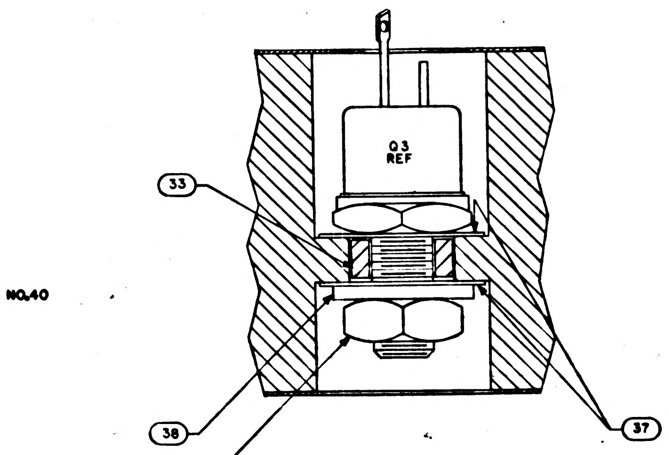
TP1 REF
.000
.015
3
SEE NOTE 18
.154 MAX TYP
SEE NOTE 6
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTE 5
.124
.114 TYP
SEE NOTE 17
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
5. ○ WITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK .100/.060 HIGH WHITE PER ND 1002019
10. STAKE FIND NO.4 THRU FIND NO. 31, FIND NO. 33 AND FIND NO. 34 PER ND 1002009
11. ON CR7 CUT PIN NO.1, ON CR8 CUT PIN NO.2, .010/.020 ABOVE CASE
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002003 (BLACK POLYURETHANE FOAM)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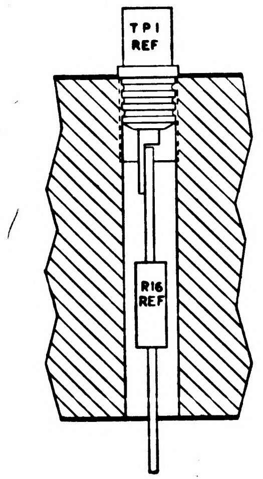
SEE NOTE 7

SECTION A–A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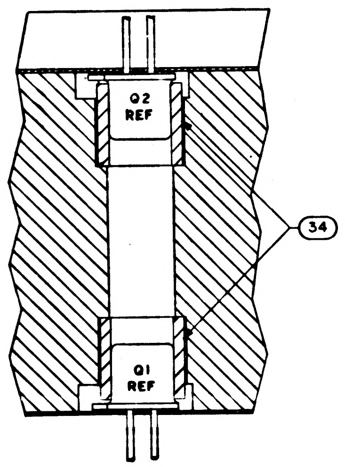
SECTION B–B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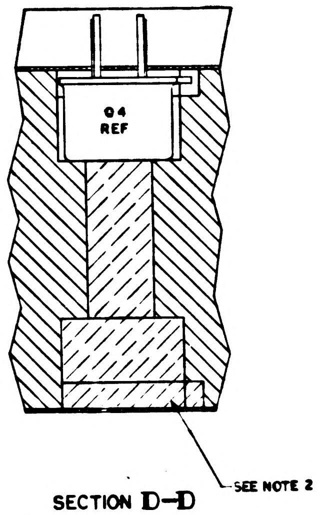
SECTION C–C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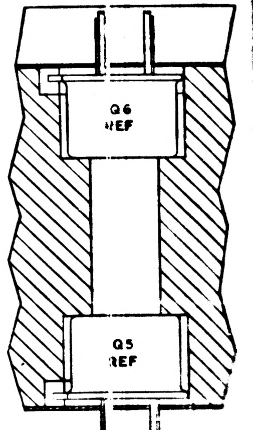
SEE NOTE 2

SECTION D–D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SECTION E–E

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INCHES
PHOTOGRAPHIC SCALE ONLY

Class A Release
TDRR 06084

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
3/10/64	A	06813	2 and 3.	WAR	
8/18/64	B	11646	3	WSK	JB

This specification consists of page i to iii and 1 to 4 inclusive.

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, for use in the APOLLO Guidance and Navigation Equipment.

4 Feb 64
MIT/IL DATE

2/4/64
NASA/MSC APPROVAL DATE

PREPARED BY	TITLE	DATE
	Spec. Eng. Writer	11-11-63
AC Spark Plug		
EXAMINED BY	**TITLE**	**DATE**
L.S. Ferris	Sr. Proj. Engr.	12-12-63
AC Spark Plug		
APPROVED BY	**TITLE**	**DATE**
	Asst. Dir	1-31-64
MIT/IL		
APPROVED BY	**TITLE**	**DATE**
MIT/IL		
APPROVED BY	**TITLE**	**DATE**
MIT/IL		

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, Drawing 1007027, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007027	Final Test Method for Binary Current Switch, Computer Output Assembly

DRAWINGS

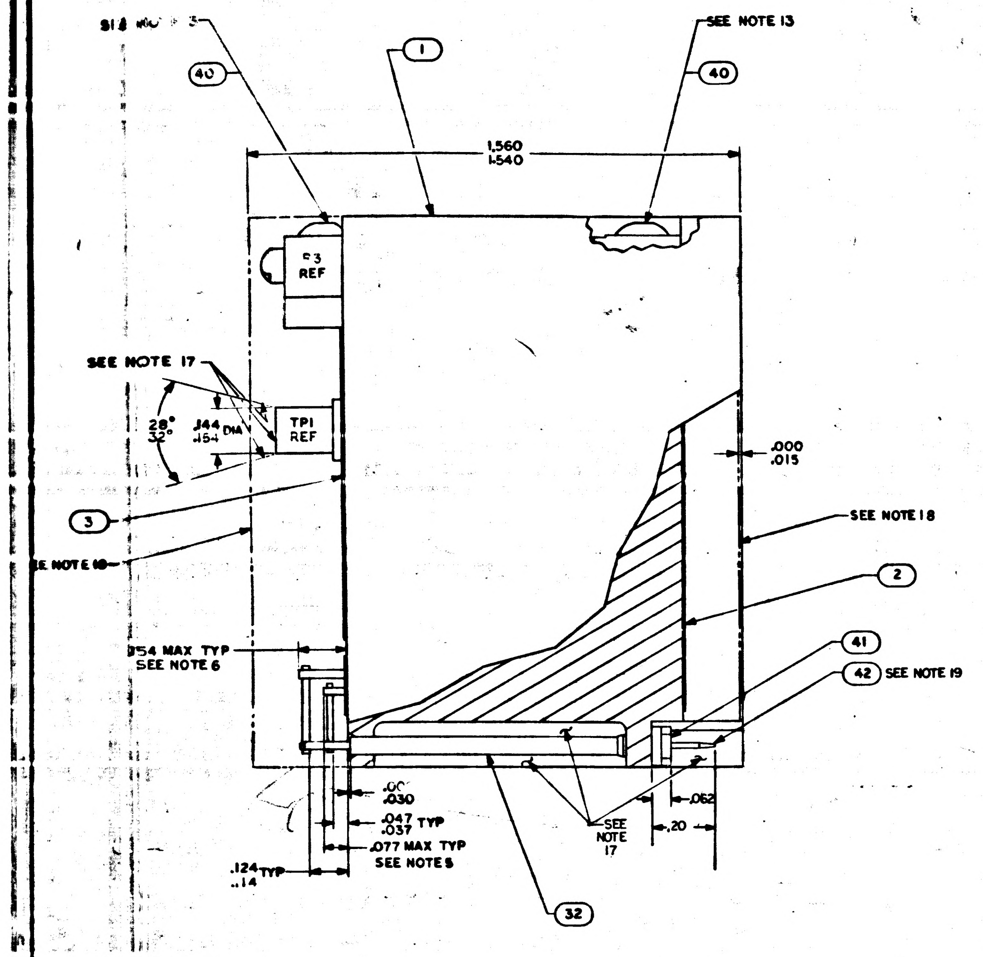
APOLLO G&N

1007027	Binary Current Switch, Computer Output Assembly
1010043	Schematic, Binary Current Switch (For Reference Only)

1007027	C

REVISIONS C2A 18 TDRR 30715

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 04007		WK
B	REVISED PER TDRR 01257	5-15-65	WK
C	REVISED PER TDRR 01712	6-26-65	WK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SEE NOTE 13
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1.540
R3 REF
SEE NOTE 17
28°
32°
.144
.154 DIA
TP1 REF
.000
.015
3
SEE NOTE 18
SEE NOTE 10
2
.154 MAX TYP
SEE NOTE 6
41
42 SEE NOTE 19
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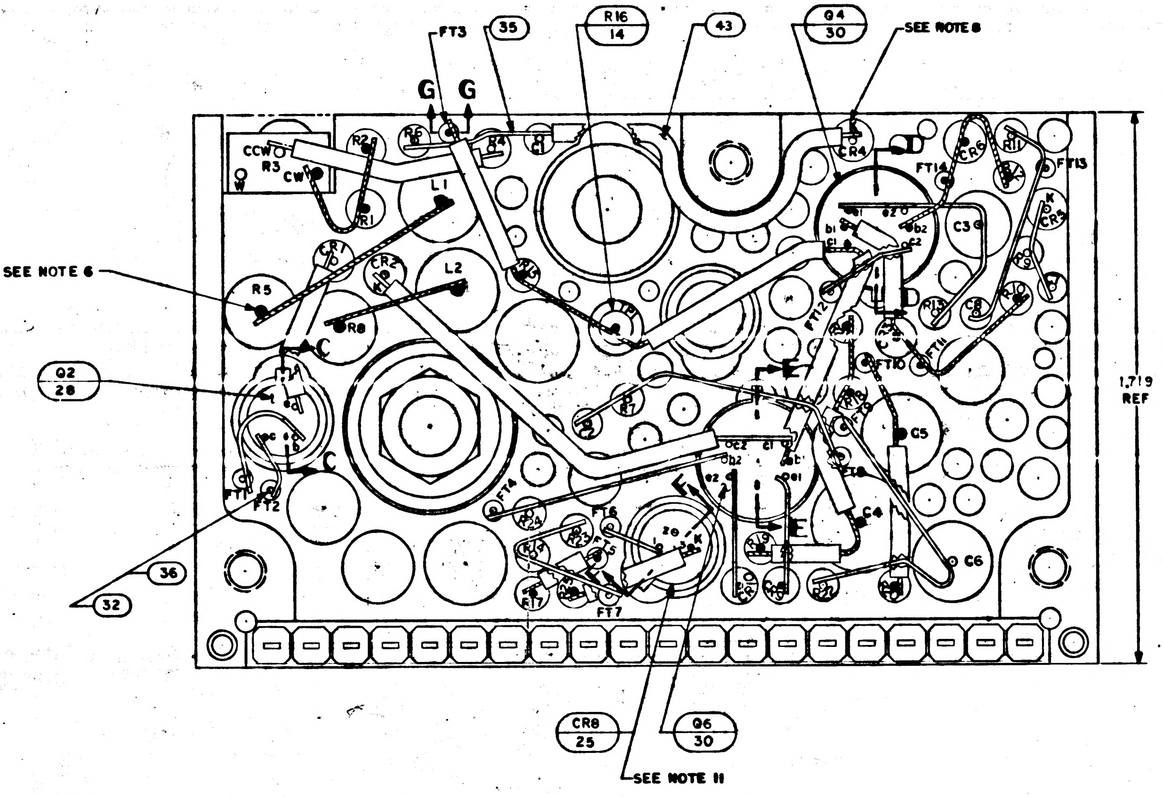
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Q4
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L1
R1
CR4
FT14
CR6
R11
FT13
C3
CR5
SEE NOTE 6
CR1
CR2
L2
R5
R8
C
Q2
28
C
FT1
FT2
36
32
FT4
FT6
FT5
FT7
FT12
FT11
FT10
FT9
FT8
R7
R13
C8
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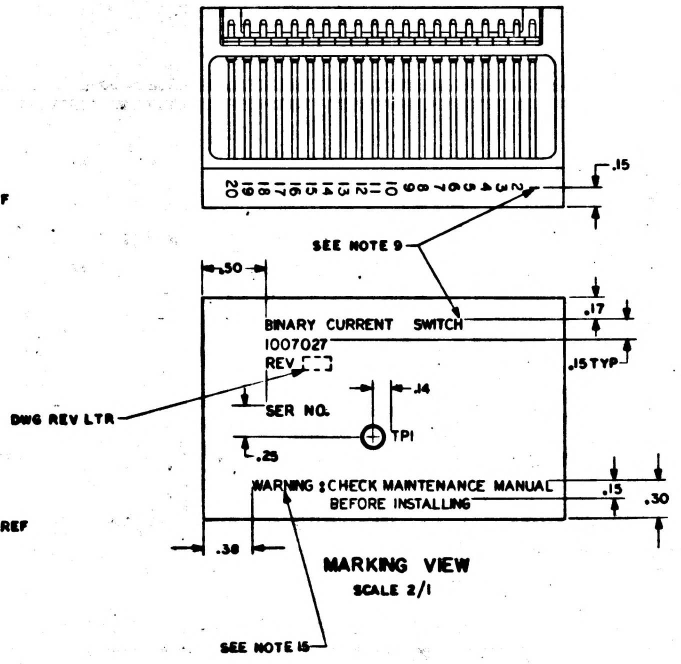
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SEE NOTE 9
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BINARY CURRENT SWITCH
1007027
REV
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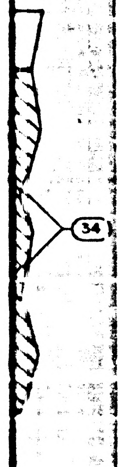
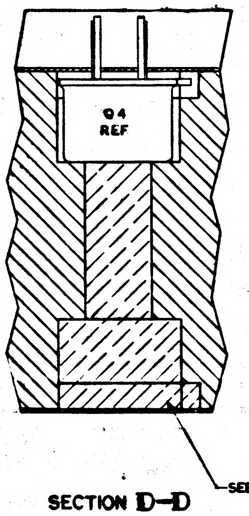
DWG REV LTR
.14
SER NO.
TP1
.25
WARNING : CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.30
.38
SEE NOTE 15

MARKING VIEW
SCALE 2/1

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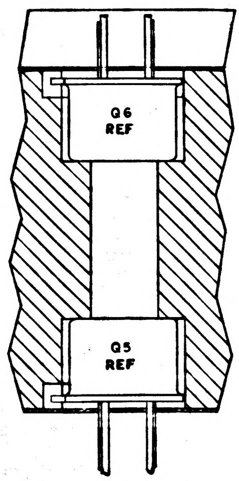
SEE NOTE 2

SECTION D-D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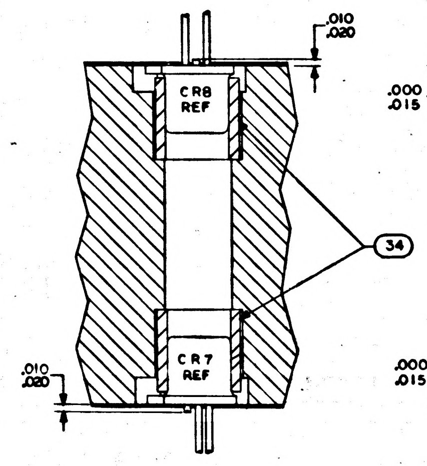
SECTION E-E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CR7 REF
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.020

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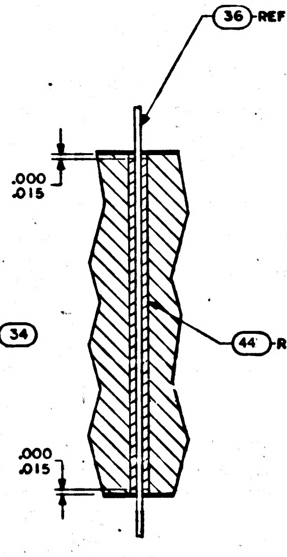
36 REF
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44 REF
.000
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SECTION G-G

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☒	1010043	SCHEMATIC	REF
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
20	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
20	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006757—8	WIRE, ELEC, .020 DIA	36
AR	1006757—L	WIRE, ELEC, .010 X .020	35
4	1008025—1	INSULATOR BUSHING	34
1	1008021 — 1	INSULATOR, BUSHING	33
AR	1006776—20	INSULATION SLEEVING	32
1	1010292—002	TERMINAL, FEED THRU	31
3	1010376 — 1	TRANSISTOR	30
1	1010269	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010390	DIODE	25
2	1010462	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF 100V ±10%	21
1	1010393 -039	CAP., FIXED TANT, 6.8UF 50V ±10%	20
1	1006755 —73	CAP., FIXED TANT, 2.2 UF 35V ±10%	19
2	1006777 —13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750 —15	RESISTOR, FIXED MF, 200 Ω, 1/4W ±2%	17
2	1006750—44	RESISTOR, FIXED MF, 3.3K, 1/4W ±2%	16
2	1006750 —1	RESISTOR, FIXED MF, 51Ω, 1/4W ±2%	15
1	1006750—80	RESISTOR, FIXED MF, 100K, 1/4W ±2%	14
2	1010369—92	RESISTOR, FIXED COMP, 300K, 1/4W ±5%	13
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4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389 —80	RESISTOR, FIXED WW, 10K, 3W ±1%	8
1	1010364 —557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373 —10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364—635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 178K, 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055- 2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
Cambridge, Mass.

DRAWN R. Bell DATE 27 -
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Gp 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007027
SCALE 5/1
WT
SHEET 1 OF 1

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

F2

1007027

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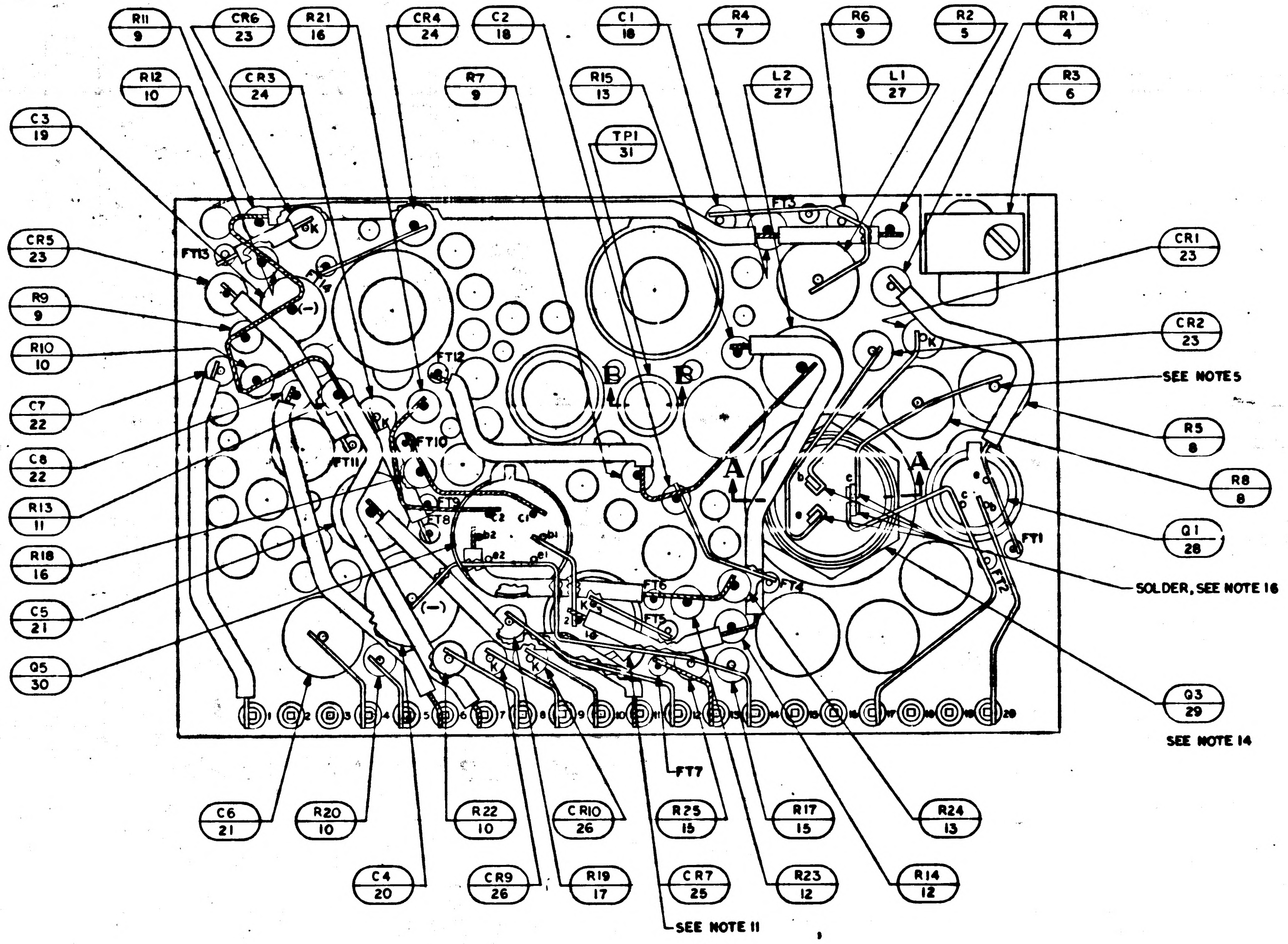
L 1007027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TP1 31
C3 19
CR5 23
R9 9
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C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTE 5
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Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
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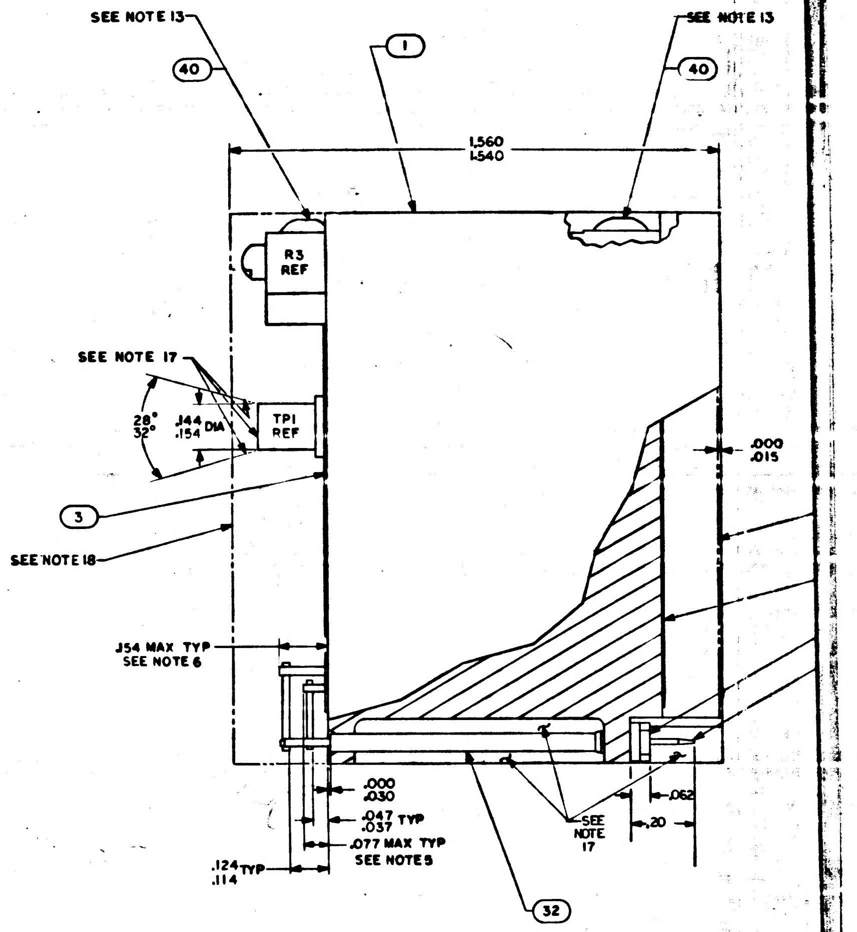
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SEE NOTE 18
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SEE NOTE 6
.000
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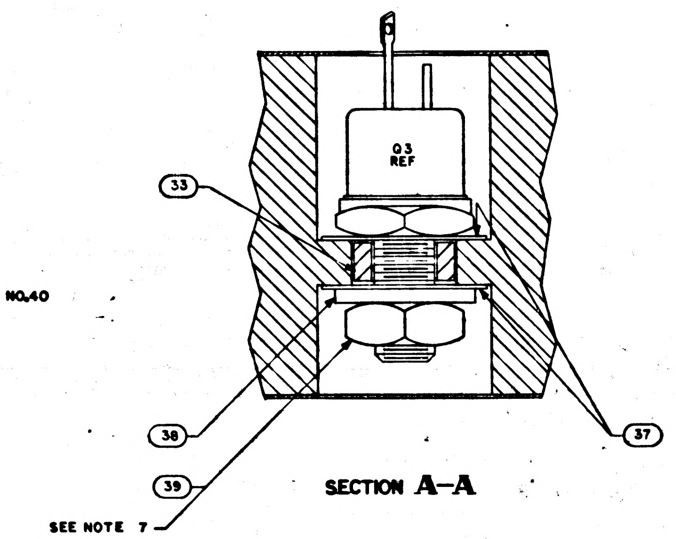
.047
.037 TYP
.077 MAX TYP
SEE NOTE 5
.124
.114 TYP
SEE NOTE 17
.062
.20
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
5. ○ WITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK .100/.060 HIGH WHITE PER ND 1002019
10. STAKE FIND NO.4 THRU FIND NO. 31, FIND NO. 33 AND FIND NO. 34 PER ND 1002009
11. ON CR7 CUT PIN NO.1, ON CR8 CUT PIN NO.2, .010/.020 ABOVE CASE
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002003 (BLACK POLYURETHANE FOAM)
19. MUST MEET REQUIREMENTS OF ND 1002136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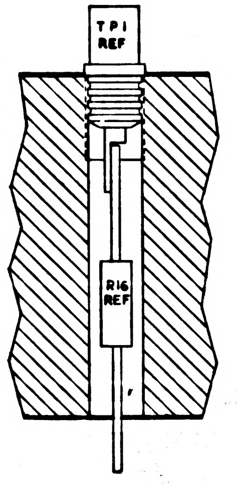
SEE NOTE 7

SECTION A-A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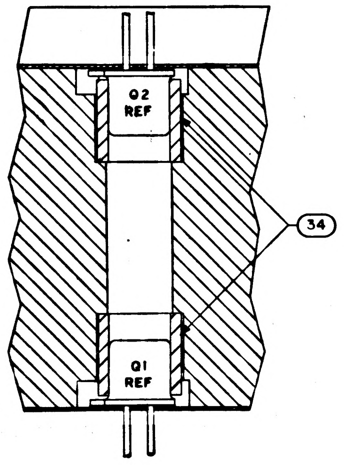
R16 REF

SECTION B-B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Q1 REF
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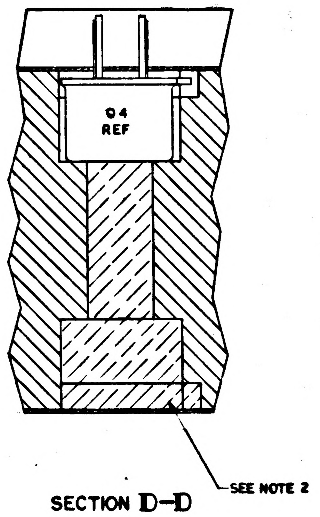
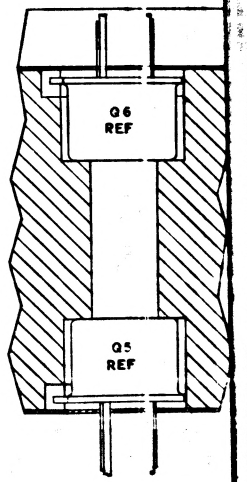
SECTION C-C


Q4 REF
SEE NOTE 2

SECTION D-D


Q6 REF
Q5 REF

SECTION E-E

INCHES
PHOTOGRAPHIC SCALE ONLY

F1

Class A Release
TDRR 06084

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
[illegible]	A	[illegible]	2 and 3.	WJR	
8/18/64	B	11646	3	WSK	JB
9/1/64	C	12205	3	WK	WJR

This specification consists of page i to iii and 1 to 4 inclusive.

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, for use in the APOLLO Guidance and Navigation Equipment.

W. Kupfer 4 Feb 64
MIT/IL DATE

2/4/64
NASA/MSC APPROVAL DATE

PREPARED BY TITLE DATE
Spec. Eng Writer 11-11-63
AC Spark Plug

EXAMINED BY TITLE DATE
Sr. Proj Engr 12-12-63
AC Spark Plug

APPROVED BY TITLE DATE
1-31-64
MIT/IL

APPROVED BY TITLE DATE

MIT/IL

APPROVED BY TITLE DATE

MIT/IL

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, Drawing 1007027, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007027	Final Test Method for Binary Current Switch, Computer Output Assembly

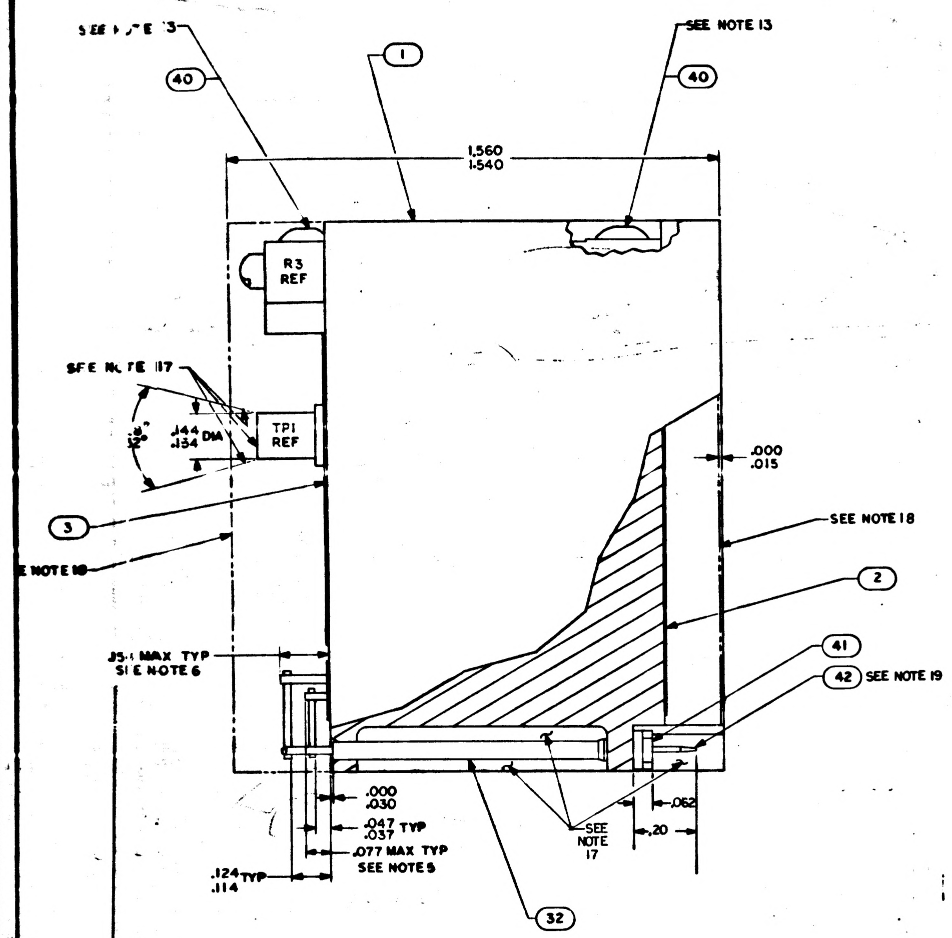
DRAWINGS

APOLLO G&N

1007027	Binary Current Switch, Computer Output Assembly
1010043	Schematic, Binary Current Switch (For Reference Only)

1007027 D

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00007	[illegible]	WK
B	REVISED PER TDRR 01257	5-8-63	WK
C	REVISED PER TDRR 01712	6-6-63	WK
D	REVISED PER TDRR 01850	7-2-63	WK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SEE NOTE 13
40
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R3 REF
SEE NOTE 17
32°
.144
.134 DIA
TP1 REF
.000
.015
3
SEE NOTE 18
SEE NOTE 18
2
.354 MAX TYP
SEE NOTE 6
41
42 SEE NOTE 19
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.030
.047
.037 TYP
.077 MAX TYP
SEE NOTES
.124
.114 TYP
SEE NOTE 17
.062
.20
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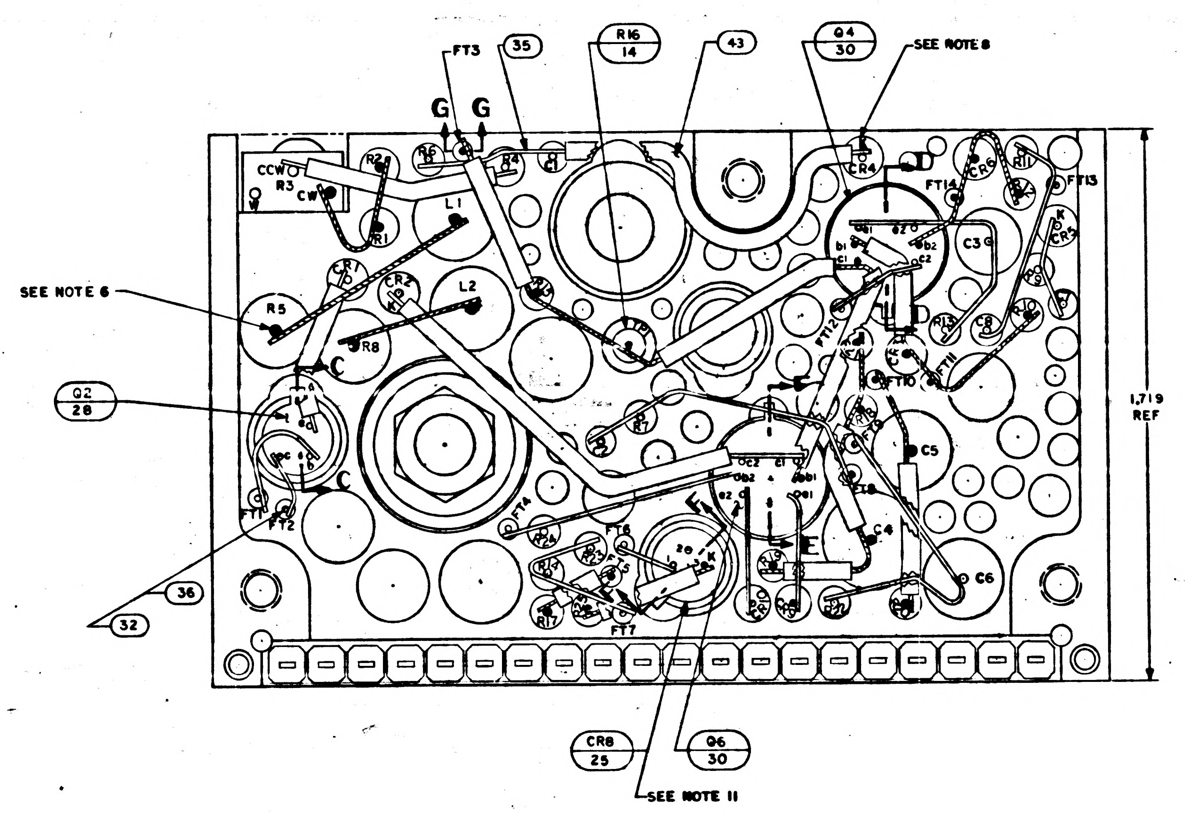
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Q4
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SEE NOTE 8
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CCW
R3
CW
R2
R6
R4
C1
CR4
FT14
CR6
R11
FT13
R1
L1
C3
CR5
SEE NOTE 6
CR1
CR2
L2
R5
R8
R13
C8
R10
C
Q2
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REF
FT12
FT11
FT10
R7
C5
C
FT1
FT2
FT4
FT8
C4
R24
FT6
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FT5
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C6
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R17
FT7
R22
CR8
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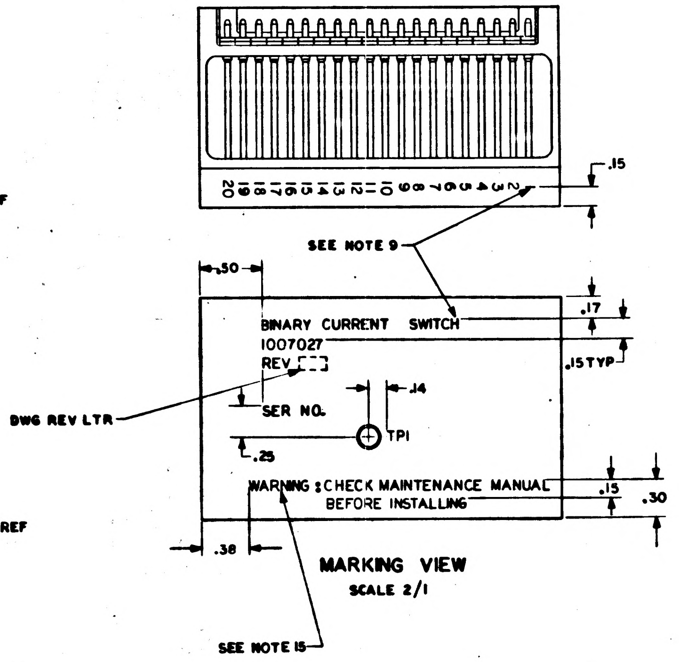
Q6
30
SEE NOTE 11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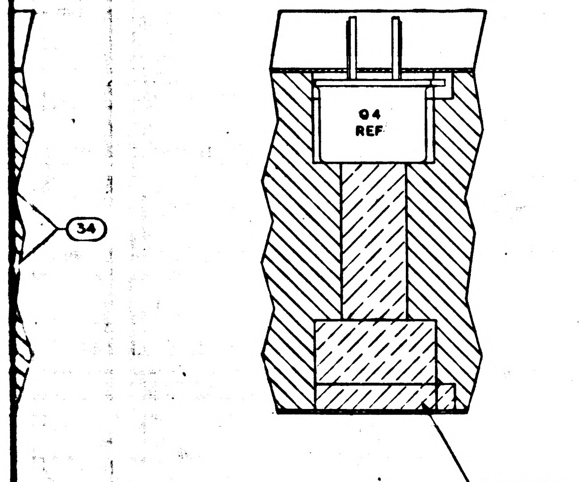
.15
SEE NOTE 9
.50
.17
BINARY CURRENT SWITCH
1007027
REV
.15 TYP
.14
DWG REV LTR
SER NO.
TP1
.25
WARNING : CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.30
.38
SEE NOTE 15

MARKING VIEW
SCALE 2/1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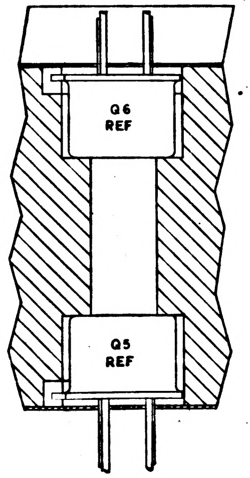
Q4 REF
Q5 REF
SEE NOTE 2

SECTION D-D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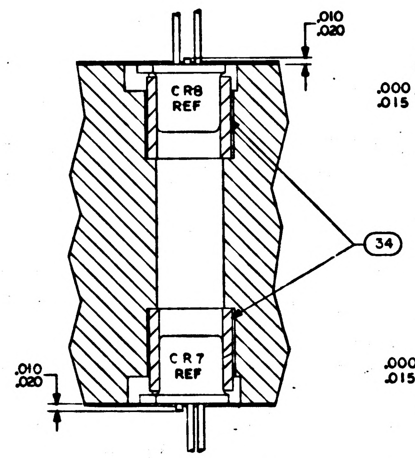
SECTION E-E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.020
CR8 REF
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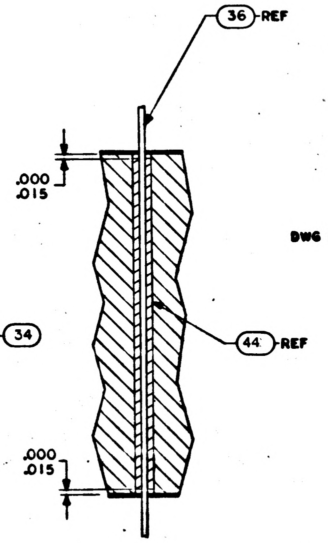
CR7 REF
.010
.020

SECTION F-F


36 REF
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.015
44 REF
.000
.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
20	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
20	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006757—8	WIRE, ELEC, .020 DIA	36
AR	1006757—L	WIRE, ELEC, .010 X .020	35
4	1008025—1	INSULATOR BUSHING	34
1	1008021 — 1	INSULATOR, BUSHING	33
AR	1006776—20	INSULATION SLEEVING	32
1	1010292—002	TERMINAL, FEED THRU	31
3	1010376 — 4	TRANSISTOR	30
1	1010269	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010390	DIODE	25
2	1010462	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755 —73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777 —13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750 —15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750—44	RESISTOR, FIXED MF, 3.3K, 1/4W ±2%	16
2	1006750 —1	RESISTOR, FIXED MF, 51Ω, 1/4W ±2%	15
1	1006750—80	RESISTOR, FIXED MF, 100K, 1/4W ±2%	14
2	1010369—92	RESISTOR, FIXED COMP, 300Ω 1/2W ±5%	13
2	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750 —18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389 —80	RESISTOR, FIXED WW, 10K, 3W ±1%	8
1	1010364 —557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373 —10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364—635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055 - 2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN [illegible] DATE 27 [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL
NASA APPROVAL
MIT APPROVAL [illegible] 3 [illegible] 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007027
SCALE 5/1
WT
SHEET 1 OF 1

1007027 D

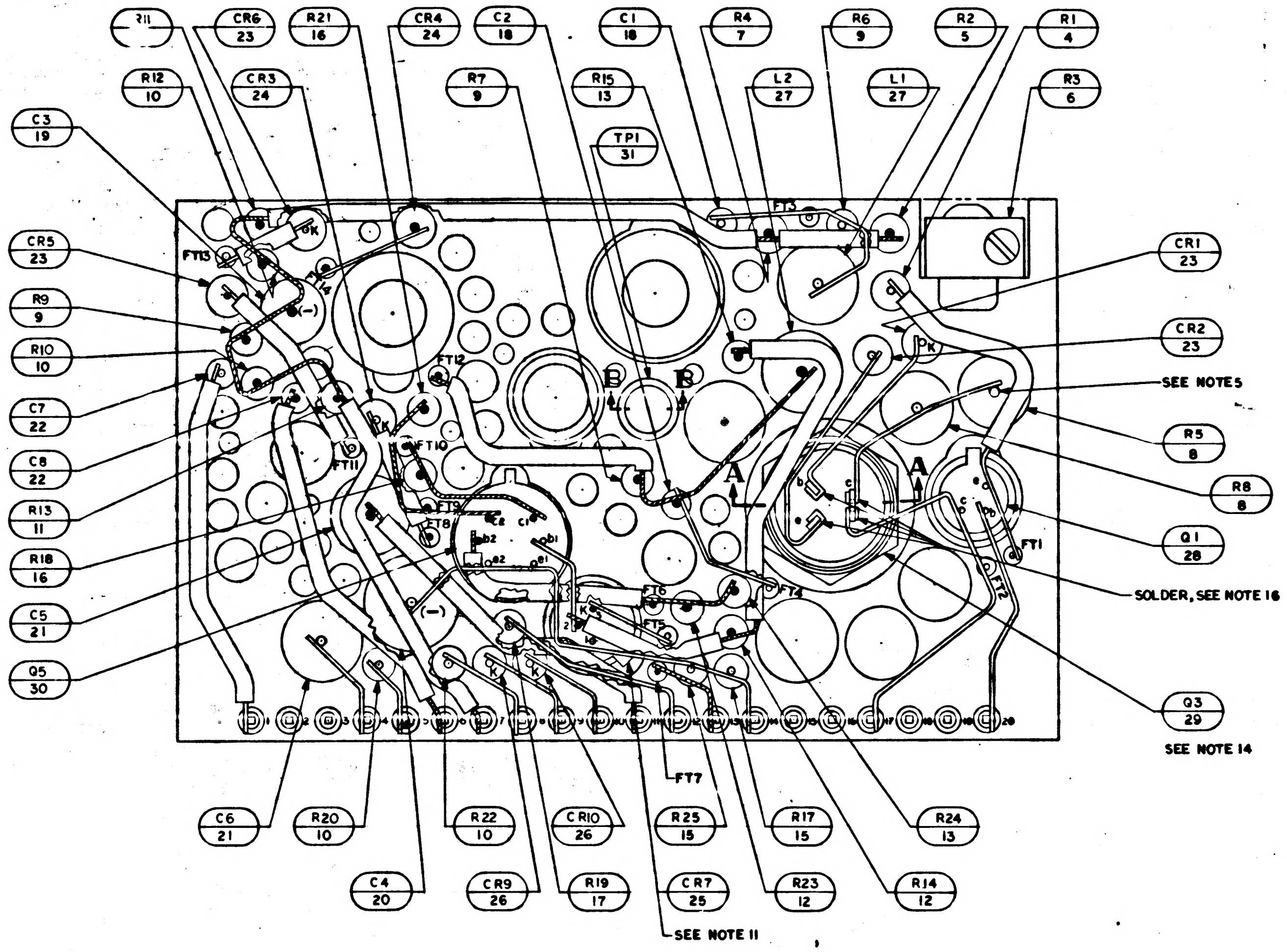
MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

F-2

1007027

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.


R11
CR6 23
R21 16
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C2 18
C1 18
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R6 9
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R1 4
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R15 13
L2 27
L1 27
R3 6
TP1 31
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTE 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
FT1
FT2
FT3
FT4
FT5
FT6
FT7
FT8
FT9
FT10
FT11
FT12
FT13
K
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A
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18
19
20
C6 21
R20 10
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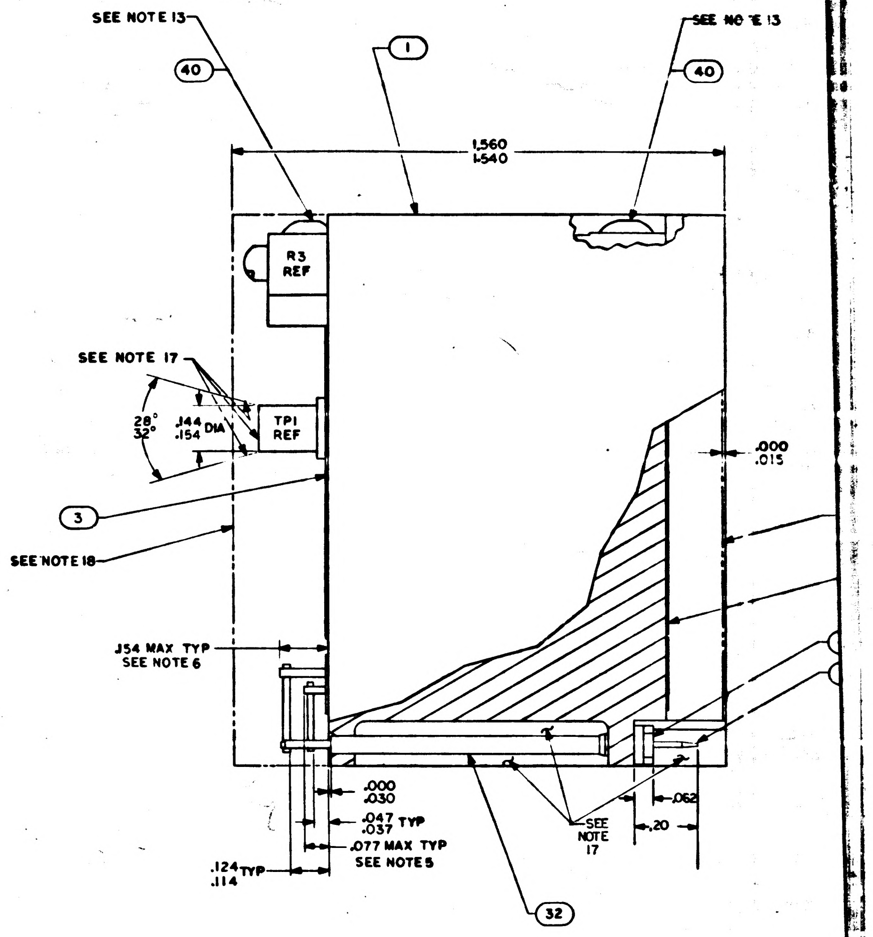
CR7 25
R23 12
R14 12
SEE NOTE 11


SEE NOTE 13
40
1
SEE NOTE 13
40
1.560
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R3 REF
SEE NOTE 17
28°
32°
.144
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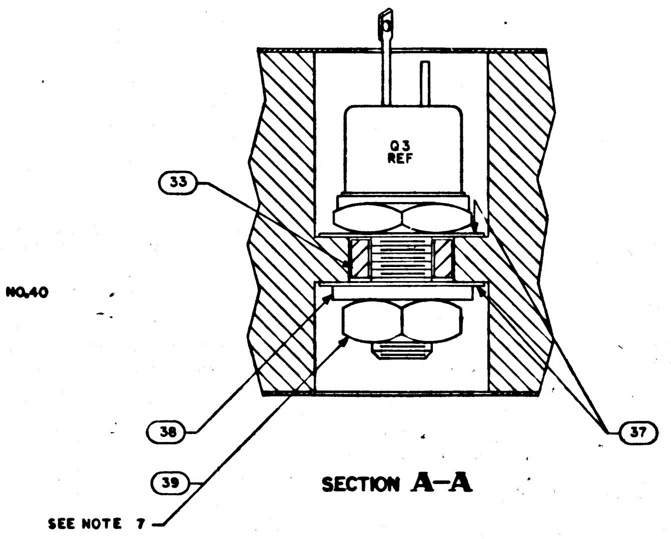
TP1 REF
.000
.015
3
SEE NOTE 18
.154 MAX TYP
SEE NOTE 6
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTE 5
.124
.114 TYP
SEE NOTE 17
.062
.20
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
5. ○ WITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK .100/.060 HIGH WHITE PER ND 1002019
10. STAKE FIND NO. 4 THRU FIND NO. 31, FIND NO. 33 AND FIND NO. 34 PER ND 1002009
11. ON CR7 CUT PIN NO. 1, ON CR8 CUT PIN NO. 2, .010/.020 ABOVE CASE
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO. 40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002003 (BLACK POLYURETHANE FOAM)
19. MUST MEET REQUIREMENTS OF ND 1002136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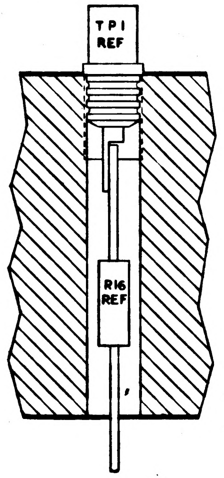
SEE NOTE 7

SECTION A-A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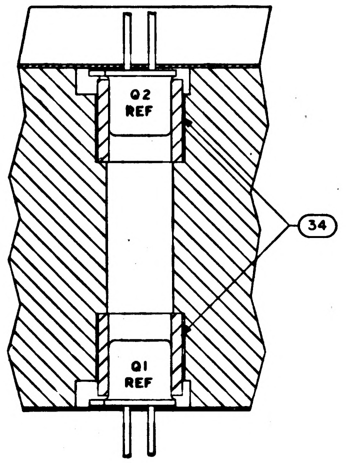
R16 REF

SECTION B-B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Q1 REF
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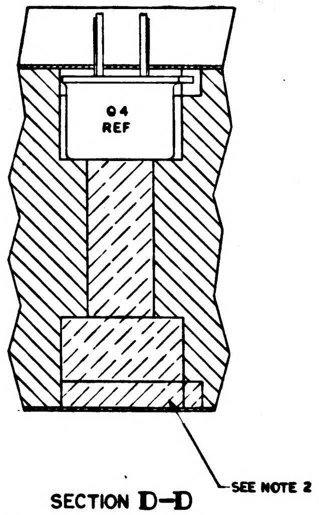
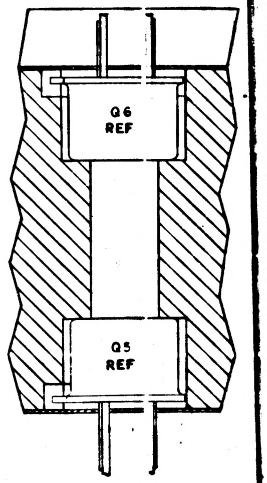
SECTION C-C


Q4 REF
SEE NOTE 2

SECTION D-D


Q6 REF
Q5 REF

SECTION E-E

Class A Release
TDRR 06084

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

Record of Revisions

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				MIT	NASA
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8/18/64	B	11646	3	WSK [illegible]	JB
9/1/64	C	12205	3	WK [illegible]	WJR
9/1/64	D	12206	3	WK [illegible]	WJR

This specification consists of page i to iii and 1 to 4 inclusive.

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FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, for use in the APOLLO Guidance and Navigation Equipment.

W Kupfer 4 Feb 64
MIT/IL DATE

J Bassard 2/4/64
NASA/MSC APPROVAL DATE

PREPARED BY **TITLE** **DATE**
R. J. Mura Spec. Eng. Writer 11-11-63
AC Spark Plug

EXAMINED BY **TITLE** **DATE**
L. S. Ferris Sr. Proj. Engr. 12-12-63
AC Spark Plug

APPROVED BY **TITLE** **DATE**
A. J. Stan Asst Dir 1-31-64
MIT/IL

APPROVED BY **TITLE** **DATE**

MIT/IL

APPROVED BY **TITLE** **DATE**

MIT/IL

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, Drawing 1007027, hereafter called the assembly.

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APOLLO G&N Specification
PS-1007027
4 February 1964

Class A Release
TDRR 06084

PROCUREMENT SPECIFICATION
FOR
BINARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

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9/1/64	D	12206	3	WK [illegible]	WJR

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APOLLO G&N Specification
PS-1007027
4 February 1964

PROCUREMENT SPECIFICATION
FOR
BINARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

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4 Feb 64
MIT/IL DATE

2/4/64
NASA/MSC APPROVAL DATE

PREPARED BY	TITLE	DATE
R. J. Mura	Spec. Eng. Writer	11-11-63
AC Spark Plug		

EXAMINED BY	TITLE	DATE
L. S. Ferris	Sr. Proj. Engr.	12-12-63
AC Spark Plug		

APPROVED BY	TITLE	DATE
	Asst. Dir	1-31-64
MIT/IL		

APPROVED BY	TITLE	DATE
MIT/IL		

APPROVED BY	TITLE	DATE
MIT/IL		

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DRAWINGS

APOLLO G&N

1007027	Binary Current Switch, Computer Output Assembly
1010043	Schematic, Binary Current Switch (For Reference Only)

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly provides pulses-torque current switching control in the accelerometer loops and generates and applies P and N pulses to the Forward Backward Counter.

3.3 FUNCTIONAL REQUIREMENTS

3.3.1 Electrical Inputs. The assembly shall perform as specified herein with the following electrical inputs:

a. DC Supply Voltages:

(1) +123 vdc ± 2%, nominal, + 138 vdc enhanced, + 108 vdc degraded
(2) +28 vdc ± 2% nominal, + 30.8 vdc enhanced, + 25.2 vdc degraded

b. Input Signals

(1) TM ± Set Pulses

	NOMINAL	ENHANCED	DEGRADED
Amplitude	-18 ± 0.5V peak	-20 ± 0.5 V peak	-13 ±.5 V peak
PRF	3.2 kc ± 2%	3.2 kc ± 2%	3.2 kc ± 2%
Risetime	0.10 + 0.05, -0.02 μsec	≤ 100 n sec	0.8 ± 0.1 μsec
Falltime	0.10 + 0.20, -0.02 μsec	≤ 80 n sec	1 ± 0.1 μsec
Pulse Width	3.0 ± 0.3 μsec	3.0 ± 0.3 μsec	3.0 ± 0.3 μsec

(2) Data Pulse

	NOMINAL	ENHANCED	DEGRADED
Amplitude	3.2 ± 0.1 V peak	3.5 ± 0.1 V	2.9 ± 0.1 V
PRF	3.2 kc ± 2%	3.2 kc ± 2%	3.2 kc ± 2%
Risetime	0.5 ± .10 μsec	0.5 ± .10 μsec	0.5 ± 0.10μsec
Falltime	5.5 ± 0.5 μsec	5.5 ± 0.5 μsec	5.5 ± 0.5μsec
Pulse Width	3.1 ± 0.5 μsec	3.1 ± 0.5 μsec	3.1 ± 0.5μsec
Timing	Data pulse lags TM ± Set pulse by 1.2 ± 0.2 μsec.		

3.3.2 Insulation Resistance. The resistance between the electrical interconnection of all assembly pins and the assembly mounting screws shall be equal to or greater than 100 megohms.

3.3.3 Scale-Factor Voltage. The assembly shall produce a scale-factor voltage of 6.00 ± 0.15 vdc across a simulated scale-factor network upon adjustment of the dc voltage at pin 20.

3.3.4 Output Leakage Current. The T+ and T- leakage current shall be equal to or less than 10 mμa.

3.3.5 Torque Pulse Characteristics. The T+ pulse and T- pulse characteristics, under conditions of nominal, enhanced and degraded inputs shall be as follows.

(1) Pulse risetime:	1.35 μsec
(2) Pulse falltime:	≤ 200 nsec
(3) Delay of pulse risetime:	≤ 650 nsec
(4) Delay of pulse falltime:	≤ 500 nsec

3.3.6 Scale-Factor Transient. The pulse at the simulated scale-factor resistor shall be as follows:

(1) Amplitude	≤ 4.0 V
(2) Pulse Width:	≤ 0.6μsec
(3) Flat-Top (from 4μs after TM ± Set to 1μs before TM ± Set):	≤ 50 mv p-p

3.3.7 P and N Pulse Generation. The N pulse and P pulse characteristics shall be as follows:

	NOMINAL	ENHANCED	DEGRADED
(1) Pulse amplitude:	-22±2V	-23.5±2V	-19.5±2V
(2) Pulse Risetime:	≤0.3 μsec	—	—
(3) Pulse Falltime:	≤3.0 μsec	—	—
(4) Pulse Width:	3.0 + 3.5, -1.0 μsec	—	—
(5) Residual amplitude:	2V	2V	2V

3.3.8 Dynamic Pulse Logic. T+ and N pulses shall occur in response to TM+ Set input pulses and T- and P pulses shall occur in response to TM- Set pulses under the conditions of enhanced and degraded inputs.

3.4 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.4.1 Service Life.

3.4.1.1 Operating Life. The assembly shall meet performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.4.1.2 Shelf Life. The assembly shall have a shelf life of at least 5 years, without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.4.2 Reliability. Design objections require maximum reliability of the assembly during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 3.9 failures per million hours.

4. QUALITY ASSURANCE PROVISIONS

4.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all the quality assurance provisions of Specification ND-1002210 shall form a part of this specification.

4.2 NASA ACCEPTANCE INSPECTION. The NASA acceptance inspection will be in accordance with Specification FTM-1007027.

5. PREPARATION FOR DELIVERY

5.1 GENERAL. Preparation for delivery shall be in accordance with Specification ND-1002210.

6. NOTES

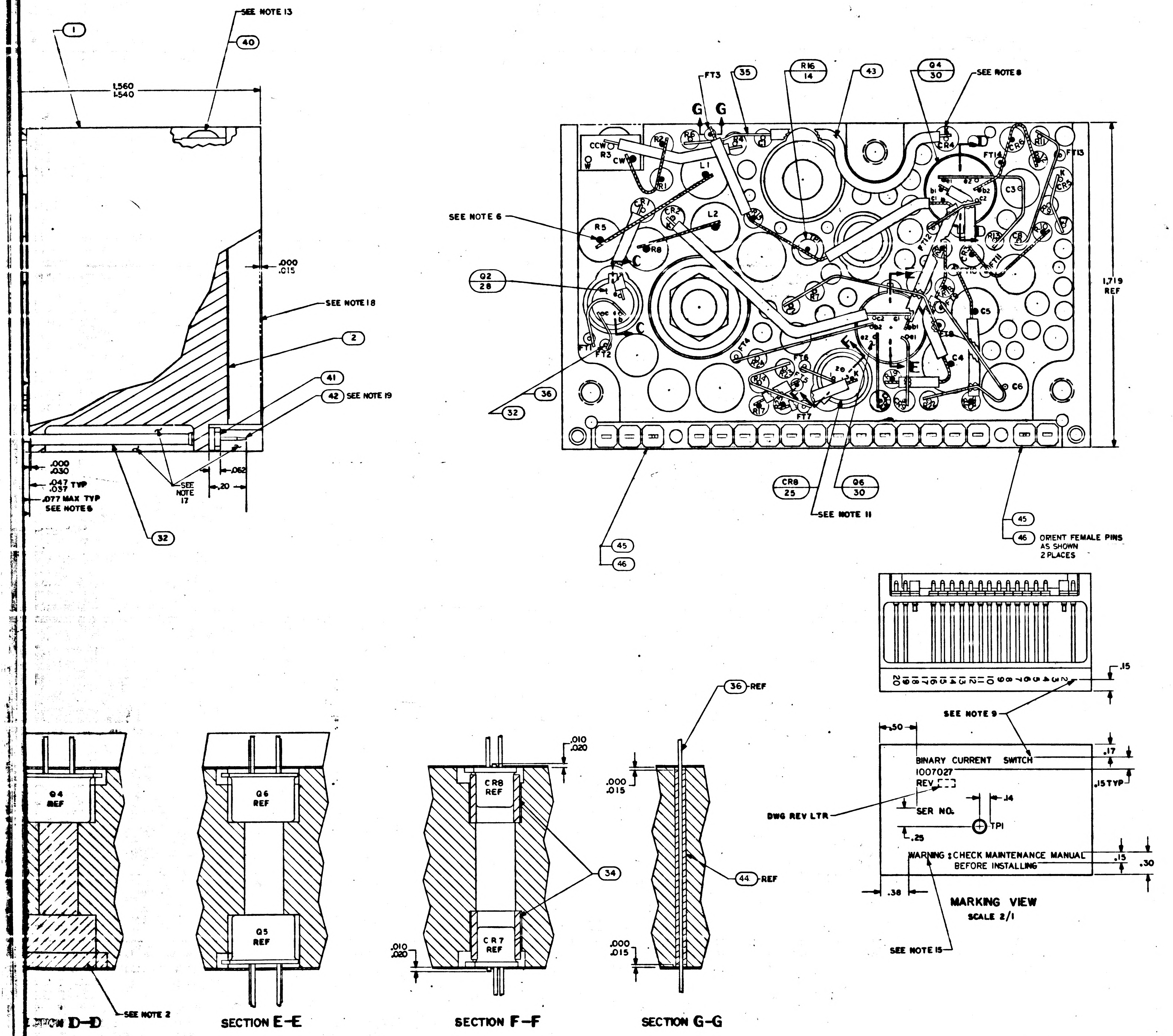
Notice: When APOLLO G&N drawings, specifications, or other data are used for any purpose other than in connection with a definitely related NASA procurement operation, NASA thereby incurs no responsibility nor any obligation whatsoever, and the fact that NASA may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

RJM:efo

1007027 E

REVISIONS CLASS B TDRR 00716

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00007		WK
B	REVISED PER TDRR 01257	5-15-63	WK
C	REVISED PER TDRR 01712	6-26-63	WK
D	REVISED PER TDRR 01850	7-9-63	WK
E	REVISED PER TDRR 01959	7-20-63	WK



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SEE NOTE 6
SEE NOTE 17
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FT3
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Q4
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SEE NOTE 8
G
G
SEE NOTE 6
Q2
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REF
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CR8
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Q6
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SEE NOTE 11
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46
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46 ORIENT FEMALE PINS AS SHOWN 2 PLACES
.15
SEE NOTE 9
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BINARY CURRENT SWITCH
1007027
REV
DWG REV LTR
SER NO.
TP1
.14
.25
.17
.15 TYP
WARNING : CHECK MAINTENANCE MANUAL BEFORE INSTALLING
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MARKING VIEW
SCALE 2/1
SEE NOTE 15
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44 REF
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Q4 REF
Q6 REF
Q5 REF
CR8 REF
CR7 REF
D—D
SEE NOTE 2
SECTION E-E
SECTION F-F
SECTION G-G

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
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2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
16	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006757—8	WIRE, ELEC, .020 DIA	36
AR	1006757—L	WIRE, ELEC, .010 X .020	35
4	1008025—1	INSULATOR BUSHING	34
1	1008021—1	INSULATOR, BUSHING	33
AR	1006776—20	INSULATION SLEEVING	32
1	1010292—002	TERMINAL, FEED THRU	31
3	1010376 - 4	TRANSISTOR	30
1	1010269	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010390	DIODE	25
2	1010462	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8UF, 50V ±10%	20
1	1006755—73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777—13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750—15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750—44	RESISTOR, FIXED MF, 3.3K, 1/4W ±2%	16
2	1006750—1	RESISTOR, FIXED MF, 51Ω, 1/4W ±2%	15
1	1006750—80	RESISTOR, FIXED MF, 100K, 1/4W ±2%	14
2	1010369—92	RESISTOR, FIXED COMP, 300K, 1/8W ±5%	13
2	1006750—53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750—18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±2	10
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389—80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364—557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373—10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364—635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

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DRAWN R. Bell DATE 27
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Jy 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007027
SCALE 5/1
WT
SHEET 1 OF 1

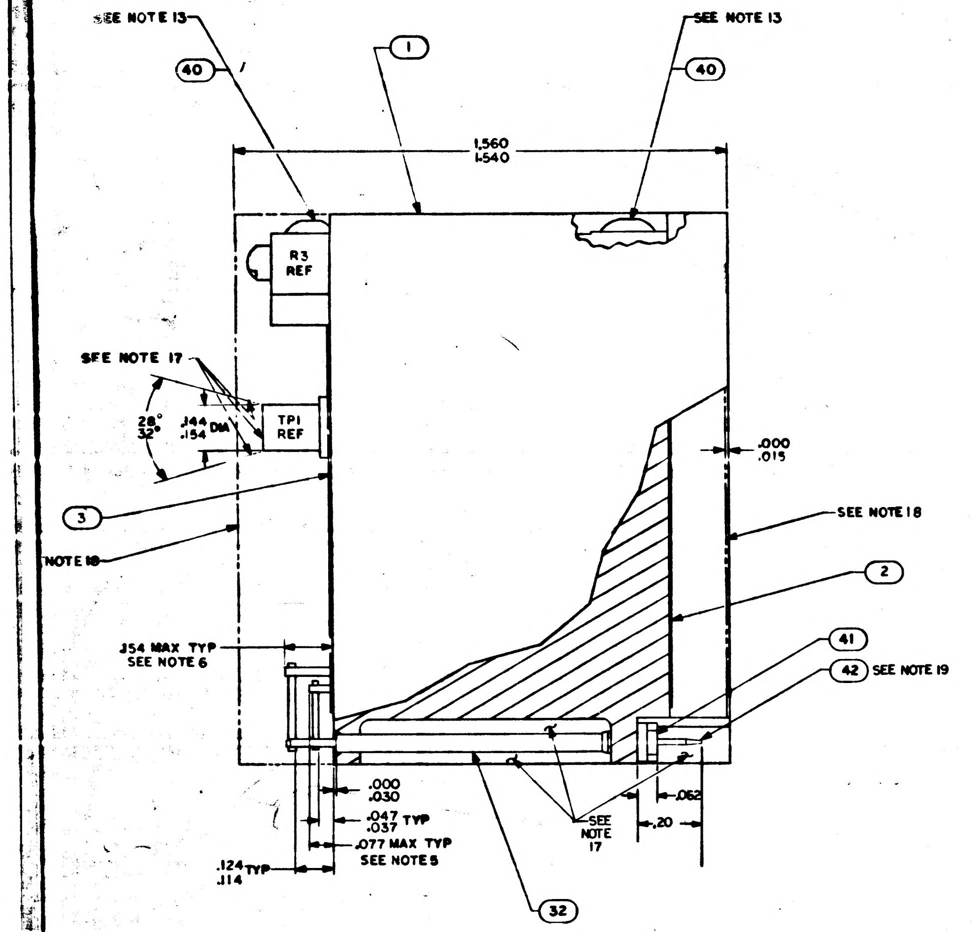
INCHES
PHOTOGRAPHIC SCALE ONLY

E-3

1007027

1007027 E

SYM	DESCRIPTION
A	REVISED PER TDRR 00009
B	REVISED PER TDRR 01257
C	REVISED PER TDRR 01912
D	REVISED PER TDRR 01580
E	REVISED PER TDRR 01859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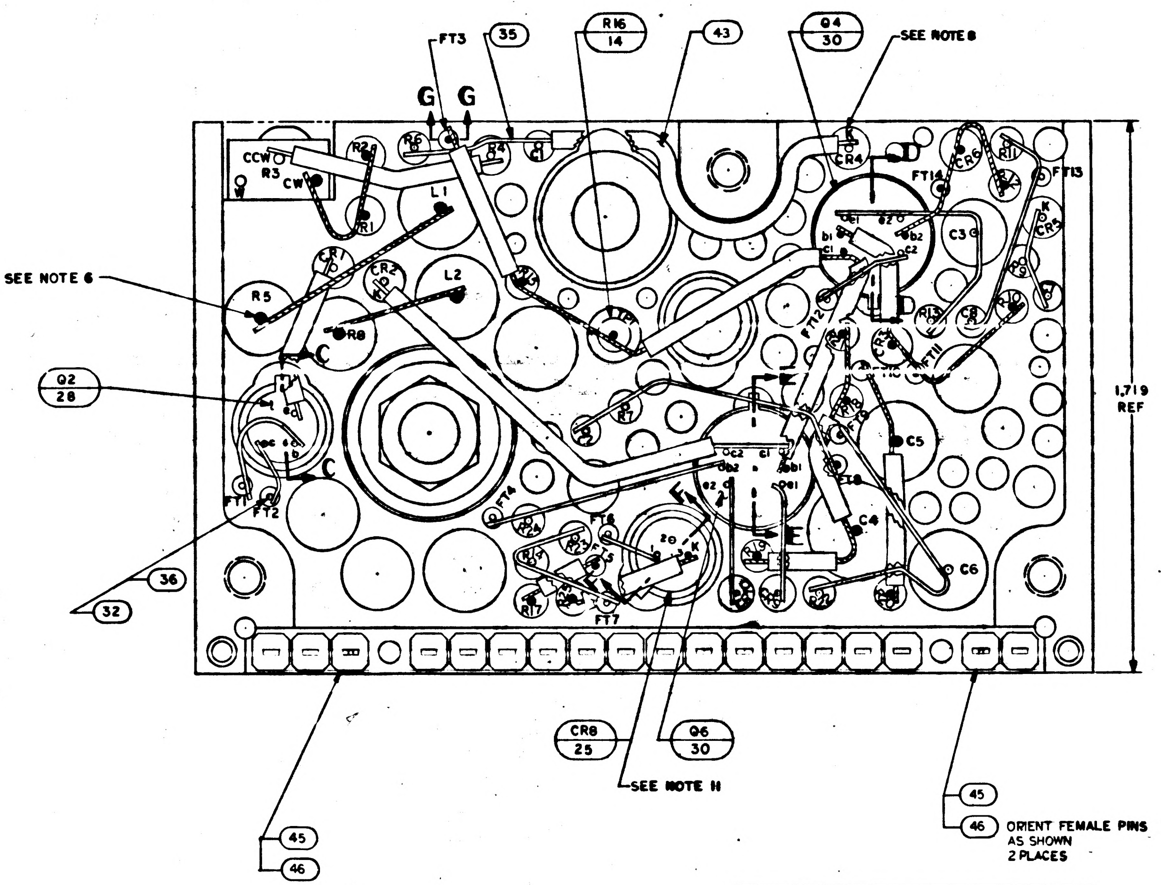
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CR2
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FT2
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FT8
FT7
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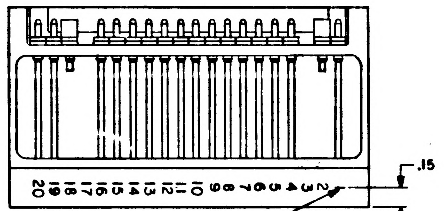
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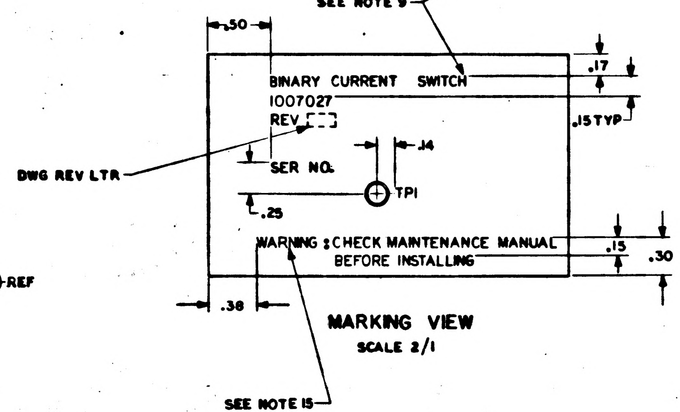
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SEE NOTE 15

BINARY CURRENT SWITCH
1007027
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SER NO.
WARNING : CHECK MAINTENANCE MANUAL BEFORE INSTALLING

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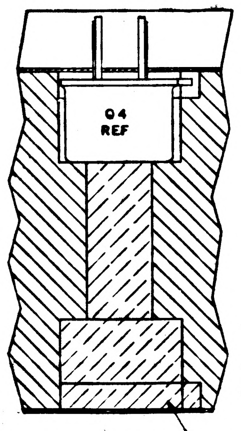
SCALE 2/1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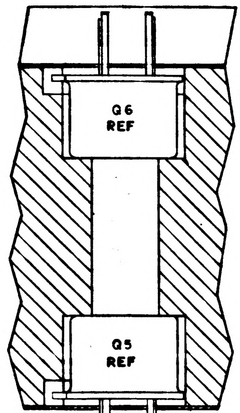
SECTION D–D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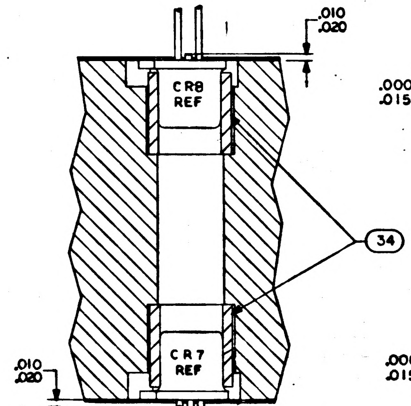
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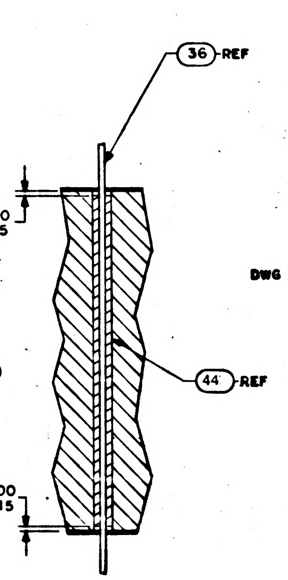
SECTION F–F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SECTION G–G

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QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
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2	1006781-1	CONTACT, WRAPOST FEMALE
2	1006774	INSULATOR, WRAPOST FEMALE
AR	1006776 – 22	INSULATION SLEEVING
AR	1006776 – 21	INSULATION SLEEVING
16	1006782 — 4	CONTACT, WRAPOST MALE
16	1006775	INSULATOR, WRAPOST MALE
2	1000093 — 3	SCREW, BOTTON HEAD
1	MS 35650 — 104	NUT, PLAIN, HEX
1	1008020—1	WASHER, FLAT
2	1008024—1	WASHER, INSULATOR
AR	1006757—8	WIRE, ELEC, .020 DIA
AR	1006757—L	WIRE, ELEC, .010 X .020
4	1008025—1	INSULATOR BUSHING
1	1008021 — 1	INSULATOR, BUSHING
AR	1006776—20	INSULATION SLEEVING
1	1010292—002	TERMINAL, FEED THRU
3	1010376 – 4	TRANSISTOR
1	1010269	TRANSISTOR
2	1010357	TRANSISTOR
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5
2	1010394	DIODE
2	1010390	DIODE
2	1010462	DIODE
4	1010385	DIODE
2	1006777—14	CAP., FIXED CER, 130 UUF, 10
2	1006777—33	CAP., FIXED CER, .022 UF, 10
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50
1	1006755 —73	CAP., FIXED TANT, 2.2 UF, 35
2	1006777 —13	CAP., FIXED CER, 100 UUF, 10
1	1006750 —15	RESISTOR, FIXED MF, 200Ω, 1
2	1006750—44	RESISTOR, FIXED MF, 3.3K, 1
2	1006750 —1	RESISTOR, FIXED MF, 51Ω,
1	1006750—80	RESISTOR, FIXED MF, 100K
2	1010369—92	RESISTOR, FIXED COMP, 300
2	1006750—53	RESISTOR, FIXED MF, 7.5K, 1
1	1006750—18	RESISTOR, FIXED MF, 270Ω,
4	1006750—67	RESISTOR, FIXED MF, 30K, 1
4	1006750—81	RESISTOR, FIXED MF, 110K,
2	1010389 —80	RESISTOR, FIXED WW, 10K
1	1010364 —557	RESISTOR, FIXED MF 39.2K 1
1	1010373 —10	RESISTOR, VAR, 10K
1	1010364—635	RESISTOR, FIXED MF,
1	1010364—683	RESISTOR, FIXED MF, 178K
1	1008055—1	INSULATOR, TOP
1	1008055- 2	INSULATOR, BOTTOM
1	1007035	HEAT SINK

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.05 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN R. Bell DATE 27
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Jan 63

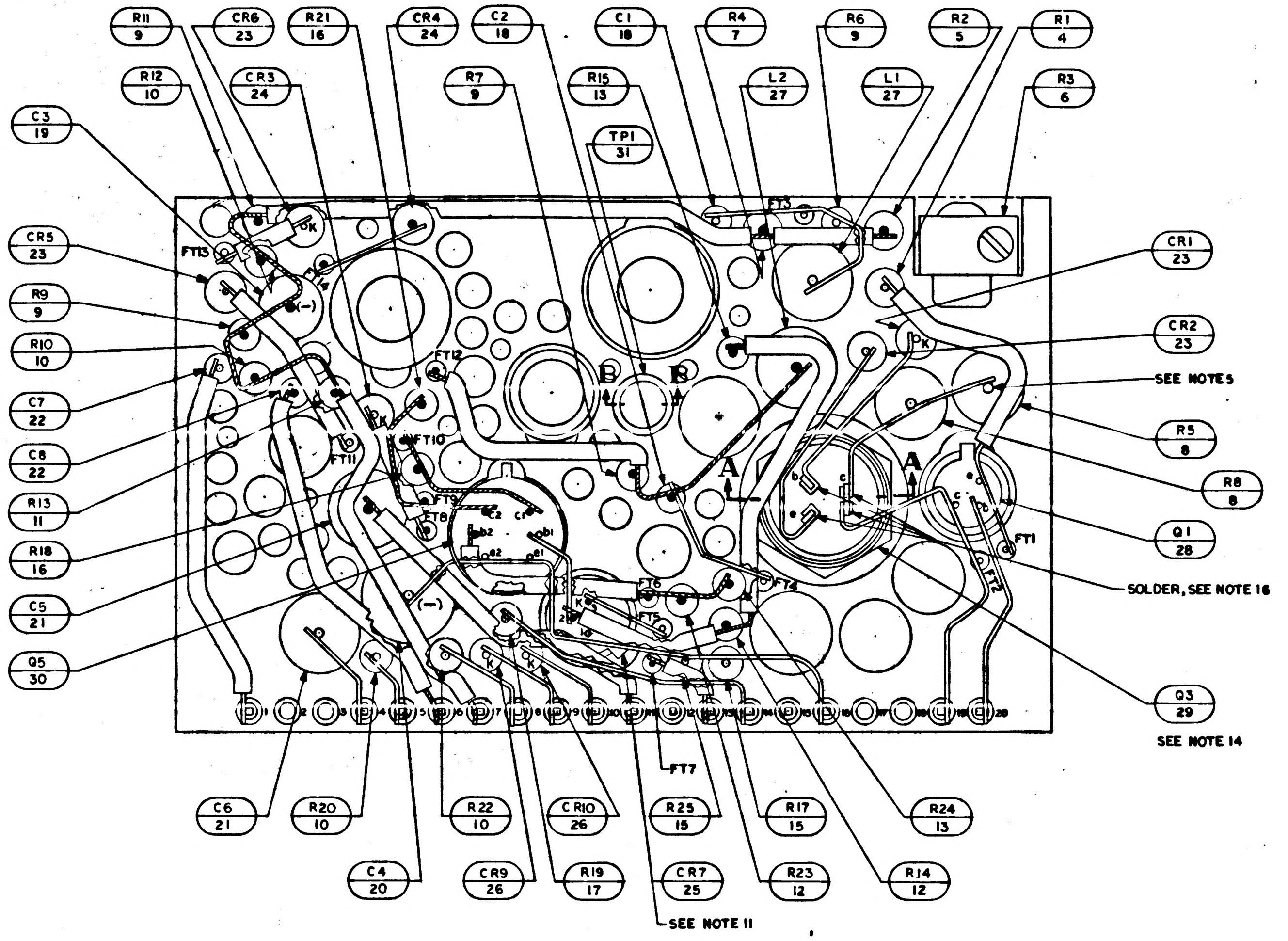
MANNED SPACECRAFT C
HOUSTON, TEXAS

BINARY CURRENT
COMPUTER OUT
ASSEMBLY

CODE IDENT NO.
SIZE J
1007027
SCALE 5/1

MASTER

1007027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R10 10
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R13 11
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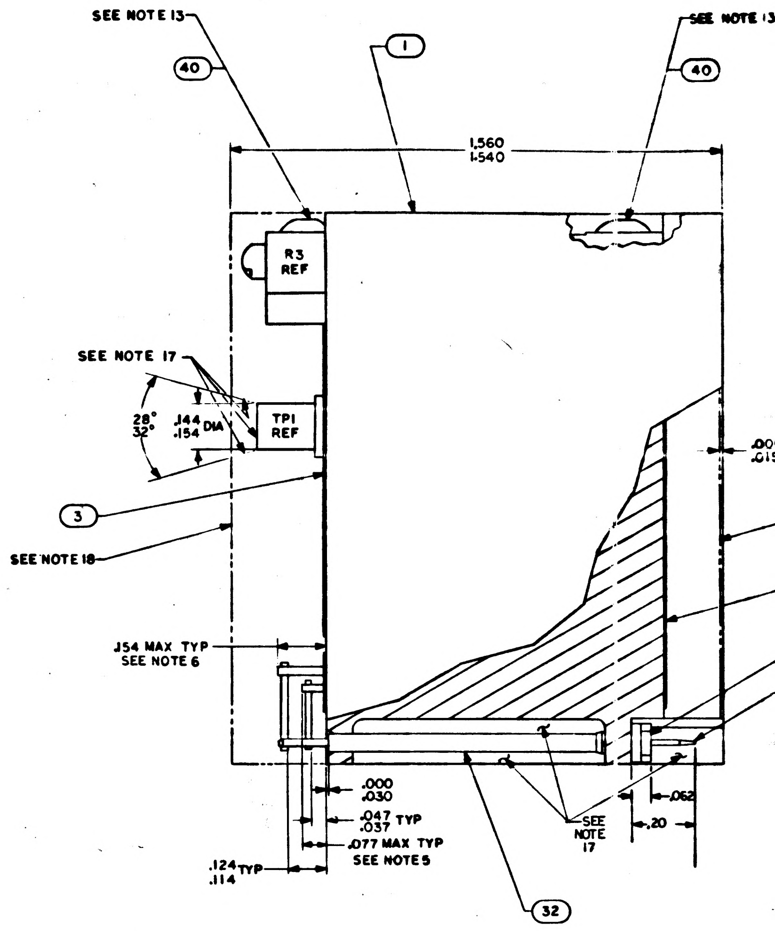
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.124 TYP
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SEE NOTE 17
.062
.20
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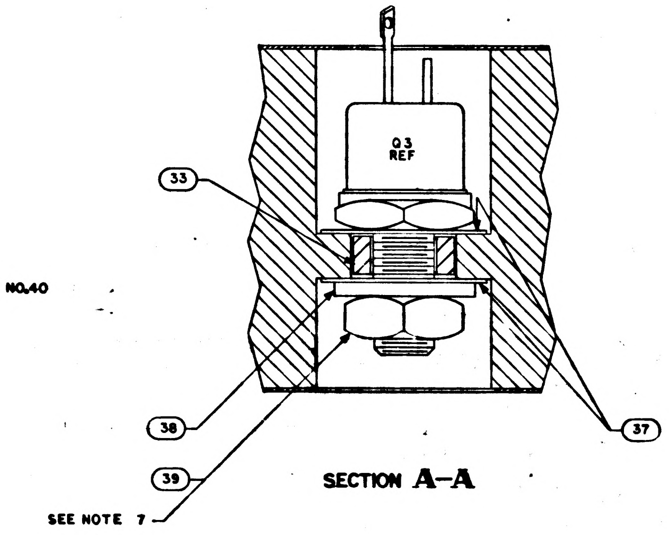
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
5. ○ WITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK .100/.060 HIGH WHITE PER ND 1002019
10. STAKE FIND NO.4 THRU FIND NO. 31, FIND NO. 33 AND FIND NO. 34 PER ND 1002009
11. ON CR7 CUT PIN NO.1, ON CR8 CUT PIN NO.2, .010/.020 ABOVE CASE
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002003 (BLACK POLYURETHANE FOAM)
19. MUST MEET REQUIREMENTS OF ND 1002136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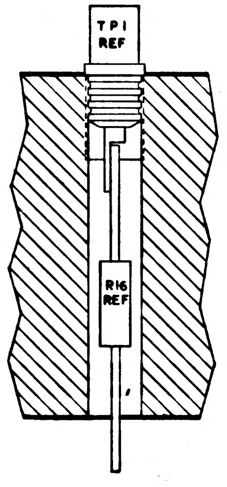
SECTION A-A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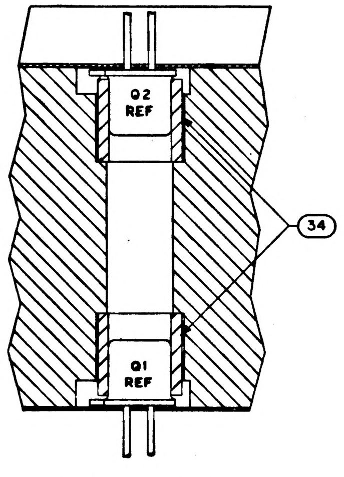
SECTION B-B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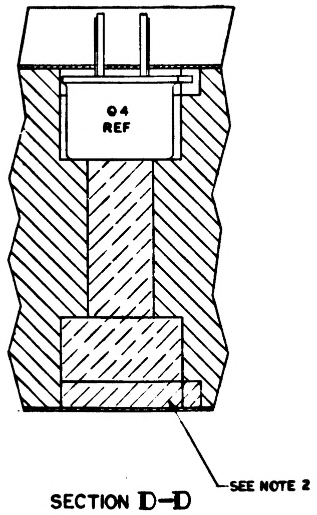
SECTION C-C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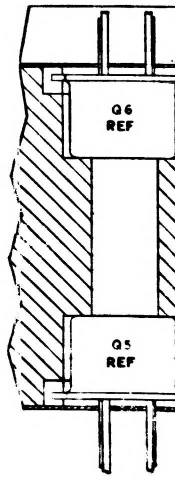
SEE NOTE 2

SECTION D-D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SECTION E-

INCHES 0 1 2 PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS1007027 E
4 February 1964

Class A Release
TDRR 06084

PROCUREMENT SPECIFICATION
FOR
BINARY CURRENT SWITCH,
COMPUTER OUTPUT ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
3/10/64	A	06813	2 and 3.		
8/18/64	B	11646	3	WSK	JB
9/1/64	C	12205	3	WK	WJR
9/1/64	D	12206	3	WK	WJR
3/9/65	E	17283	1 - 7	WK	WJR

This specification consists of page i to iii and 1 to 7 inclusive.

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly provides pulses-torque current switching control in the accelerometer loops and generates and applies P and N pulses to the Forward Backward Counter.

3.3 FUNCTIONAL REQUIREMENTS

3.3.1 Electrical Inputs. The assembly shall perform as specified herein with the following electrical inputs.

a. DC Supply Voltages - DC supply voltages shall be as specified in Table I.
b. Input Signals - Input signals shall be as specified in Tables II, III, IV and Figure 1.

TABLE I

SUPPLY VOLTAGES

SUPPLY VOLTAGE	CONDITIONS (vdc ±2%)		
	Nominal	Enhanced	Degraded
+28 vdc	28.0	30.8	25.2
+120 vdc	123.0	138.0	108.0

TABLE II

TM±SET PULSES

CHARACTERISTICS	CONDITIONS			
	Nominal	Enhanced	Degraded	Threshold
PRF	3.2 kc ±2%	3.2 kc ±2%	3.2 kc ±2%	3.2 kc ±2%
Amplitude	-18.0±0.5V peak	-20.0±0.5V peak	-13.0±0.5V peak	-3.00+0.5, -0V peak
Risetime	0.10+0.05 -0.02 μsec	<100 nsec	0.8±0.1μsec	0.10+0.05, -0.03 μsec
Falltime	0.10+0.20, -0.02 μsec	<80 nsec	1.0±0.1μsec	0.10+0.20, -0.02 μsec
Pulse Width	3.0±0.3 μsec	3.0±0.3 μsec	3.0±0.3 μsec	3.0±0.3 μsec

TABLE III

DATA PULSES

CHARACTERISTICS	CONDITIONS		
	Nominal	Enhanced	Degraded
PRF	3.2 kc	3.2 kc	3.2 kc
Amplitude	3.2±0.1V	3.4±0.1V	2.9±0.1V
Risetime	0.5±0.1 μsec	0.5±0.1 μsec	0.5±0.1 μsec
Falltime	5.5±0.5 μsec	5.5±0.5 μsec	5.5±0.5 μsec
Pulse Width	3.1±0.5 μsec	3.1±0.5 μsec	3.1±0.5 μsec

TABLE IV

MODING

MODE	TEST SIGNAL LINE	CONDITION
0	TM+Set TM-Set Data Pulse	No Pulse PRF 3.2 kc ±2% PRF 3.2 kc ±2%, Lags TM-Set by 1.2±0.2 μsec
1	TM+Set TM-Set Data Pulse	PRF 3.2 kc ±2% No Pulse PRF 3.2 kc ±2%, Lags TM+Set by 1.2±0.2 μsec
1-1	TM+Set TM-Set Data Pulse	PRF 1.6 kc ±2% PRF 1.6 kc ±2%, Lags TM+Set by 312.5±3.0 μsec PRF 3.2 kc ±2%, Lags TM+Set and TM-Set by 1. ±0.2 μsec

3.3.2 Insulation Resistance. The resistance between the electrical interconnection of all assembly pins and the assembly mounting screws shall be equal to or greater than 100 megohms.

3.3.3 Scale-Factor Voltage. The Type I assembly shall produce a scale-factor voltage of 6.0±0.15 vdc across a simulated scale-factor network upon adjustment of the dc voltage at pin 20.

3.3.4 Bistable Mode. The Type II assembly shall exhibit no astable or monostable modes of operation during the turn-on period with the ramp signal input (see Figure 1) applied to pin 20.

3.3.5 Bias Normalization. The Type II assembly shall produce average output currents equalized to within 12 ppm upon adjustment of resistor R3.

3.3.6 Torque Pulse. The output T+ pulse and T- pulse shall be as follows under nominal, enhanced and degraded input conditions:

a. Nominal input conditions

	Type I	Type II
(1) Pulse risetime	≤1.35 μsec	≤1.35 μsec
(2) Pulse decay time	≤200 nsec	≤200 nsec
(3) Delay of pulse risetime	≤650 nsec	≤450 nsec
(4) Delay of pulse decay time	≤500 nsec	≤350 nsec

b. Enhanced input conditions

	Type I	Type II
(1) Pulse risetime	≤1.35 μsec	≤1.35 μsec
(2) Pulse decay time	≤200 nsec	≤200 nsec
(3) Delay of pulse risetime	≤650 nsec	≤450 nsec
(4) Delay of pulse decay time	≤500 nsec	≤350 nsec

c. Degraded input conditions

	Type I	Type II
(1) Pulse risetime	≤1.35 μsec	≤1.35 μsec
(2) Pulse decay time	≤200 nsec	≤200 nsec
(3) Delay of pulse risetime	≤650 nsec	≤450 nsec
(4) Delay of pulse decay time	≤500 nsec	≤350 nsec

3.3.7 Scale Factor Transient. The transients occurring at the simulated scale-factor network shall be as follows:

a. During transition:

(1) Pulse amplitude	≤4V pp
(2) Pulse width	≤0.6 μsec

b. During steady-state

(1) Amplitude ≤50 mv pp

3.3.8 Dynamic Pulse Logic. In the Type I assembly T+ and N pulses shall occur in response to TM+Set input pulses and T- and P pulses shall occur in response to TM-Set pulses under the conditions of enhanced and degraded inputs.

3.3.9 P and N Pulses. P and N pulses shall be generated in response to TM-Set and TM+Set inputs, respectively, and shall have the following characteristics:

a. Nominal input conditions

(1) Pulse amplitude -22±2V
(2) Pulse risetime ≤0.3 μsec
(3) Pulse decay time ≤3 μsec
(4) Pulse width 3.0-1.0+3.5 μsec
(5) Residual level ≤-2V
(6) The amplitude of all P pulses shall match within ±10 percent
(7) The amplitude of all N pulses shall match within ±10 percent

b. Enhanced input conditions

(1) Pulse amplitude -23.5±2.0V

c. Degraded input conditions

(1) Pulse amplitude -19.5±2.0V

3.3.10 Leakage Current. The leakage current into the T+ and T- output terminals during pulse absence shall be equal to or less than 10 milli-microamperes.

3.4 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.4.1 Service Life

3.4.1.1 Operating Life. The assembly shall meet performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.4.1.2 Shelf Life. The assembly shall have a shelf life of at least 5 years, without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.4.2 Reliability. Design objections require maximum reliability of the assembly during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 3.9 failures per million hours.

4. QUALITY ASSURANCE PROVISIONS

4.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all the quality assurance provisions of Specification ND-1002210 shall form a part of this specification.

4.2 NASA ACCEPTANCE INSPECTION. The NASA acceptance inspection will be in accordance with Specification FTM-1007027.

5. PREPARATION FOR DELIVERY

5.1 GENERAL. Preparation for delivery shall be in accordance with Specification ND-1002210.

6. NOTES

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GK/jmg

1007027 F

REVISIONS CLASS B TDRR 00916

SYM	DESCRIPTION	DATE	APPROVAL
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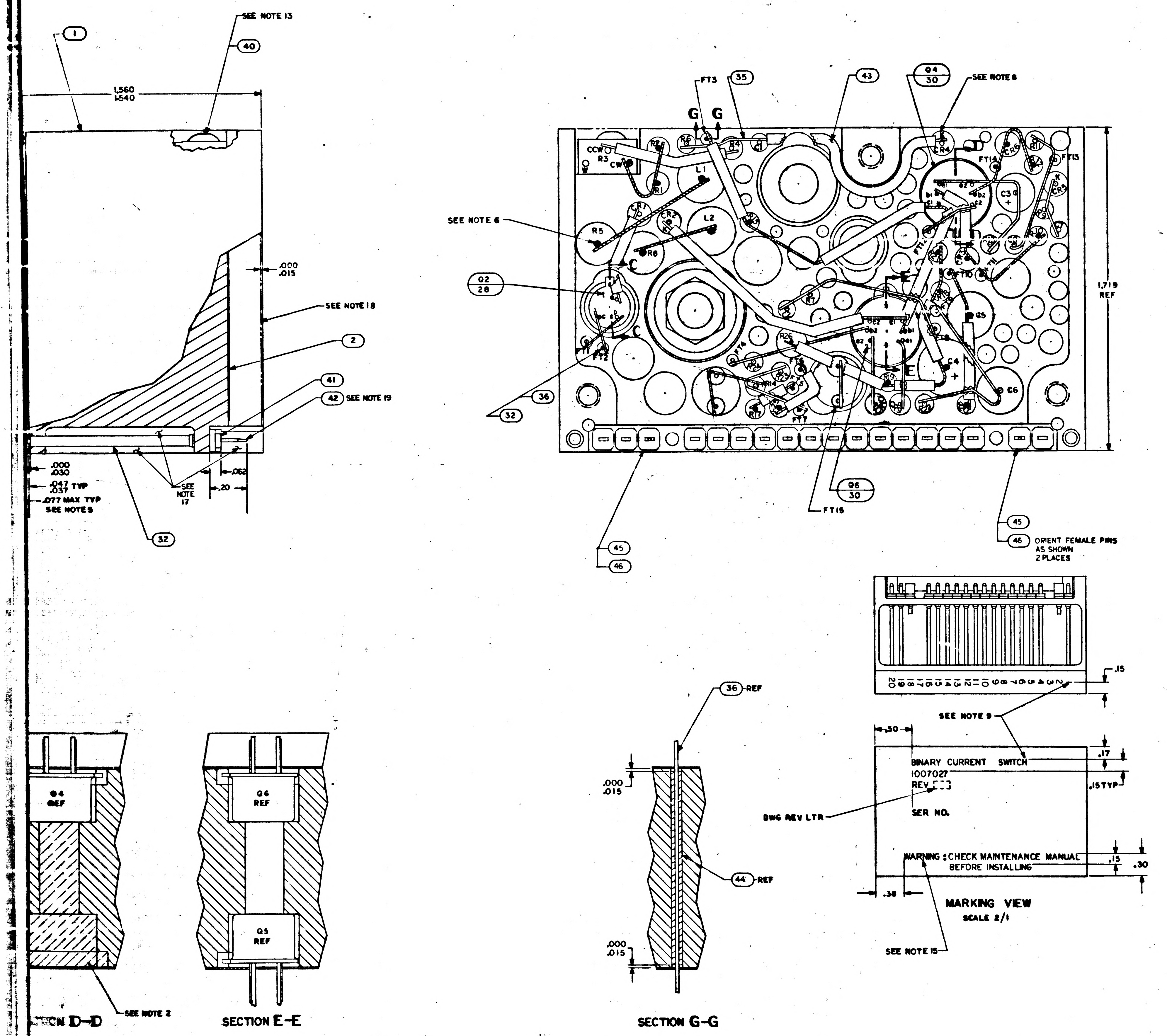
D	REVISED PER TDRR 01850	[illegible]	WK
E	REVISED PER TDRR 01959	[illegible]	WK
F	REVISED PER TDRR 02166	7-29-63	J.J.M. WK
G	REVISED PER TDRR 02718	8-21-63	J.J.M.



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SEE NOTE 8
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SEE NOTE 9
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BINARY CURRENT SWITCH
1007027
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DWG REV LTR
WARNING: CHECK MAINTENANCE MANUAL BEFORE INSTALLING
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SCALE 2/1
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Q6 REF
Q5 REF
SEE NOTE 2
SECTION D-D
SECTION E-E
SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
16	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006757—8	WIRE, ELEC, .020 DIA	36
AR	1006757—L	WIRE, ELEC, .010 X .020	35
2	1008025—1	INSULATOR BUSHING	34
1	1008021 — 1	INSULATOR, BUSHING	33
AR	1006776—20	INSULATION SLEEVING	32
3	1010376 — 4	TRANSISTOR	30
1	1010269 — 1	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755 —73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777 —13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750 —15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750— 56	RESISTOR, FIXED MF, 10 K, 1/4W ±2%	16
2	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	15
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	13
2	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750 —18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF. 30K, 1/4W ±2%	10
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389 —80	RESISTOR, FIXED WW. 10K, 3 W ±1%	8
1	1010364 —557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373 —10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364—635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

J 1007027 G

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007027
SCALE 5/1
WT
SHEET 1 OF 1

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

E3
1007027

1007027 F

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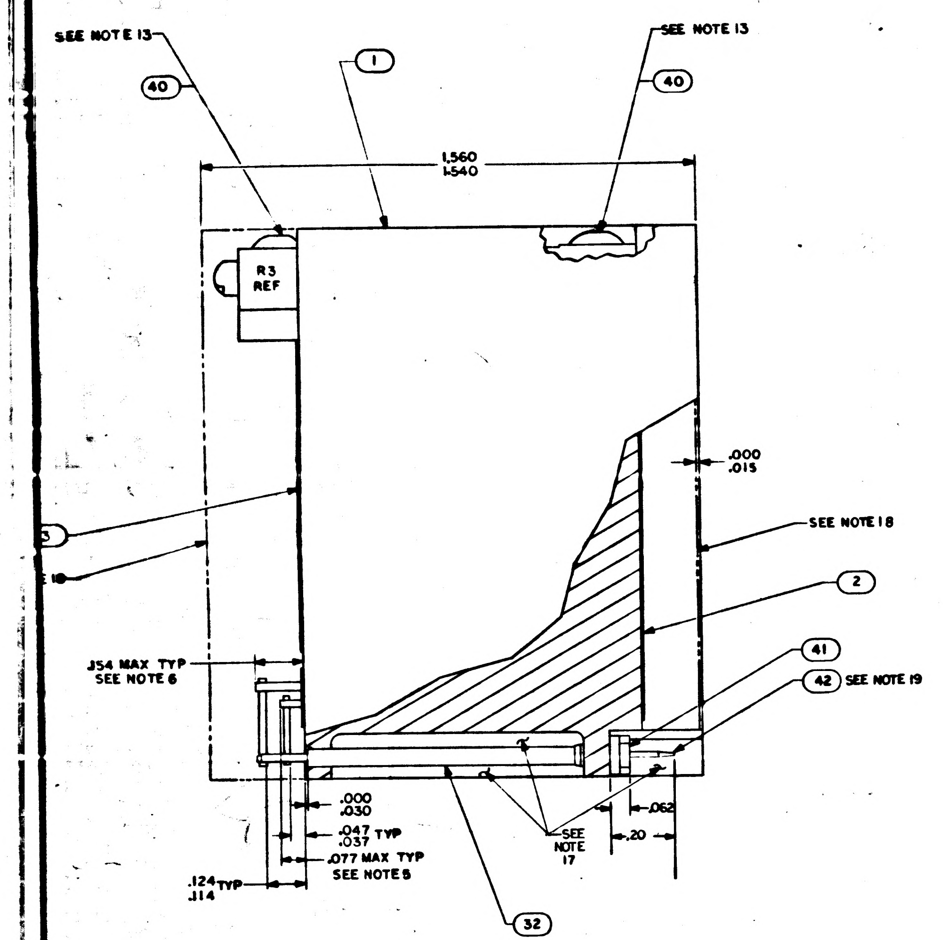
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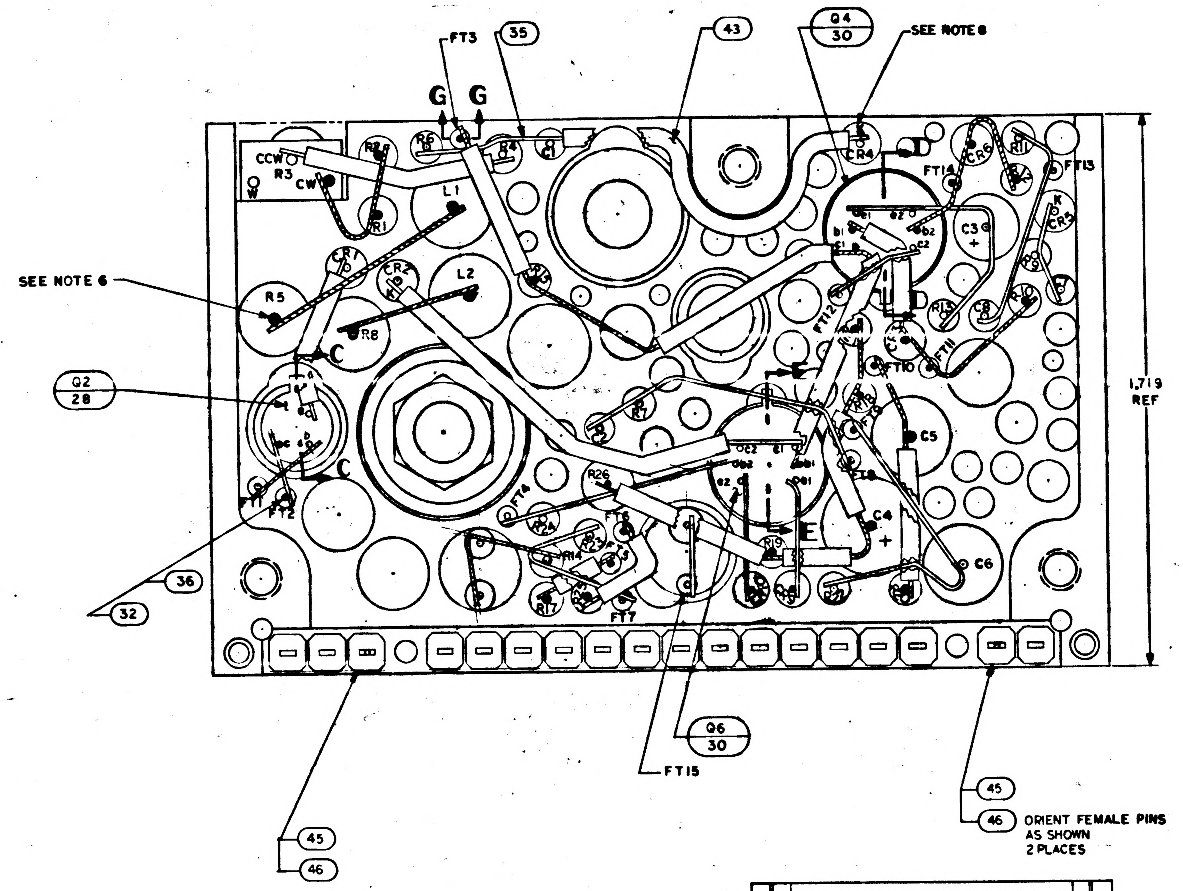
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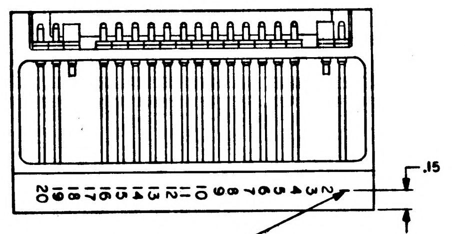
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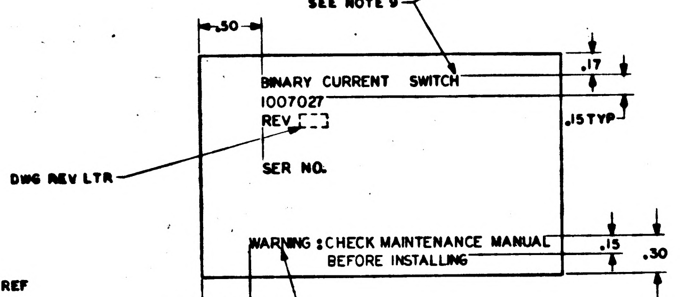
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SEE NOTE 15

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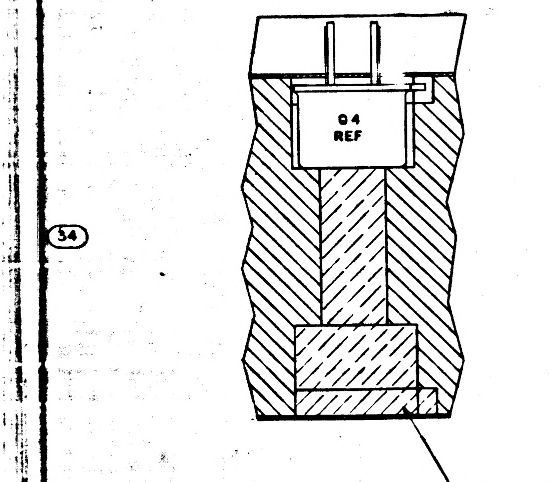
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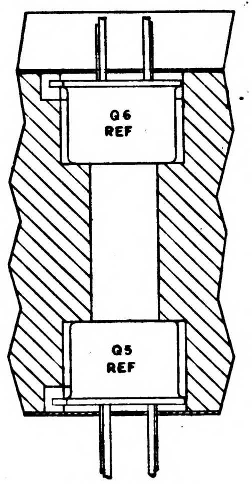
SECTION D-D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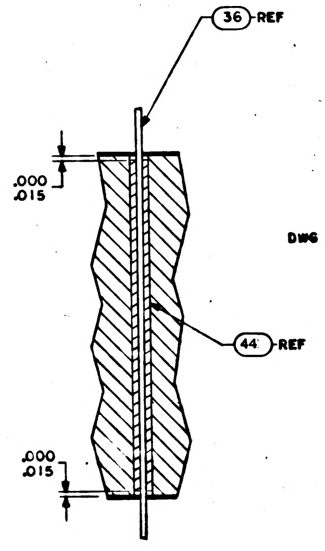
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SECTION G-G

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2	1006777-16	CAPACITOR
1	1006750-40	RESISTOR
1	1010372-6	DIODE
2	1006781-1	CONTACT, WRAPOST FEMALE MIN
2	1006774	INSULATOR, WRAPOST FEMALE MIN
AR	1006776 - 22	INSULATION SLEEVING
AR	1006776 - 21	INSULATION SLEEVING
16	1006782 — 4	CONTACT, WRAPOST MALE MIN
16	1006775	INSULATOR, WRAPOST MALE MIN
2	1000093 — 3	SCREW, BUTTON HEAD
1	MS 35650 — 104	NUT, PLAIN, HEX
1	1008020—1	WASHER, FLAT
2	1008024—1	WASHER, INSULATOR
AR	1006757—8	WIRE, ELEC, .020 DIA
AR	1006757—L	WIRE, ELEC, .010 X .020
2	1008025—1	INSULATOR BUSHING
1	1008021 — 1	INSULATOR, BUSHING
AR	1006776—20	INSULATION SLEEVING
3	1010376 — 4	TRANSISTOR
1	1010269 — 1	TRANSISTOR
2	1010357	TRANSISTOR
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%
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1	1006755 —73	CAP., FIXED TANT, 2.2 UF, 35V ±10
2	1006777 —13	CAP., FIXED CER, 100UUF, 100V ±10
1	1006750 —15	RESISTOR, FIXED MF, 200Ω.1/4W ±2
2	1006750— 56	RESISTOR, FIXED MF, 10 K.1/4W ±2
2	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4W ±
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%
2	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2
1	1006750 —18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2
4	1006750—67	RESISTOR, FIXED MF. 30K 1/4W ±2%
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%
2	1010389 —80	RESISTOR, FIXED WW. 10K, 3 W ±1%
1	1010364 —557	RESISTOR, FIXED MF 39.2K 1/8W ±1%
1	1010378 —10	RESISTOR, VAR. 10K 1W ±5%
1	1010364—635	RESISTOR, FIXED MF. 100K, 1/8W ±1%
1	1010364—683	RESISTOR, FIXED MF. 178K 1/8W ±1%
1	1008055—1	INSULATOR, TOP
1	1008055- 2	INSULATOR, BOTTOM
1	1007035	HEATSINK

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
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MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWIT
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ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007027
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INCHES
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1007027

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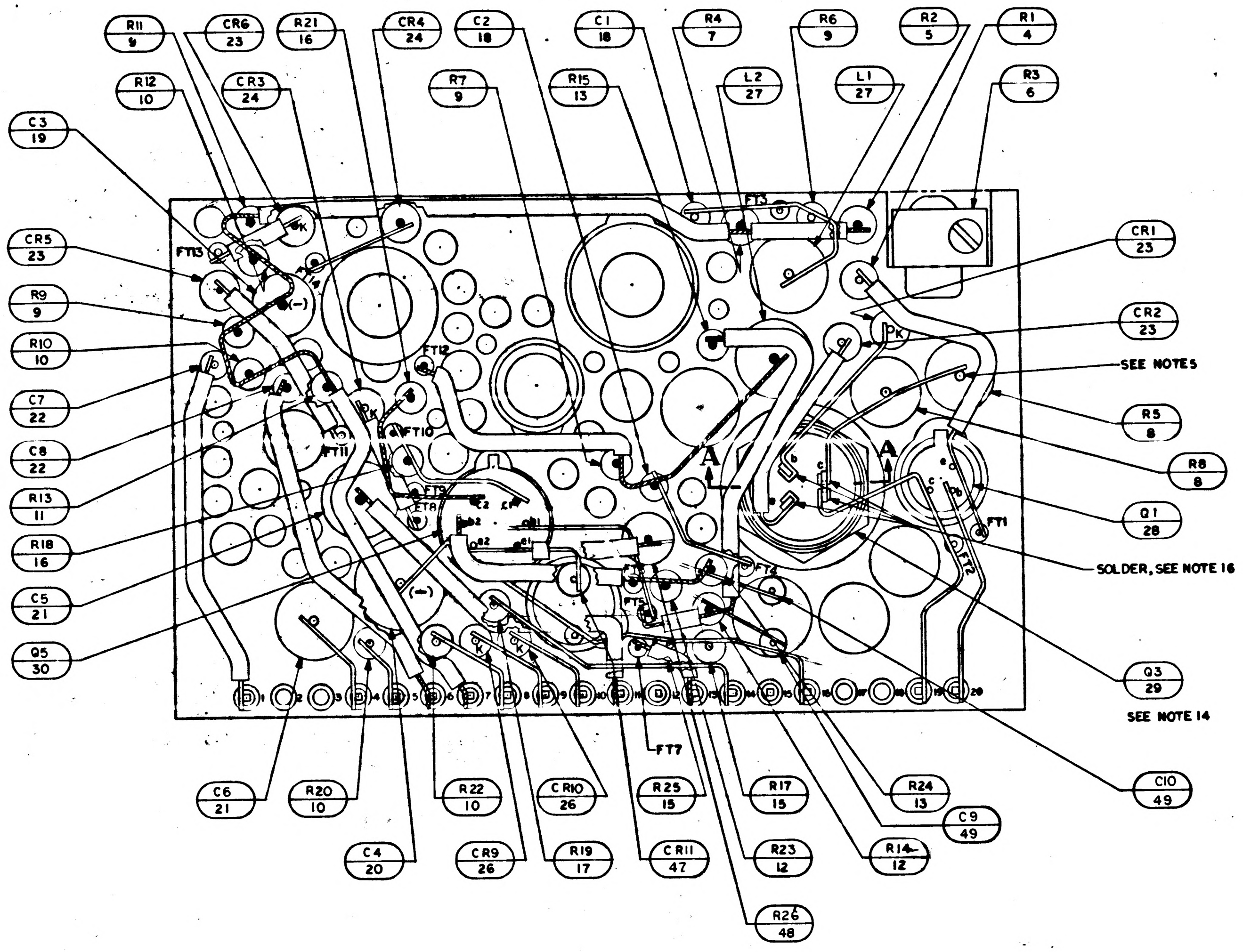
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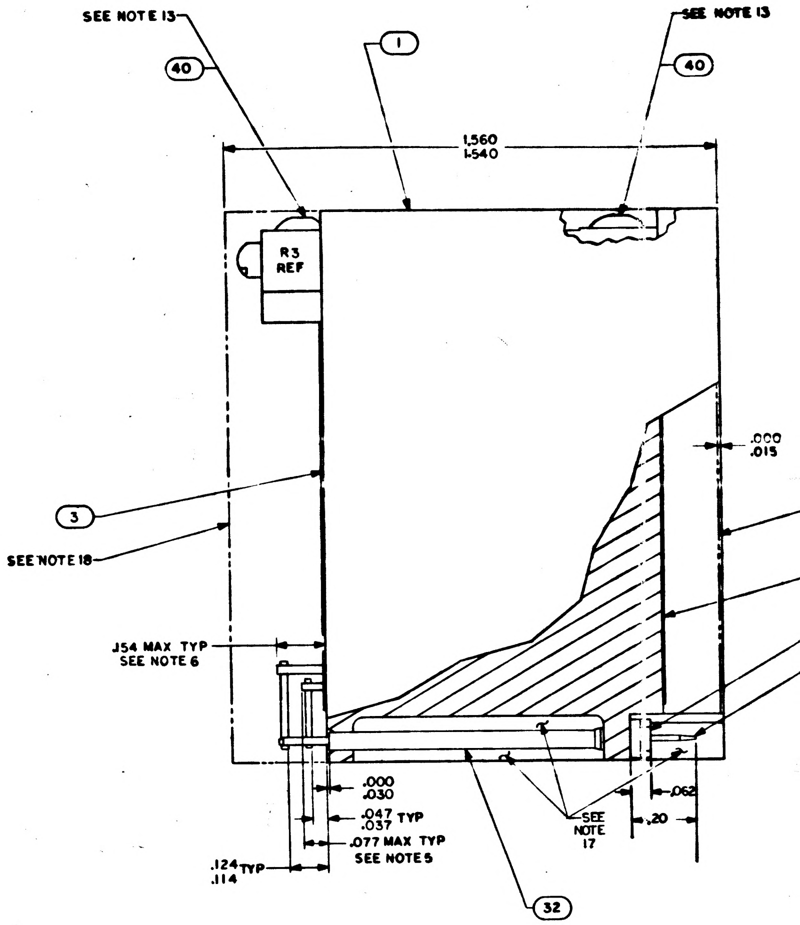
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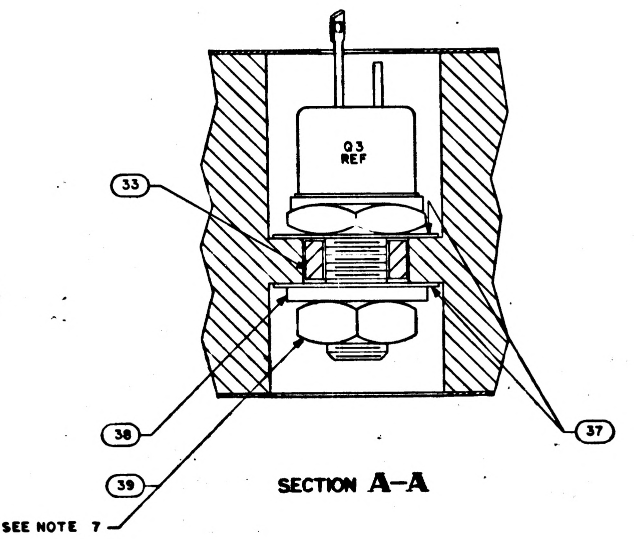
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
5. ○ WITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK .100/.060 HIGH WHITE PER ND 1002019
10. STAKE FIND NO. 4 THRU FIND NO. 31, FIND NO. 33 AND FIND NO. 34 PER ND 1002009

12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002003 (BLACK POLYURETHANE FOAM)
19. MUST MEET REQUIREMENTS OF ND 1002136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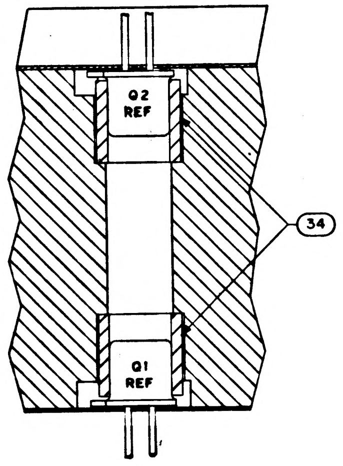
SECTION A-A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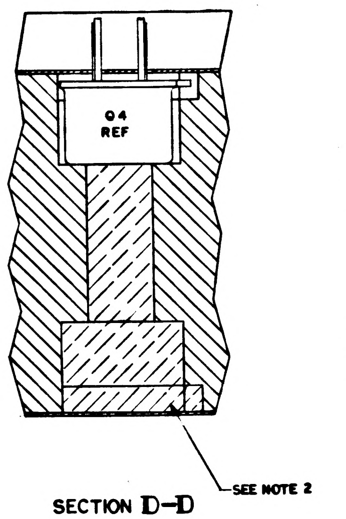
SECTION C-C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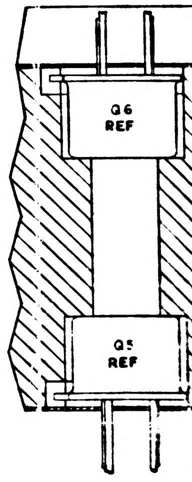
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SECTION E-E

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1007027

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E	REVISED PER TDRR 01959	7-20-63	WK
F	REVISED PER TDRR 02166	7-29-63	J.J.M. WK
G	REVISED PER TDRR 02718	8-21-63	J.J.M.
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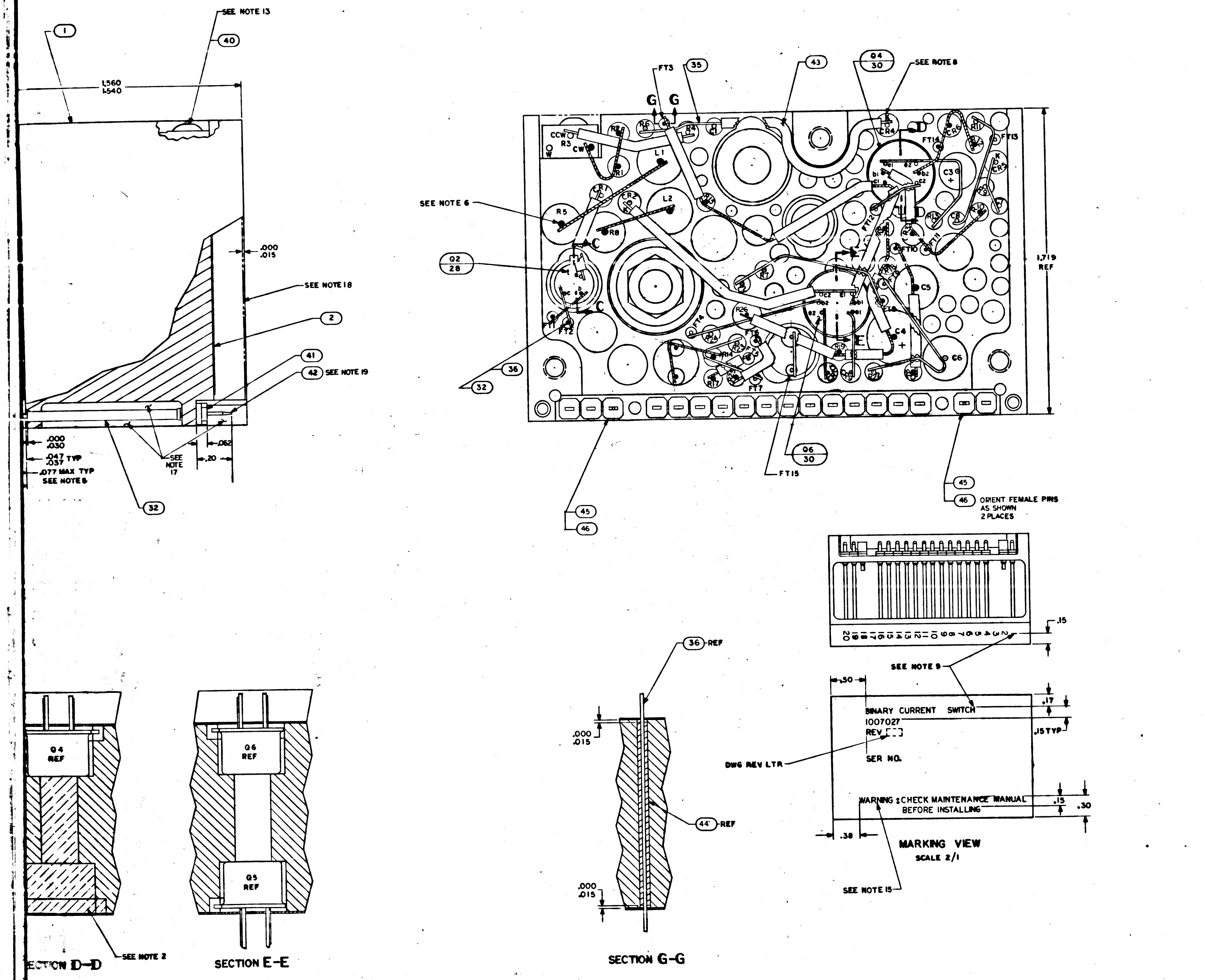
J	PER TDRR 04132	23 Oct 63	WK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SEE NOTE 6
SEE NOTE 17
.20
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G G
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Q4
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SEE NOTE 8
SEE NOTE 6
Q2
28
1.719 REF
36
32
Q6
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FT15
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46 ORIENT FEMALE PINS AS SHOWN 2 PLACES
.15
SEE NOTE 9
.50
BINARY CURRENT SWITCH
1007027
REV
SER NO.
DWG REV LTR
.17
.15 TYP
WARNING : CHECK MAINTENANCE MANUAL BEFORE INSTALLING
.15
.30
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MARKING VIEW
SCALE 2/1
SEE NOTE 15
Q4 REF
Q6 REF
Q5 REF
36 REF
44 REF
.000
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SEE NOTE 2
SECTION D-D
SECTION E-E
SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
16	1006782 - 4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 - 3	SCREW, BOTTON HEAD	40
1	MS 35650 - 104	NUT, PLAIN, HEX	39
1	1008020-1	WASHER, FLAT	38
2	1008024-1	WASHER, INSULATOR	37
AR	1006757-8	WIRE, ELEC, .020 DIA.	36
AR	1006757-L	WIRE, ELEC, .010 X .020	35
2	1008025-1	INSULATOR BUSHING	34
1	1008021-1	INSULATOR, BUSHING	33
AR	1006776-20	INSULATION SLEEVING	32
3	1010376 - 4	TRANSISTOR	30
1	1010269 - 1	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 - 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462	DIODE	24
4	1010385	DIODE	23
2	1006777-14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777-33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 -039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755 -73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777 -13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750 -15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750 - 56	RESISTOR, FIXED MF, 10 K, 1/4W ±2%	16
2	1006750 -53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	15
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	13
2	1006750 -53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750 -18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%	11
4	1006750-67	RESISTOR, FIXED MF. 30K, 1/4W ±2%	10
4	1006750-81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389 -80	RESISTOR, FIXED WW. 10K, 3 W ±1%	8
1	1010364 -557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373 -10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055-1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN R. Bell DATE 27 [illegible]
CHECKED C. [illegible]
APPROVAL A. A. [illegible] 24 Apr 62
APPROVAL
NASA APPROVAL
MIT APPROVAL WK 3 Oct 63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

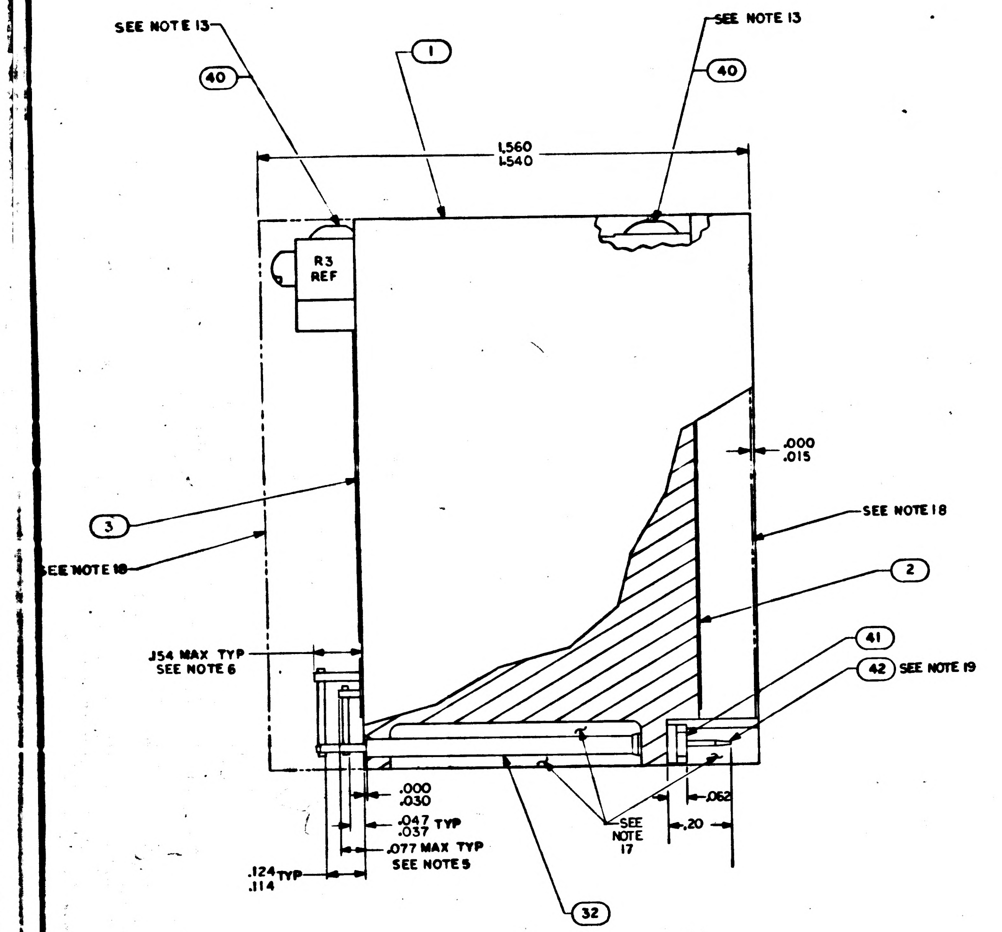
CODE IDENT NO. SIZE J NASA DRAWING NO. 1007027
SCALE 5/1 WT SHEET 1 OF 1

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

H 1007027

SYM	DESCRIPTION
A	REVISED PER TDRR 01009
B	REVISED PER TDRR 01257
C	REVISED PER TDRR 01918
D	REVISED PER TDRR 01580
E	REVISED PER TDRR 01959
F	REVISED PER TDRR 02166
G	REVISED PER TDRR 02718
H	REVISED PER TDRR 0413
J	PER TDRR 07.32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SEE NOTE 18
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SEE NOTE 17
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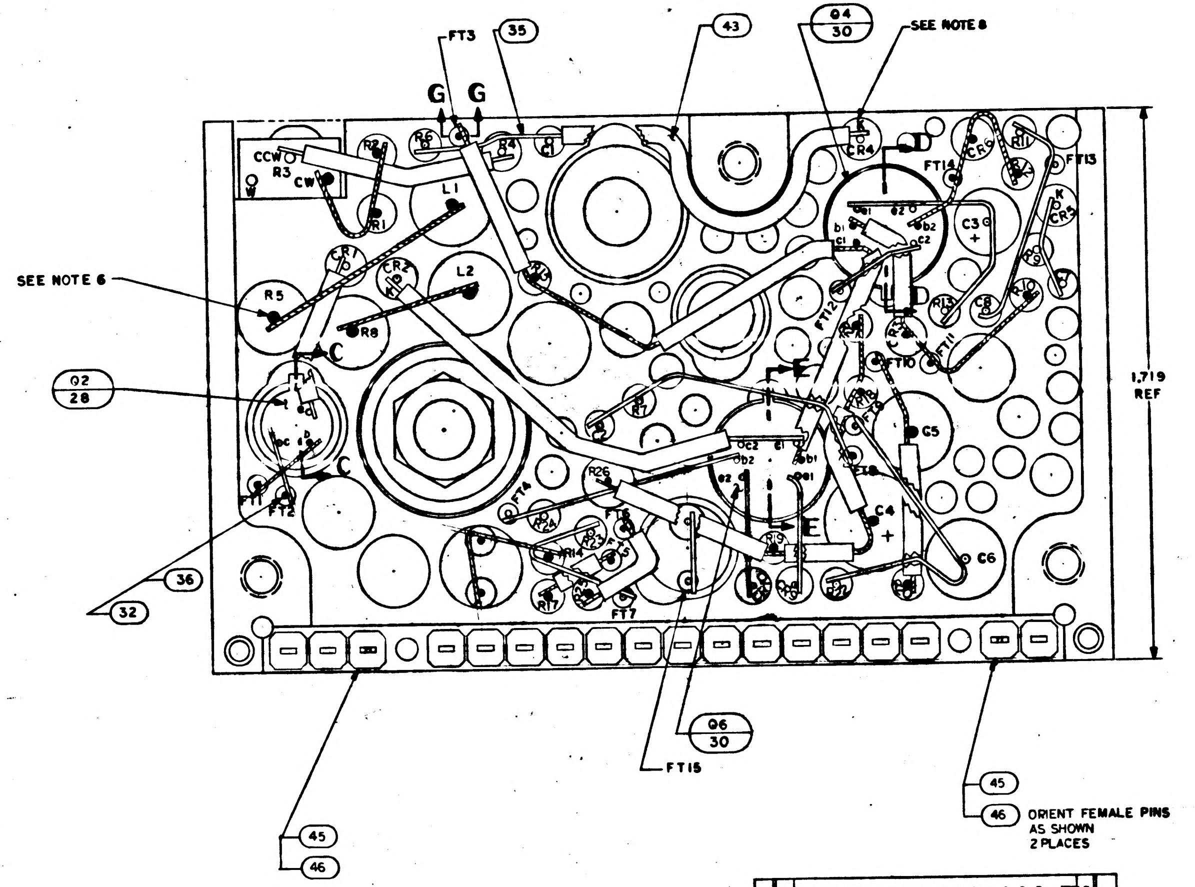
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FT14
C3
SEE NOTE 6
R5
CR1
CR2
L2
R8
C
Q2
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C5
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FT11
FT10
C
FT1
FT2
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R26
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FT15
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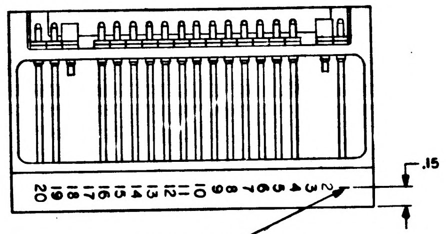
ORIENT FEMALE PINS AS SHOWN 2 PLACES
45
46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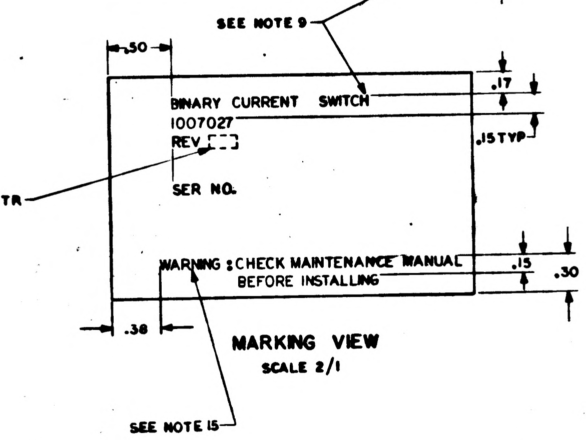
SEE NOTE 9
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BINARY CURRENT SWITCH
1007027
REV [ ]
.15 TYP
DWG REV LTR
SER NO.
WARNING : CHECK MAINTENANCE MANUAL BEFORE INSTALLING
.15
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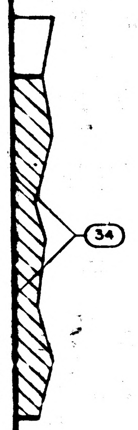
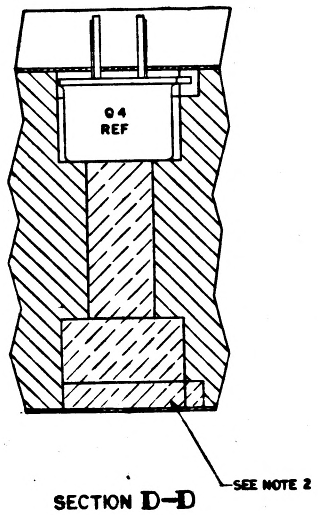
SEE NOTE 15

MARKING VIEW
SCALE 2/1

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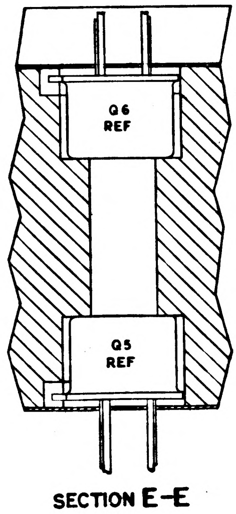
REF
SEE NOTE 2

SECTION D-D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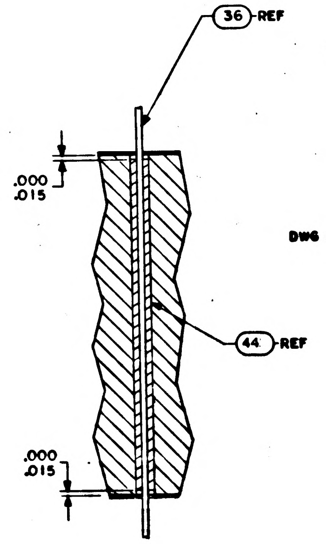
REF

SECTION E-E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44 REF
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.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
☒	1010043	SCHEMATIC
2	1006777-16	CAPACITOR
1	1006750-40	RESISTOR
1	1010372-6	DIODE
2	1006781-1	CONTACT, WRAPOST FEMALE
2	1006774	INSULATOR, WRAPOST FEMAL
AR	1006776 - 22	INSULATION SLEEVING
AR	1006776 - 21	INSULATION SLEEVING
16	1006782 - 4	CONTACT, WRAPOST MALE
16	1006775	INSULATOR, WRAPOST MAL
2	1000093 - 3	SCREW, BOTTON HEAD
1	MS 35650 - 104	NUT, PLAIN, HEX
1	1008020-1	WASHER, FLAT
2	1008024-1	WASHER, INSULATOR
AR	1006757-8	WIRE ELEC, .020 DIA
AR	1006757-L	WIRE ELEC, .010 X .020
2	1008025-1	INSULATOR BUSHING
1	1008021-1	INSULATOR, BUSHING
AR	1006776-20	INSULATION SLEEVING
3	1010376 - 4	TRANSISTOR
1	1010269 - 1	TRANSISTOR
2	1010357	TRANSISTOR
2	1010388 - 39	INDUCTOR, 0.01 HY 75 MA
2	1010394	DIODE
2	1010462	DIODE
4	1010385	DIODE
2	1006777-14	CAP, FIXED CER, 130 UUF, 1
2	1006777-33	CAP, FIXED CER, .022UF, 1
1	1010393 -039	CAP, FIXED TANT, 6.8 UF, 5
1	1006755 -73	CAP, FIXED TANT, 2.2 UF, 3
2	1006777 -13	CAP, FIXED CER, 100UUF 1
1	1006750 -15	RESISTOR, FIXED MF, 200Ω,
2	1006750 - 56	RESISTOR, FIXED MF, 10 K, 1
2	1006750 -53	RESISTOR, FIXED MF, 7.5K,
2	1006750-81	RESISTOR, FIXED MF, 110K 1
2	1006750 -53	RESISTOR, FIXED MF, 7,5K, 1
1	1006750 -18	RESISTOR, FIXED MF, 270Ω,
4	1006750 -67	RESISTOR, FIXED MF, 30K, 1
4	1006750 -81	RESISTOR, FIXED MF, 110K, 1/
2	1010389 -80	RESISTOR, FIXED WW, 10K,
1	1010364 -557	RESISTOR, FIXED MF 39.2K 1
1	1010373 -10	RESISTOR, VAR, 10K, 1W ±5
1	1010364-635	RESISTOR, FIXED MF, 10
1	1010364-683	RESISTOR, FIXED MF, 178K
1	1008055-1	INSULATOR, TOP
1	1008055- 2	INSULATOR, BOTTOM
1	1007035	HEATSINK

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN R. Bell DATE 27
CHECKED
APPROVAL A. A. Test 3 Apr 62
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Jan 63

MANNED SPACECRAFT C
HOUSTON TEXAS

BINARY CURRENT,
COMPUTER OUT
ASSEMBLY

CODE IDENT NO
SIZE J
NASA
1007
SCALE 5/1
WT

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

E2 1007027

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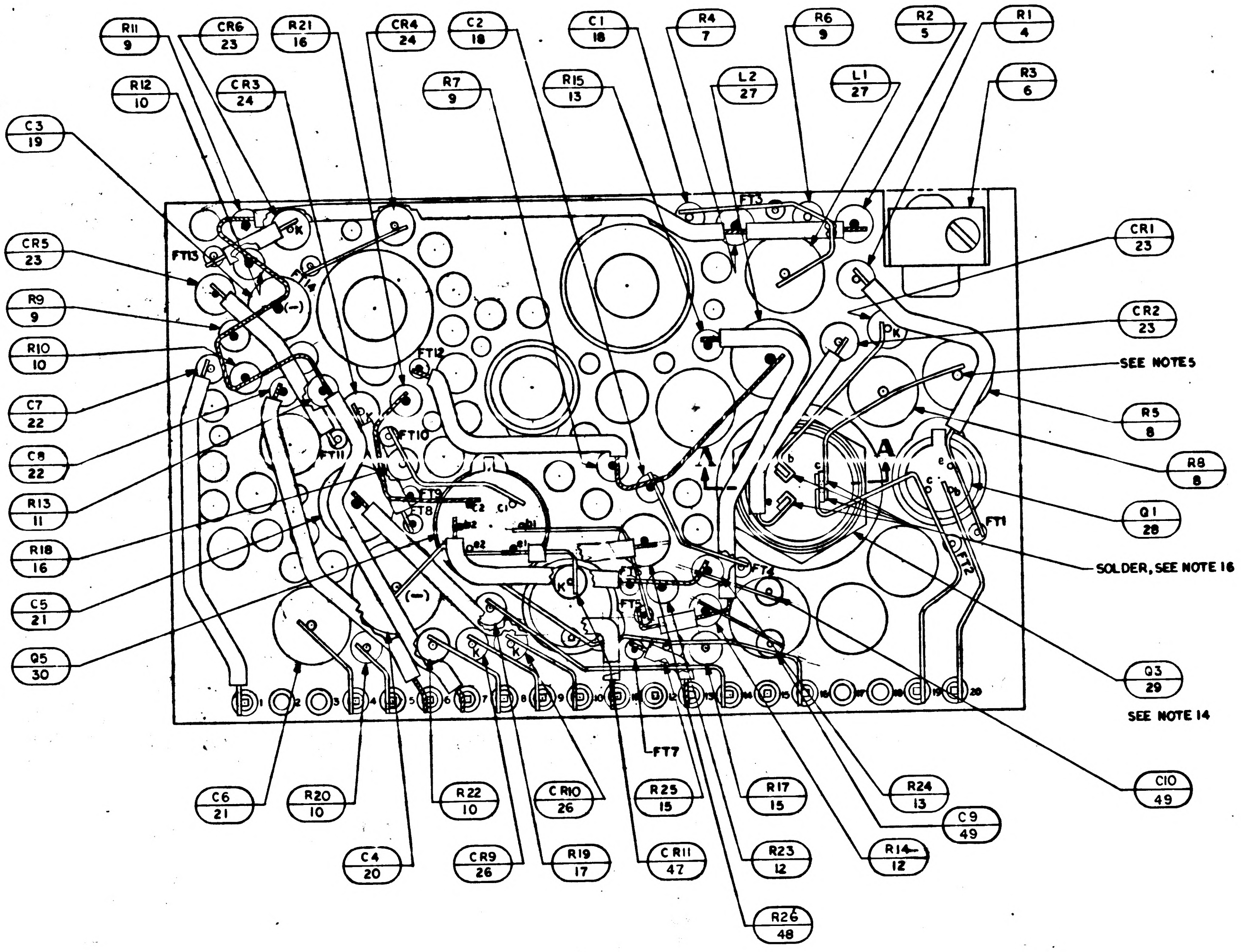
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CR5 23
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R13 11
R18 16
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Q5 30
CR1 23
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R5 8
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Q1 28
SOLDER, SEE NOTE 16
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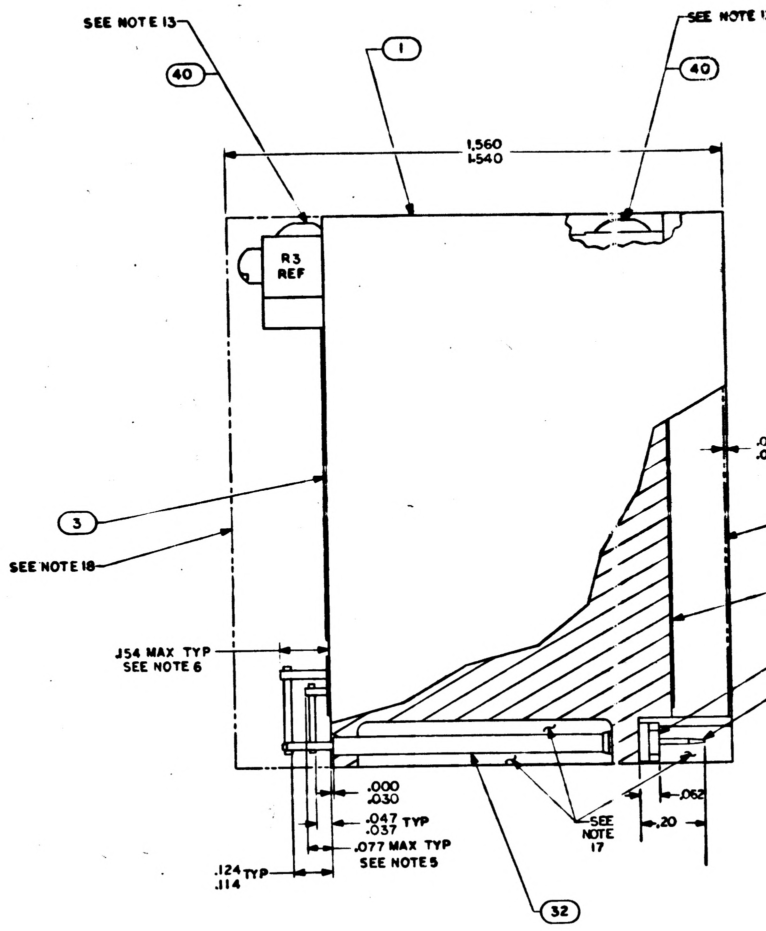
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SEE NOTE 5
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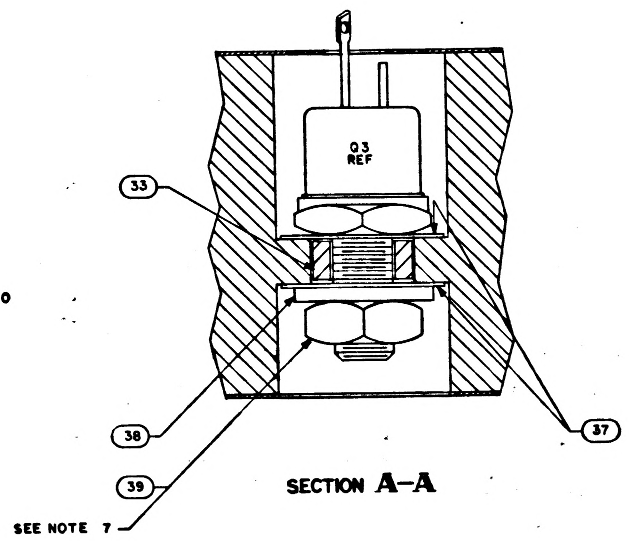
SEE NOTE 17
.062
.20
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK .100/.060 HIGH WHITE PER ND 1002019
10. STAKE FIND NO.4 THRU FIND NO. 31, FIND NO. 33 AND FIND NO. 34 PER ND 1002009

12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002003 (BLACK POLYURETHANE FOAM)
19. MUST MEET REQUIREMENTS OF ND 1002136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SEE NOTE 7
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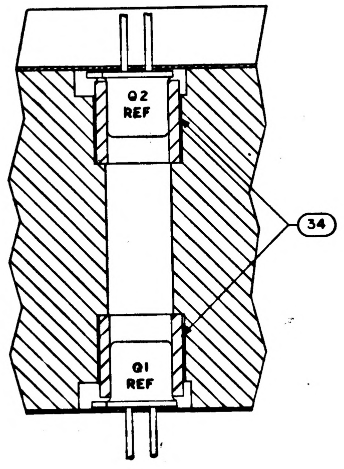
SECTION A-A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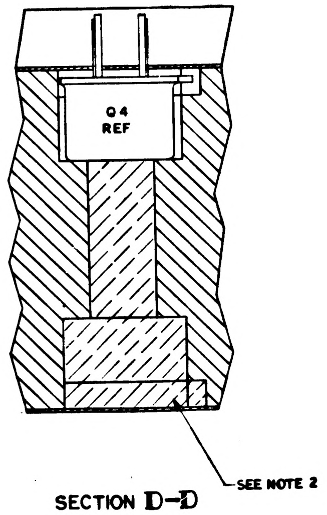
SECTION C-C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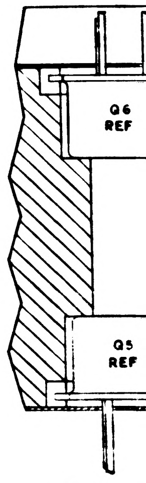
SEE NOTE 2

SECTION D-D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SECTION

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F1

1007027

1007027 J

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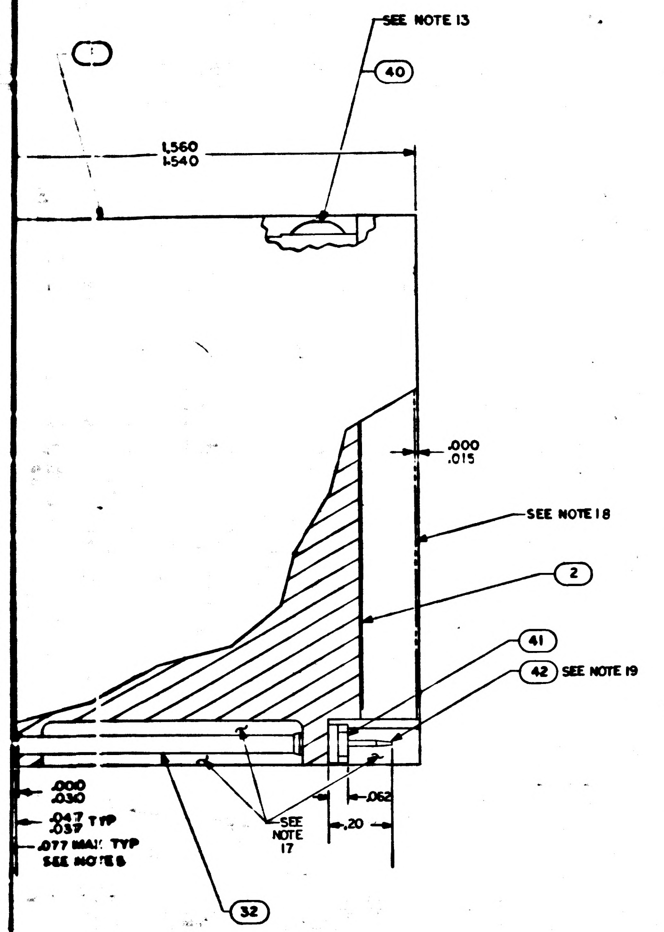
C	REVISED PER TDRR 01712	6-26-63	WK
D	REVISED PER TDRR 01850	7-2-63	WK
E	REVISED PER TDRR 01959	7-10-63	WK
F	REVISED PER TDRR 02166	7-29-63	WK
G	REVISED PER TDRR 02718	8-21-63	WK
H	REVISED PER TDRR 04131	23 OCT 63	WK
J	PER TDRR 04132	23 OCT 63	WK
K	REVISED PER TDRR 05261	17 DEC 63	WK

REVISIONS CLASS B TDRR 08716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SEE NOTES
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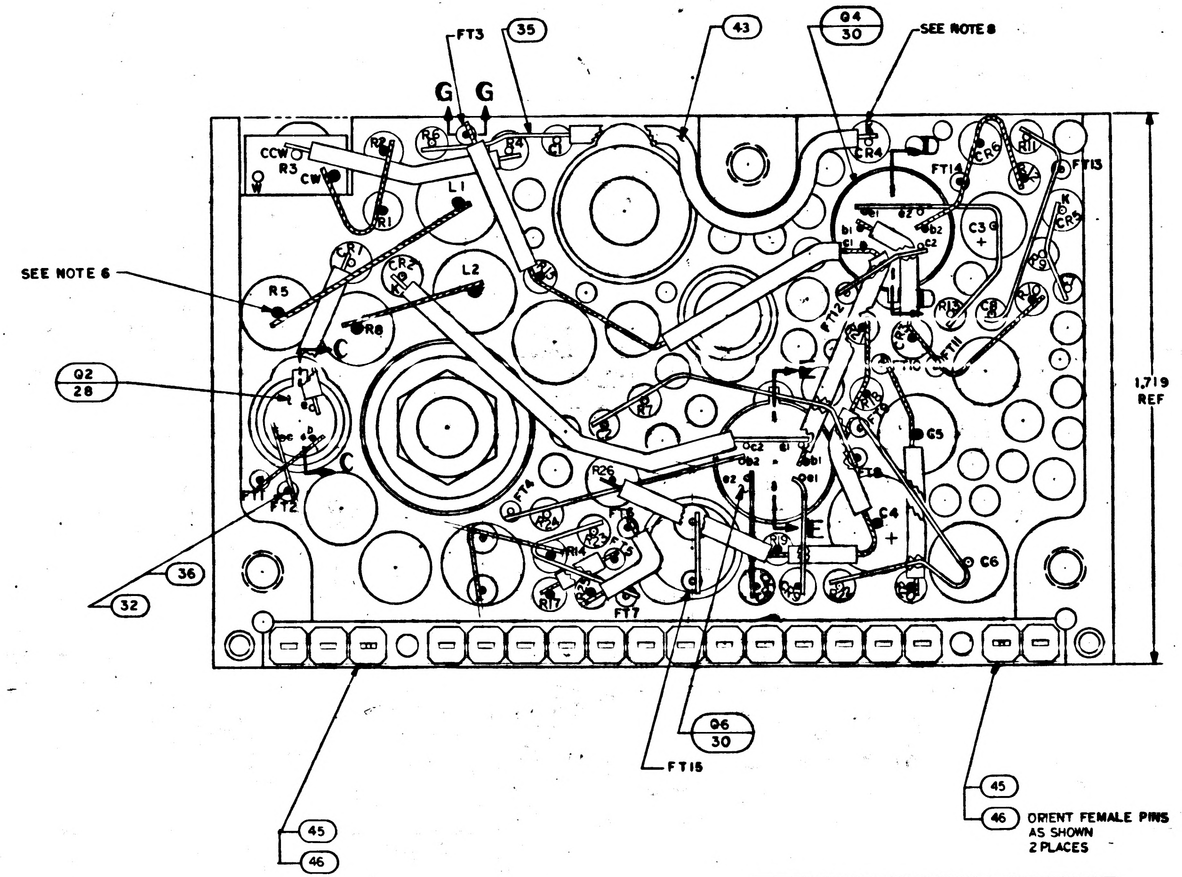
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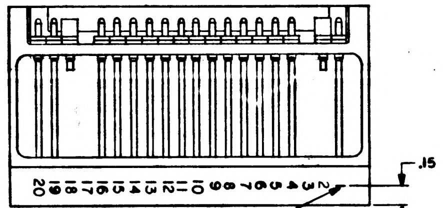
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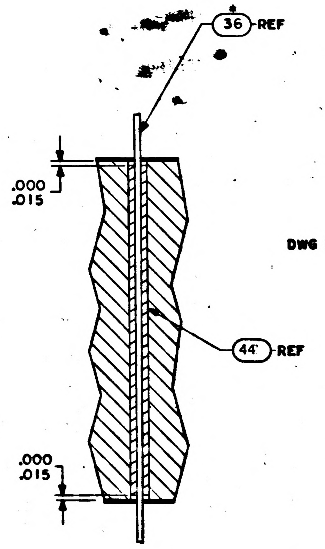
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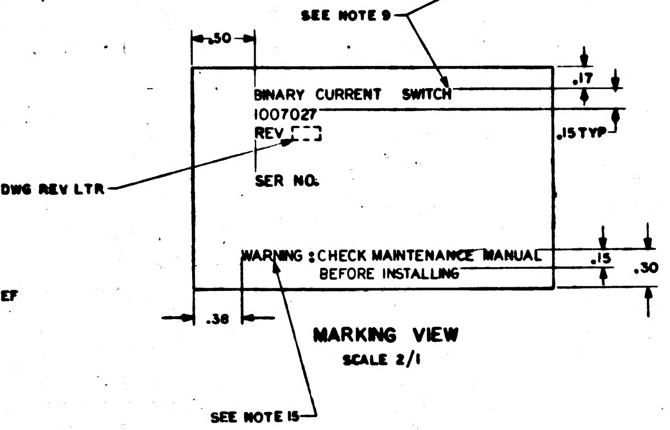
SECTION G-G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BINARY CURRENT SWITCH
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DWG REV LTR
SER NO.
WARNING : CHECK MAINTENANCE MANUAL BEFORE INSTALLING
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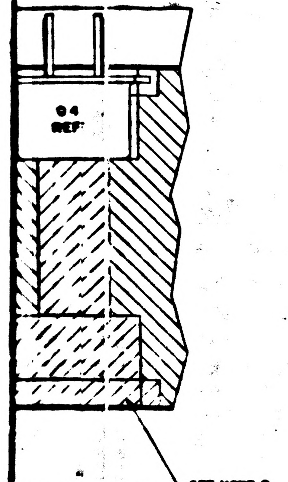
SEE NOTE 15

MARKING VIEW
SCALE 2/1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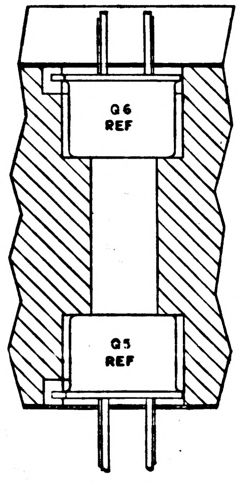
SEE NOTE 2

SECTION D-D


Q6 REF
Q5 REF

SECTION E-E

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
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16	1006775	INSULATOR, WRAPOST MALE MIN	41
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1	1008020 — 1	WASHER, FLAT	38
2	1008024 — 1	WASHER, INSULATOR	37
AR	1006757 — 8	WIRE, ELEC, .020 DIA	36
AR	1006757 — L	WIRE, ELEC, .010 X .020	35
2	1008025 — 1	INSULATOR BUSHING	34
1	1008021 — 1	INSULATOR, BUSHING	33
AR	1006776 — 20	INSULATION SLEEVING	32
3	1010376 — 4	TRANSISTOR	30
1	1010269 — 1	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462	DIODE	24
4	1010385	DIODE	23
2	1006777 — 14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777 — 33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 — 039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755 — 73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777 — 13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750 — 15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750 — 56	RESISTOR, FIXED MF, 10 K, 1/4W ±2%	16
2	1006750 — 53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	15
2	1010369 — 87	RESISTOR	14
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	13
2	1006750 — 53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750 — 18	RESISTOR, FIXED MF, 270Ω 1/4W ±2%	11
4	1006750 — 67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
2	1006750 — 81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389 — 80	RESISTOR, FIXED WW, 10K, 3W ±1%	8
1	1010364 — 557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373 — 10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364 — 635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364 — 683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055 — 1	INSULATOR, TOP	3
1	1008055 - 2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG. NO. CONTRACT
DRAWN R. Bell DATE 27 MAR 63
CHECKED C. P. Kingsbury
APPROVAL B. A. Fox 24 Apr 63
APPROVAL
NASA APPROVAL
MIT APPROVAL W. Kupfer 3 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007027
SCALE 5/1 | WT | SHEET 1 OF 1

1007027 K

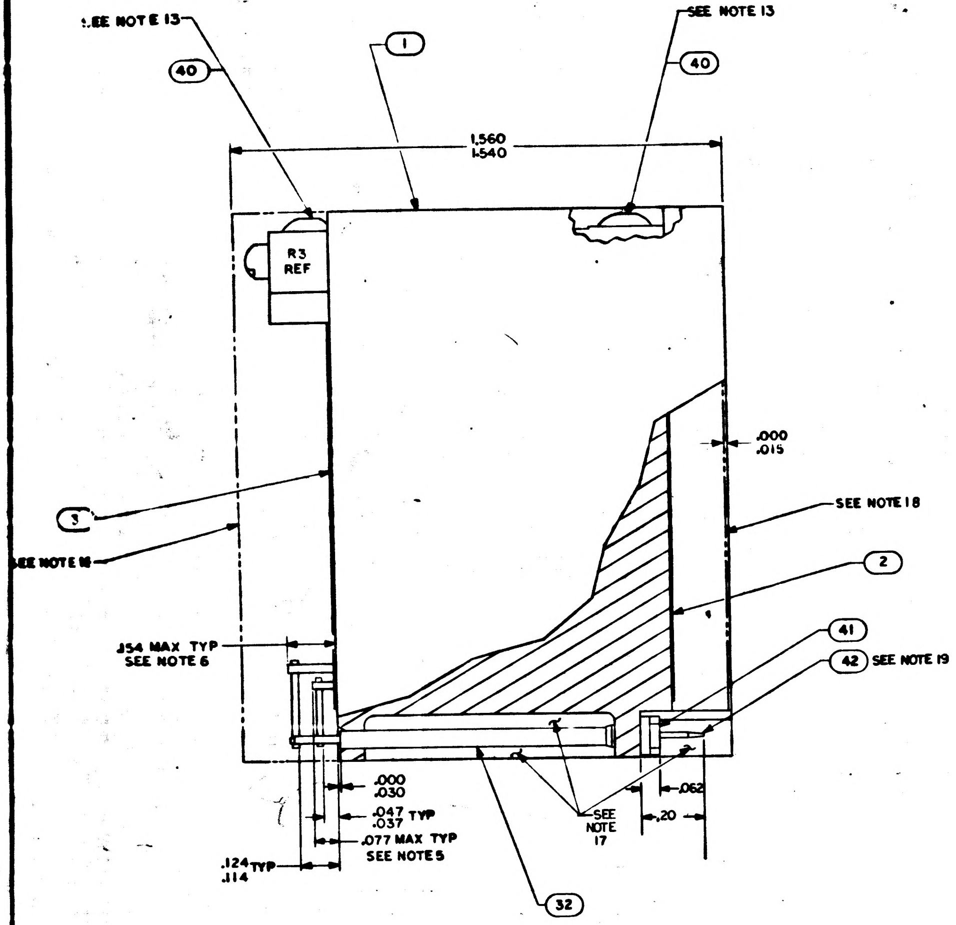
MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

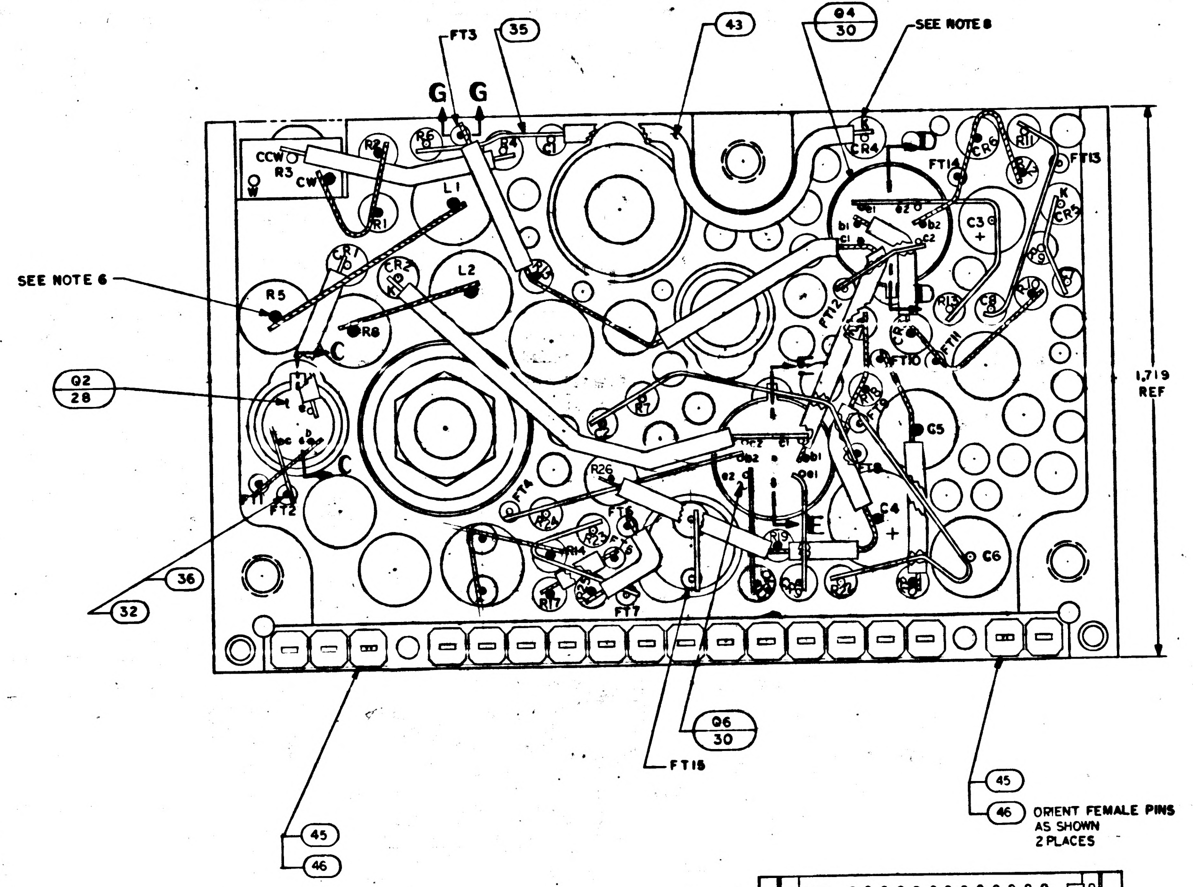
E3 1007027

1007027 J

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00608	[illegible]	WK
B	REVISED PER TDRR 01257	[illegible]	WK
C	REVISED PER TDRR 01718	5-26-60	WK
D	REVISED PER TDRR 01580	7-8-60	WK
E	REVISED PER TDRR 01955	[illegible]	WK
F	REVISED PER TDRR 02166	[illegible]	WK
G	REVISED PER TDRR 02718	[illegible]	WK
H	REVISED PER TDRR 04131	[illegible]	WK
J	PER TDRR 04133	[illegible]	WK
K	REVISED PER TDRR 05261	[illegible]	WK



SEE NOTE 13
SEE NOTE 13
40
40
1
1.560
1.540
R3
REF
3
SEE NOTE 16
.000
.015
SEE NOTE 18
2
.154 MAX TYP
SEE NOTE 6
41
42 SEE NOTE 19
.000
.030
.047 TYP
.037
.077 MAX TYP
SEE NOTE 5
.124 TYP
.114
SEE NOTE 17
.062
.20
32



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G G
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Q4
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SEE NOTE 8
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R3
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R2
R6
R4
R1
L1
CR4
FT14
FT13
CR1
CR2
L2
C3
SEE NOTE 6
R5
R8
C
D
CR3
FT9
FT10
FT11
FT12
Q2
28
1.719
REF
C5
C
R26
FT4
FT8
E
C4
C6
FT1
FT2
36
32
FT7
FT6
FT5
R7
Q6
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FT15
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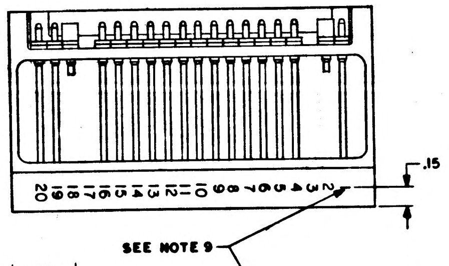
46
ORIENT FEMALE PINS
AS SHOWN
2 PLACES
45
46



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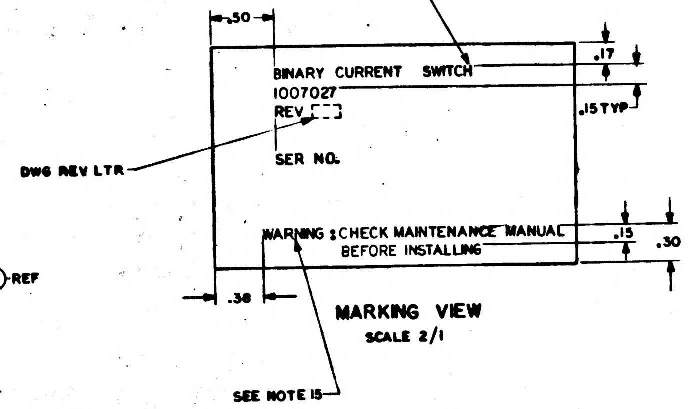
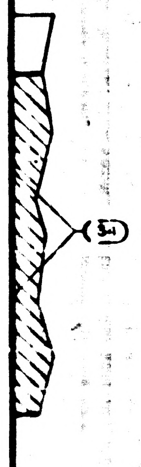
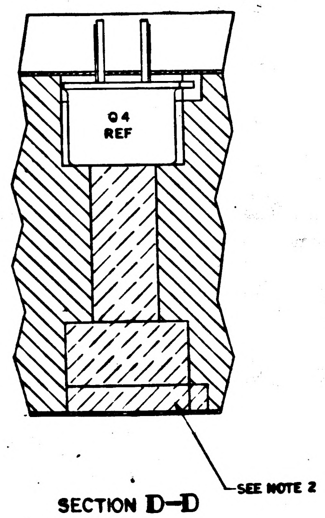
.15
SEE NOTE 9



.50
.17
BINARY CURRENT SWITCH
1007027
REV
.15 TYP
DWG REV LTR
SER NO.
WARNING : CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.30
.38
SEE NOTE 15

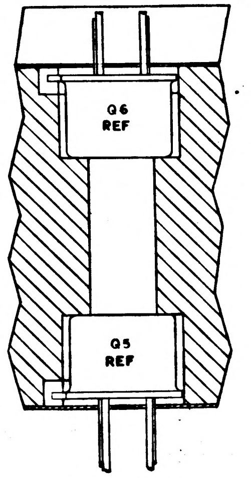
MARKING VIEW
SCALE 2/1





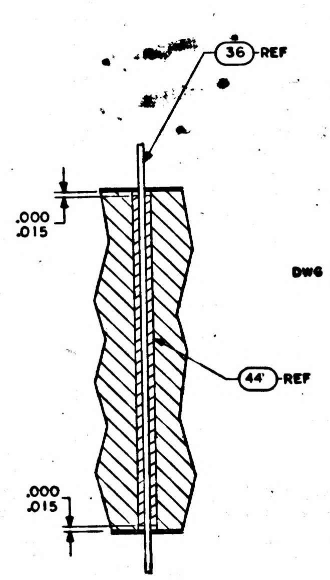
Q4
REF
SEE NOTE 2

SECTION D-D



Q6
REF
Q5
REF

SECTION E-E



36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776-22	INSULATION SLEEVING	44
AR	1006776-21	INSULATION SLEEVING	43
16	1006782-4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093-3	SCREW, BOTTON HEAD	40
1	MS 35650-104	NUT, PLAIN, HEX	39
1	1008020-1	WASHER, FLAT	38
2	1008024-1	WASHER, INSULATOR	37
AR	1006757-8	WIRE, ELEC, .020 DI	36
AR	1006757-L	WIRE, ELEC, .010 X .0[illegible]0	35
2	1008025-1	INSULATOR BUSHING	34
1	1008021-1	INSULATOR, BUSHING	33
AR	1006776-20	INSULATION SLEEVING	32
3	1010376-4	TRANSISTOR	30
1	1010269-1	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388-39	INDUCTOR, 0.01 HY [illegible]5 MA 5%	27
2	1010394	DIODE	26
2	1010462	DIODE	24
4	1010385	DIODE	23
2	1006777-14	CAP., FIXED CER, 13[illegible] UUF, 100V ±10%	22
2	1006777-33	CAP., FIXED CER, .0[illegible] UF, 100V ±10%	21
1	1010393-039	CAP., FIXED TANT, 6.[illegible] UF, 50V ±10%	20
1	1006755-73	CAP., FIXED TANT, 2.[illegible] UF, 35V ±10%	19
2	1006777-13	CAP., FIXED CER, 10[illegible] UUF, 100V ±10%	18
1	1006750-15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750-56	RESISTOR, FIXED MF, [illegible]0K, 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, [illegible]5K, 1/4W ±2%	15
2	1010369-87	RESISTOR	14
2	1006750-81	RESISTOR, FIXED MF, [illegible]0K 1/4W ±2%	13
2	1006750-53	RESISTOR, FIXED MF, [illegible]3K, 1/4W ±2%	12
1	1006750-18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%	11
4	1006750-67	RESISTOR, FIXED MF, [illegible]0K, 1/4W ±2%	10
2	1006750-81	RESISTOR, FIXED MF, 10K, 1/4W ±2%	9
2	1010389-80	RESISTOR, FIXED WW, [illegible]0K, 3W ±1%	8
1	1010364-557	RESISTOR, FIXED MF, 9.2K 1/8W ±1%	7
1	1010373-10	RESISTOR, VAR, 10K, [illegible]W ±5%	6
1	1010364-635	RESISTOR, FIXED MF, [illegible]0K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF, 7[illegible]K 1/8W ±1%	4
1	1008055-1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.05 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG. NO. CONTRACT
DRAWN R. Bell DATE 27 [illegible]
CHECKED C. P. Kingsbury 2 [illegible]
APPROVAL R. B. Toth 3 Apr 60
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

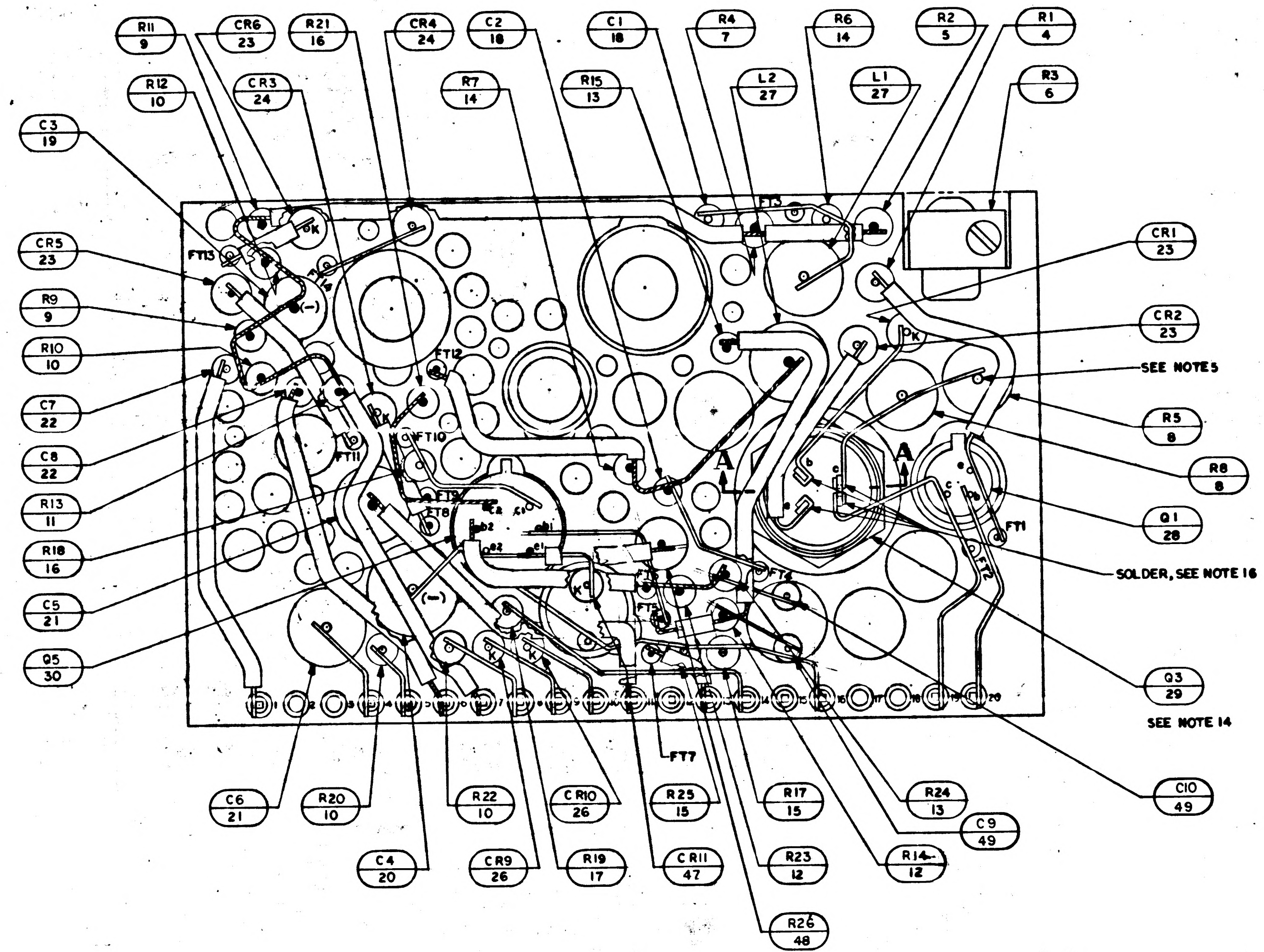
CODE IDENT NO. | SIZE J | NASA DRAWING NO 1007027
SCALE 5/1 | WT | SHEET 1

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

F2 1007027

A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CR6 23
R21 16
CR4 24
C2 18
C1 18
R4 7
R6 14
R2 5
R1 4
R12 10
CR3 24
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R15 13
L2 27
L1 27
R3 6
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTES 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
C10 49
C6 21
R20 10
R22 10
CR10 26
R25 15
R17 15
R24 13
C9 49
C4 20
CR9 26
R19 17
CR11 47
R23 12
R14 12
R26 48
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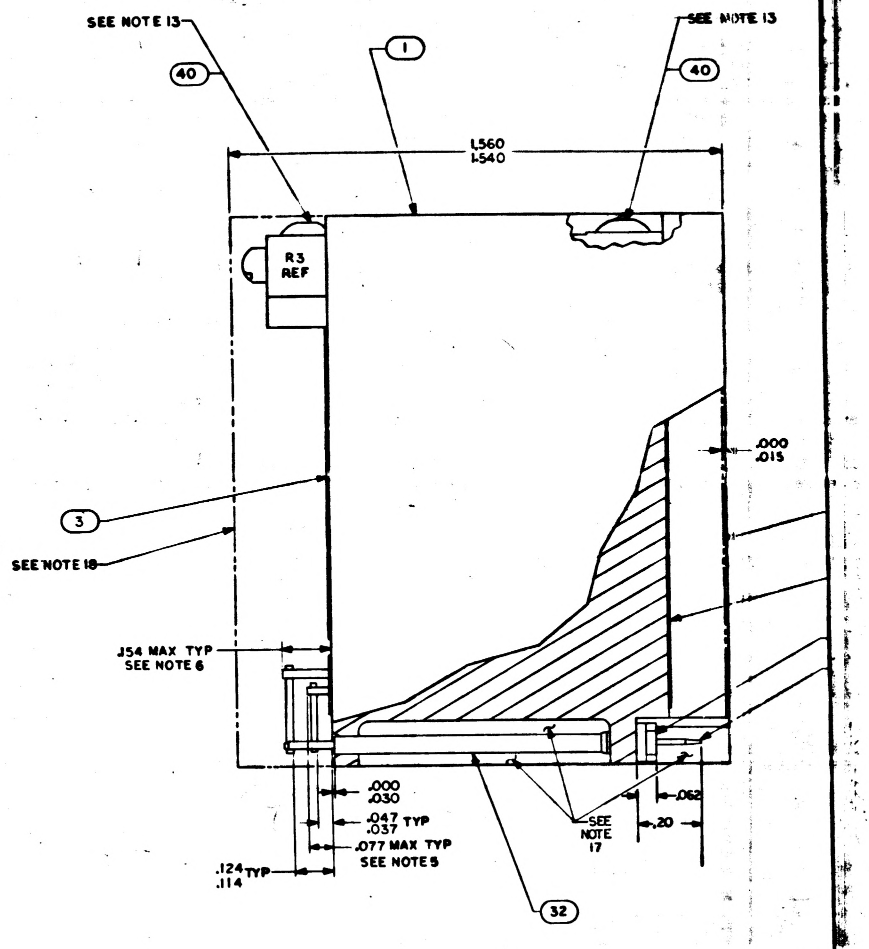
K
A
(–)


SEE NOTE 13
40
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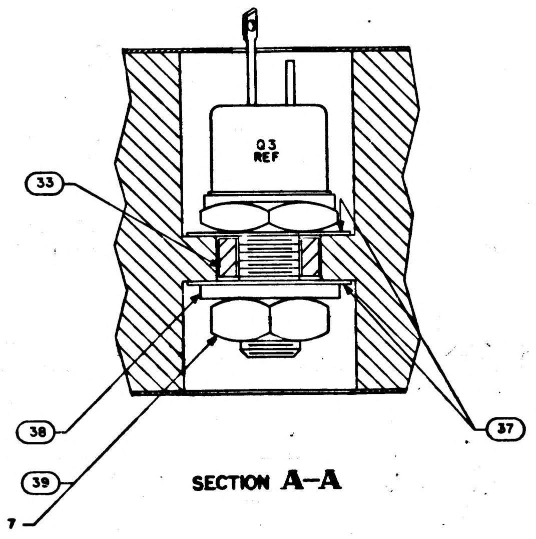
SEE NOTE 13
40
1.560
1.540
R3 REF
.000
.015
3
SEE NOTE 18
.154 MAX TYP
SEE NOTE 6
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTES 5
.124
.114 TYP
SEE NOTE 17
.062
.20
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK .100/.060 HIGH WHITE PER ND 1002019
10. STAKE FIND NO.4 THRU FIND NO. 31, FIND NO. 33 AND FIND NO. 34 PER ND 1002009

12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO. 40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002003 (BLACK POLYURETHANE FOAM)
19. MUST MEET REQUIREMENTS OF ND 1002136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SEE NOTE 7
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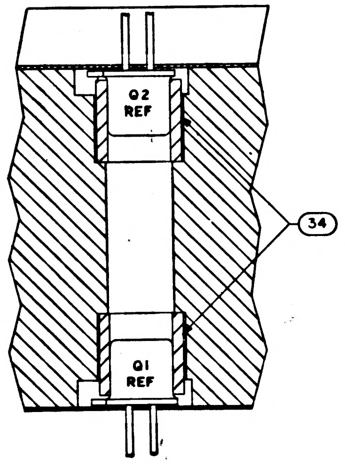
SECTION A–A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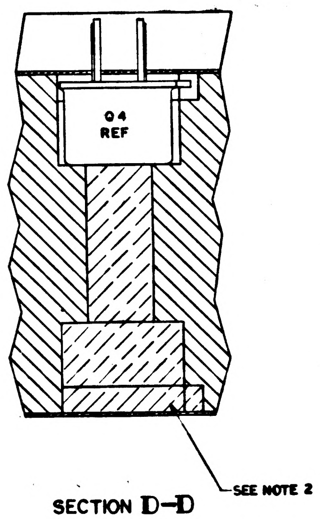
SECTION C–C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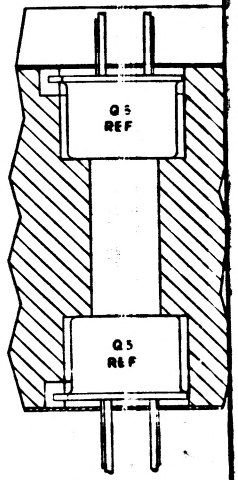
SEE NOTE 2

SECTION D–D


Q5 REF
Q5 REF

SECTION E–E

INCHES
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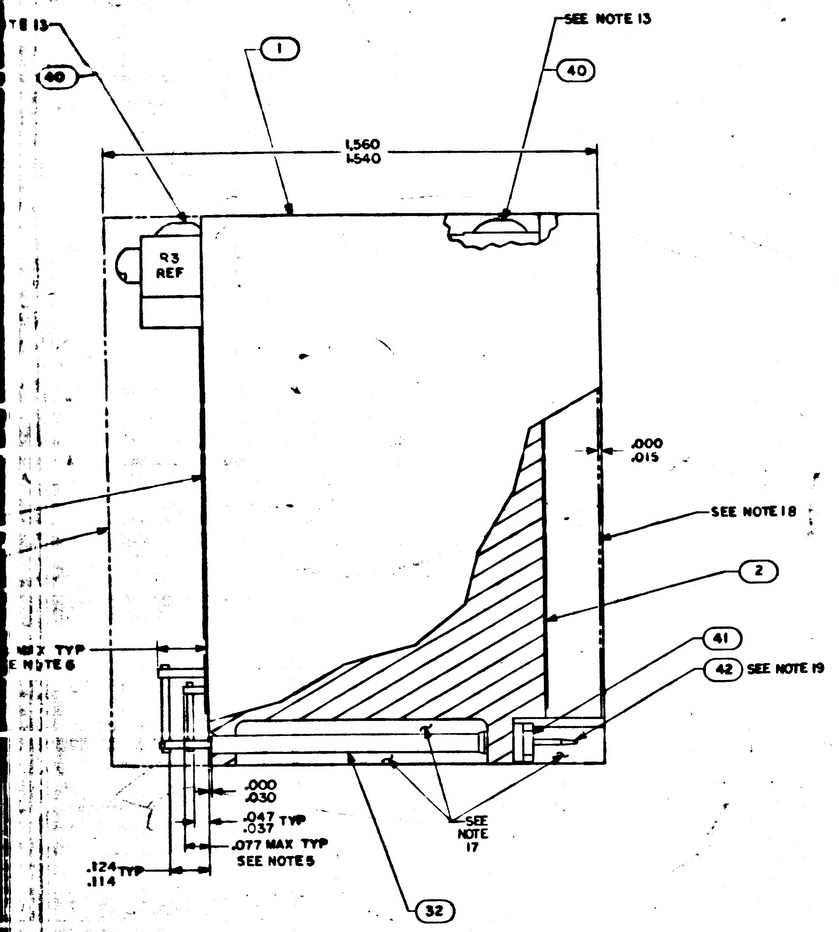
PHOTOGRAPHIC SCALE ONLY

F-1

1007027

1007027 J

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 00009	[illegible]	WK
B	REVISED PER TDRR 01257	5-15-63	WK
C	REVISED PER TDRR 01918	6-26-63	WK
D	REVISED PER TDRR 01850	7-9-63	WK
E	REVISED PER TDRR 01959	[illegible]	WK
F	REVISED PER TDRR 02166	7-29-63	WK
G	REVISED PER TDRR 02718	8-21-63	[illegible]
H	REVISED PER TDRR 04131	23 Oct 63	WK
J	PER TDRR 04132	23 Oct 63	WK
K	REVISED PER TDRR 05261	17 Dec 63	WK
L	REVISED PER TDRR 05410	27 Dec 63	WK



SEE NOTE 13
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SEE NOTE 13
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1.560
1.540
R3 REF
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SEE NOTE 18
2
41
42
SEE NOTE 19
MAX TYP
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.030
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SEE NOTE 5
.124 TYP
.114
SEE NOTE 17
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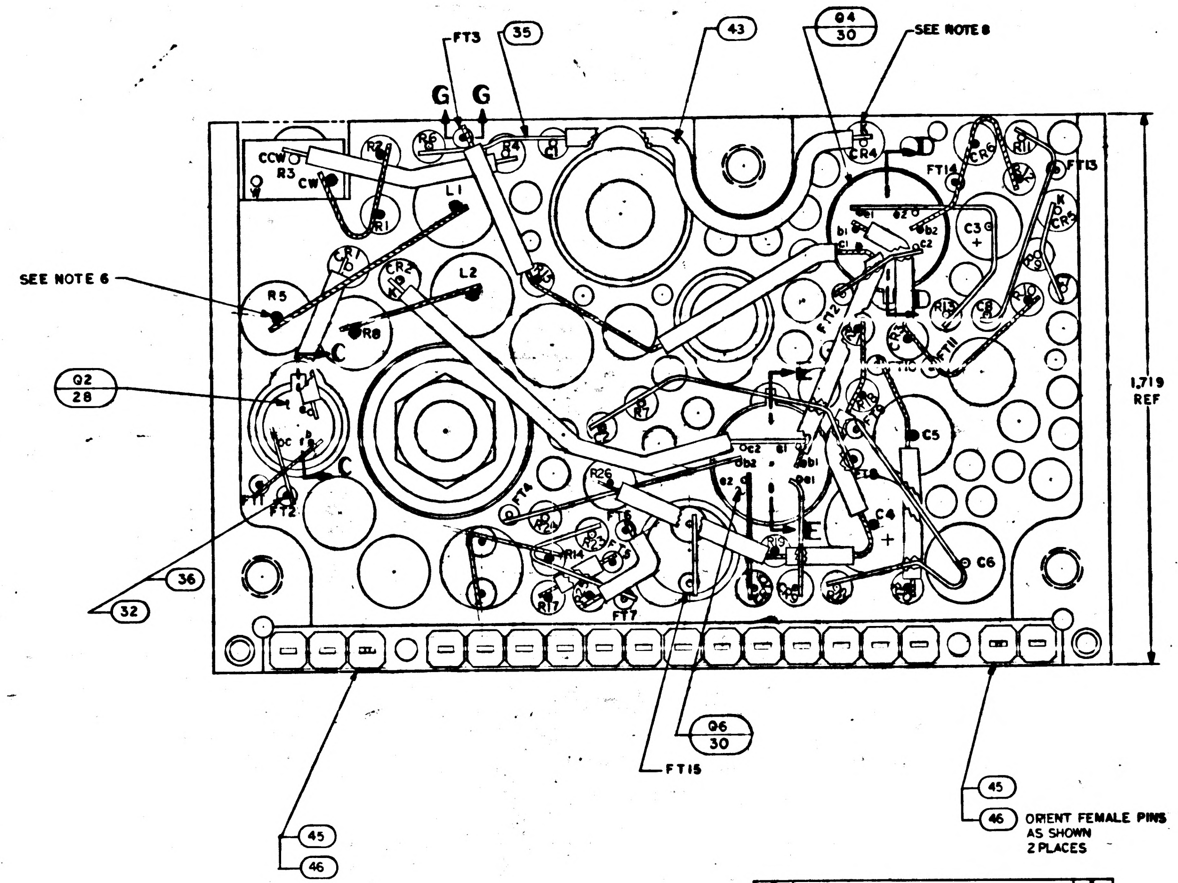

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R5
CR1
CR2
R8
SEE NOTE 6
Q2
28
C
C
FT1
FT2
FT13
FT14
C3
C5
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C6
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FT7
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36
32
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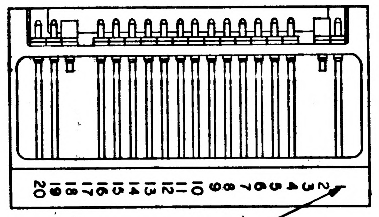
45
46
ORIENT FEMALE PINS AS SHOWN 2 PLACES



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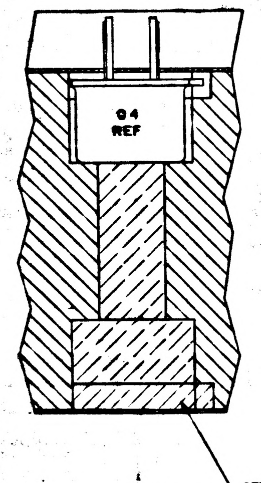
SEE NOTE 9

BINARY CURRENT SWITCH
1007027
REV [ ]
SER NO.

WARNING : CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

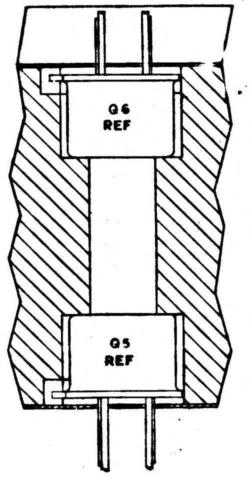
DWG REV LTR

MARKING VIEW
SCALE 2/1



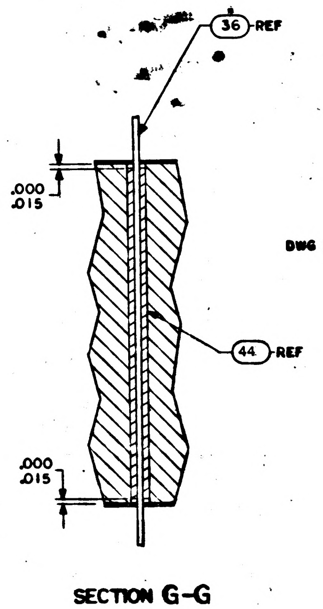
Q4 REF
Q5 REF
SEE NOTE 2

SECTION D-D



Q6 REF
Q5 REF

SECTION E-E



36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

F 2

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
16	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006757—B	WIRE, ELEC, .020 DIA	36
AR	1006757—L	WIRE, ELEC, .010 X .020	35
2	1008025—1	INSULATOR BUSHING	34
1	1008021—1	INSULATOR, BUSHING	33
AR	1006776—20	INSULATION SLEEVING	32
3	1010376 — 4	TRANSISTOR	30
1	1010269 — 1	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462 - 6	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF, 100V ± 10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ± 10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50V ± 10%	20
1	1006755 —73	CAP., FIXED TANT, 2.2 UF, 35V ± 10%	19
2	1006777 —13	CAP., FIXED CER, 100UUF, 100V ± 10%	18
1	1006750 —15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750— 56	RESISTOR, FIXED MF, 10 K, 1/4W ±2%	16
2	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	15
2	1010369 - 87	RESISTOR	14
2	1006750-81	RESISTOR, FIXED MF, 110 K 1/4W ±2%	13
2	1006750—53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750 —18	RESISTOR, FIXED MF, 270Ω 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
2	1006750—81	RESISTOR, FIXED MF, 110 K, 1/4W ±2%	9
2	1010389 —80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364 —557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373 —10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364—635	RESISTOR, FIXED MF, 100 K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

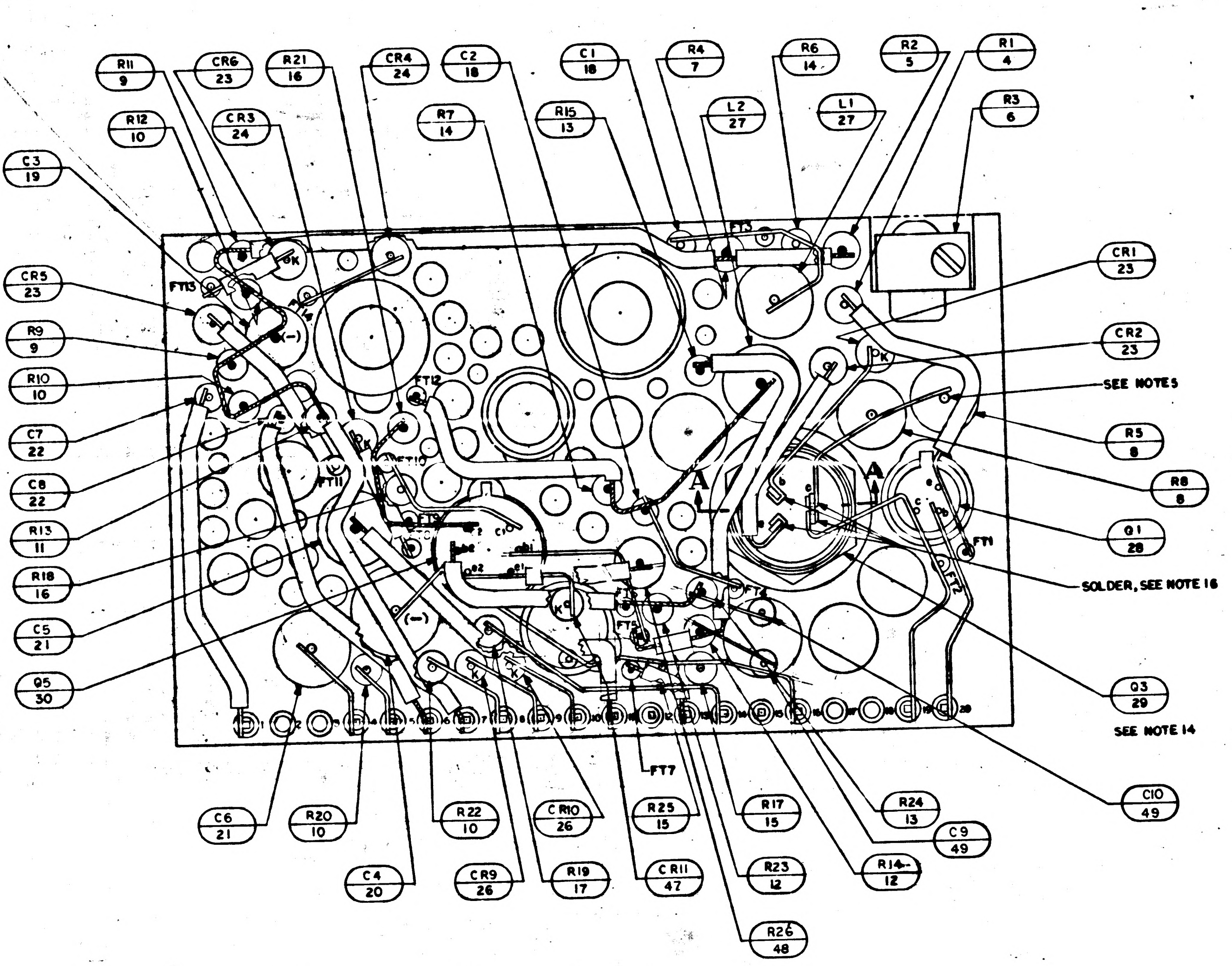
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN R. Bell DATE 27 [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 3 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING 1007027
SCALE 5/1 WT SHEET OF 1

1007027 J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C1 18
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R6 14
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R1 4
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R15 13
L2 27
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R3 6
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTE 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
FT1
FT7
FT11
FT12
FT13
K
A
C6 21
R20 10
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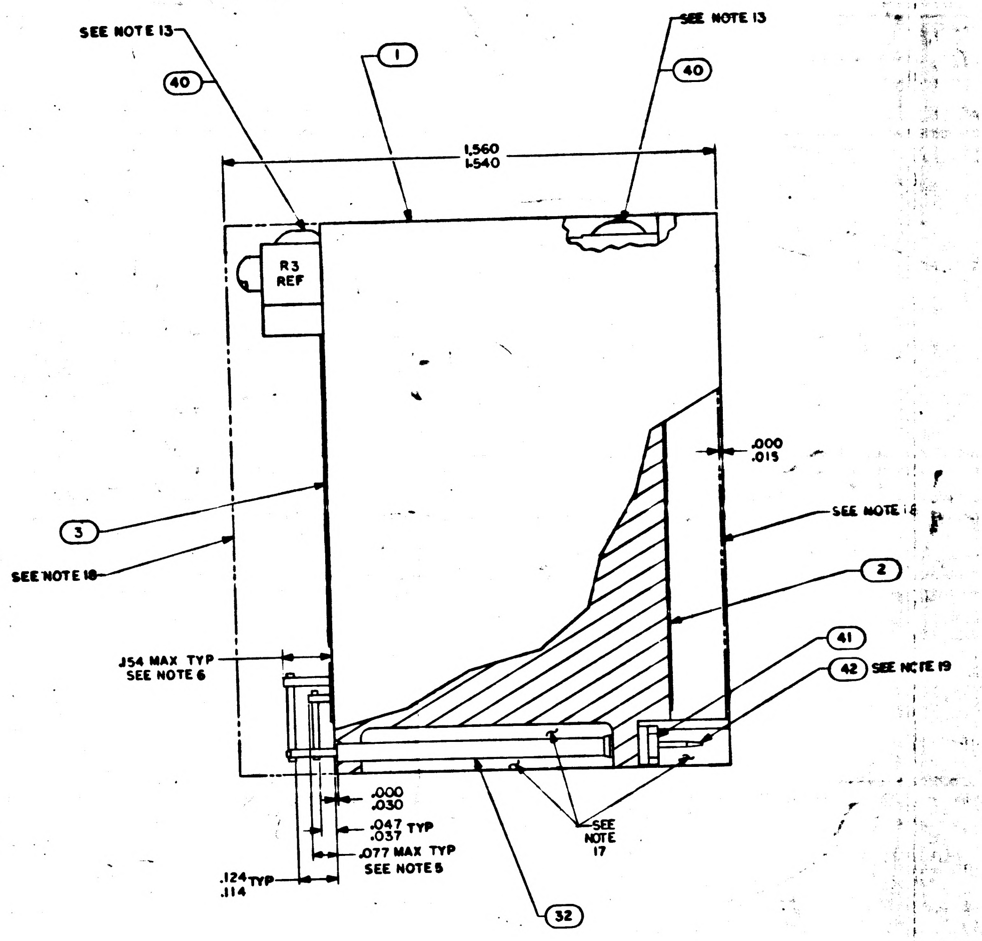
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SEE NOTE 18
2
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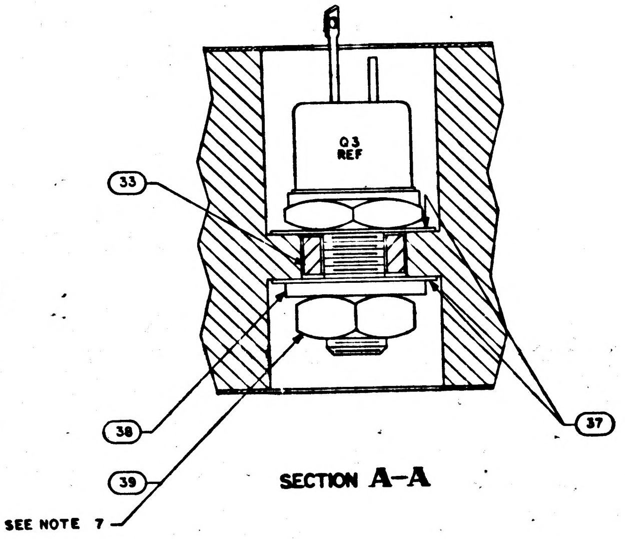
42 SEE NOTE 19
.154 MAX TYP
SEE NOTE 6
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTE 5
.124
.114 TYP
SEE NOTE 17
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003.~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009

12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
15. ~~MARK .060/.100 RED PER ND 1002010~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND 1002136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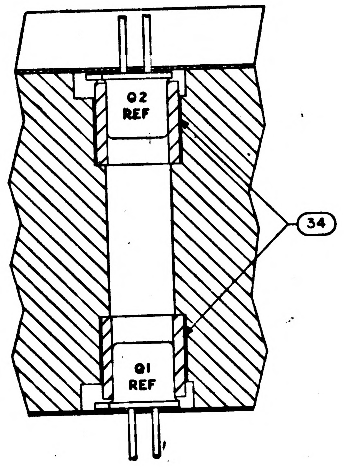
SEE NOTE 7

SECTION A-A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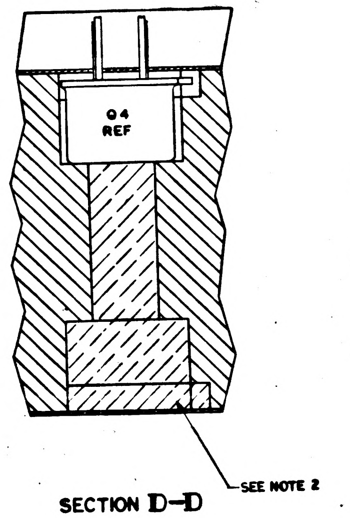
SECTION C-C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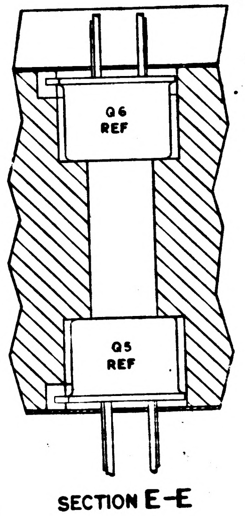
SEE NOTE 2

SECTION D-D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SECTION E-E

F-1

1007027

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1007027 M

REVISIONS CLASS B TDRR 00916

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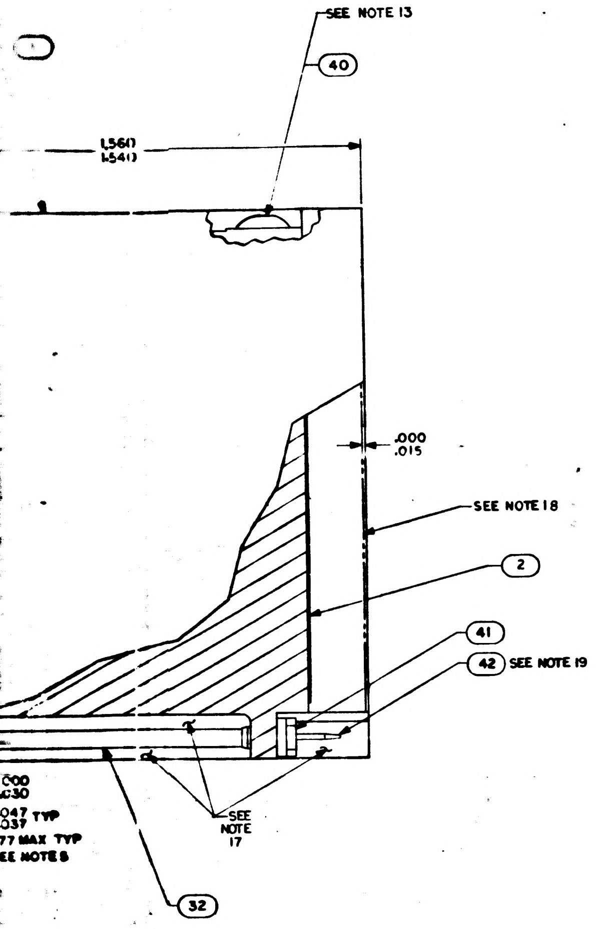
C	REVISED PER TDRR 01918	6-26-63	J.J.M. WK
D	REVISED PER TDRR 01850	7-9-63	J.J.M. WK
E	REVISED PER TDRR 01959	7-20-63	WK
F	REVISED PER TDRR 02166	7-29-63	J.J.M. WK
G	REVISED PER TDRR 02718	8-21-63	J.J.M.
H	REVISED PER TDRR 04131	23 OCT 63	WK
J	PER TDRR 04132	23 OCT 63	WK
K	REVISED PER TDRR 05261	17 DEC 63	WK
L	REVISED PER TDRR 05410	27 DEC 63	WK
M	REVISED PER TDRR 06457	[illegible] 64	WK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SEE NOTE 18
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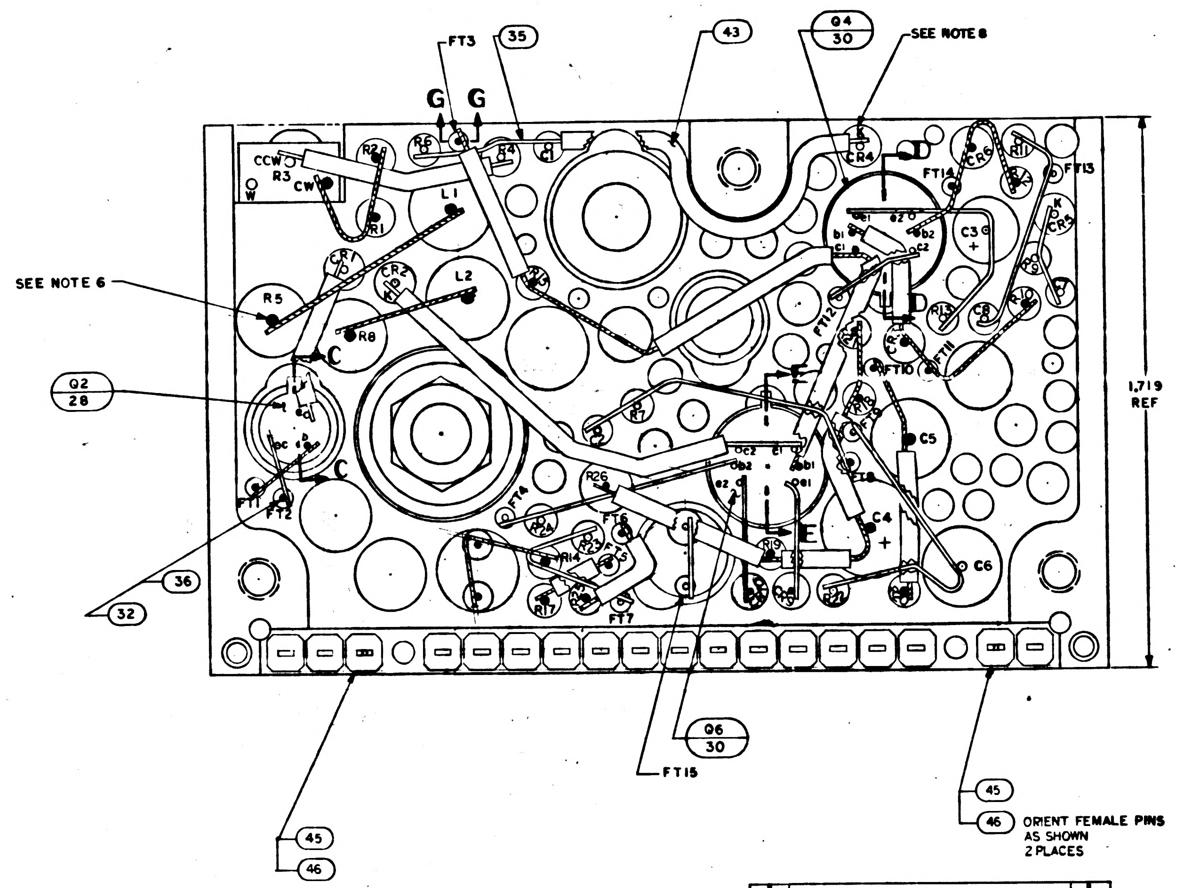
42 SEE NOTE 19
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTE 8
SEE NOTE 17
32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CR2
L2
R5
R8
SEE NOTE 6
Q2
28
C
C
FT1
FT2
36
32
R26
FT4
FT5
FT6
FT7
R17
E
E
CR4
FT14
FT13
C3
CR3
R11
CR5
C8
FT11
FT10
C5
C4
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FT9
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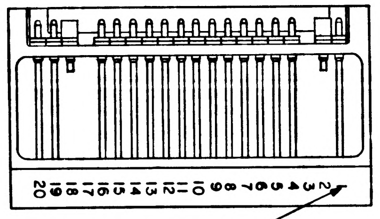
46
45
46 ORIENT FEMALE PINS AS SHOWN 2 PLACES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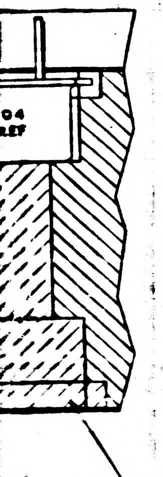
SEE NOTE 9

BINARY CURRENT SWITCH
1007027
REV.
SER NO.

DWG REV LTR

WARNING : CHECK MAINTENANCE MANUAL BEFORE INSTALLING

MARKING VIEW
SCALE 2/1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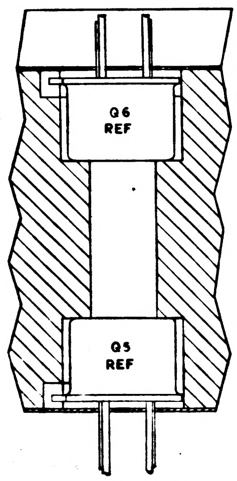
SEE NOTE 2

SECTION D-D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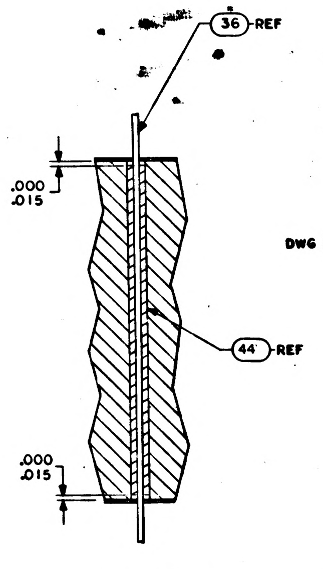
Q5 REF

SECTION E-E


36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF.
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
16	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006757—8	WIRE, ELEC, .020 DIA	36
AR	1006757—L	WIRE, ELEC, .010 X .020	35
2	1008025—1	INSULATOR BUSHING	34
1	1008021 — 1	INSULATOR, BUSHING	33
AR	1006776—20	INSULATION SLEEVING	32
3	1010376 — 4	TRANSISTOR	30
1	1010269 — 1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462 - 6	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755 —73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777 —13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750 —15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750— 56	RESISTOR, FIXED MF, 10 K, 1/4W ±2%	16
2	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4 W ±2%	15
2	1010369 — 87	RESISTOR	14
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	13
2	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750 —18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
2	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389 —80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364 —557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010378 —10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055- 2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN R. Bell DATE 27 [illegible]
CHECKED C. [illegible]
APPROVAL [illegible]
APPROVAL
NASA APPROVAL
MIT APPROVAL W Kupfer 3 Sep 63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

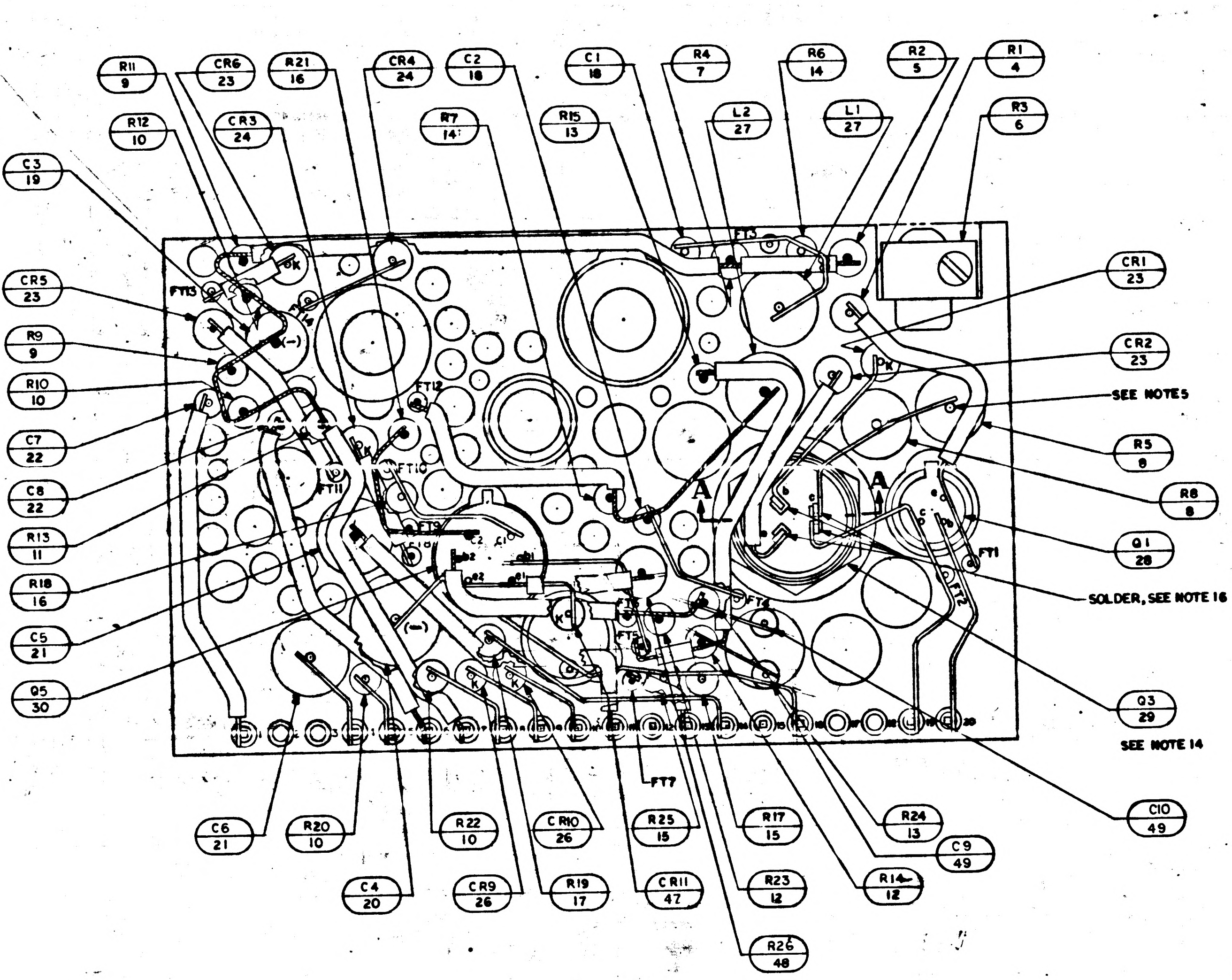
CODE IDENT NO. SIZE J NASA DRAWING NO 1007027
SCALE 5/1 WT SHEET 1 OF 1

1007027 J

MASTER

PHOTOGRAPHIC SCALE ONLY INCHES

F-2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R3 6
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTE 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
C10 49
C6 21
R20 10
C4 20
R22 10
CR9 26
CR10 26
R19 17
R25 15
CR11 47
R17 15
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C9 49
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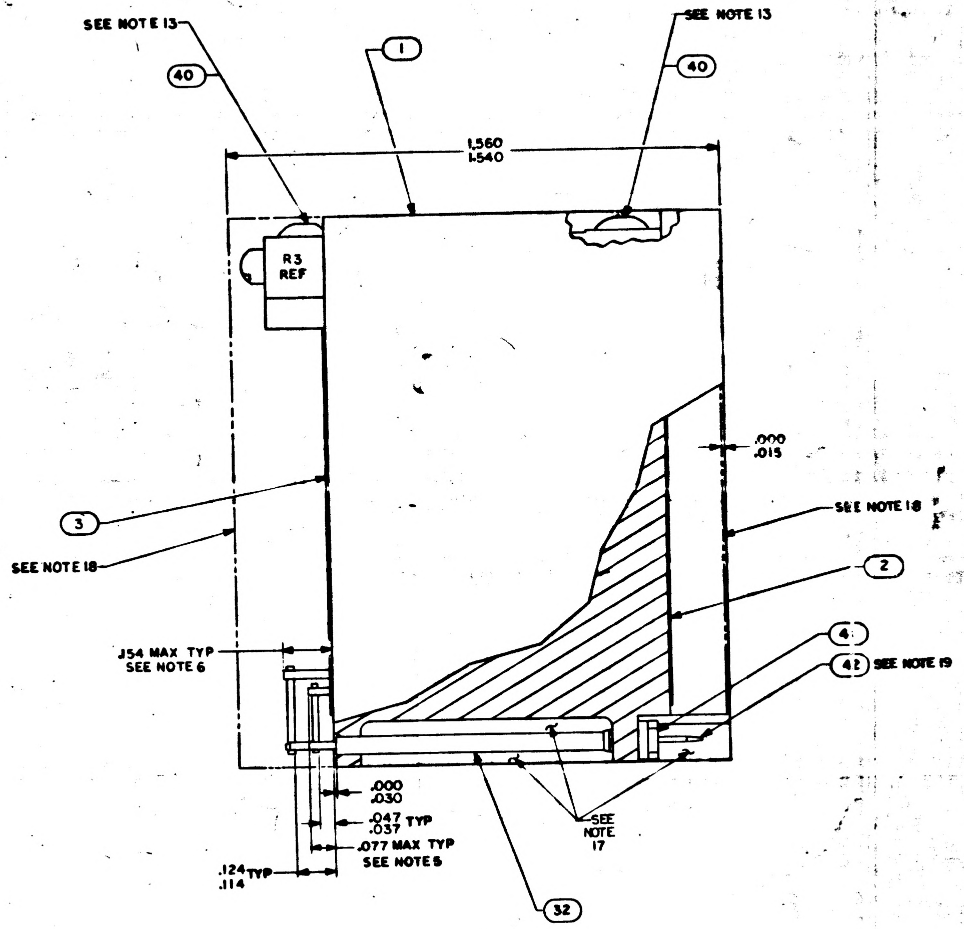
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R3 REF
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SEE NOTE 18
2
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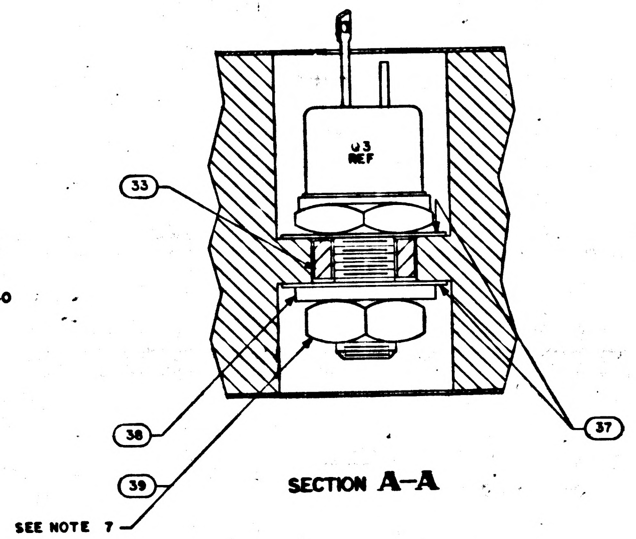
SEE NOTE 6
4
42 SEE NOTE 19
.000
.030
.047 TYP
.037
.077 MAX TYP
SEE NOTE 6
.124 TYP
.114
SEE NOTE 17
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003.~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009.
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
15. ~~MARK .060/.100 RED PER ND 1002010~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND 1002136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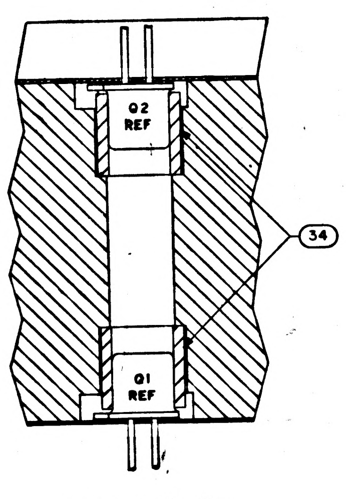
SEE NOTE 7

SECTION A-A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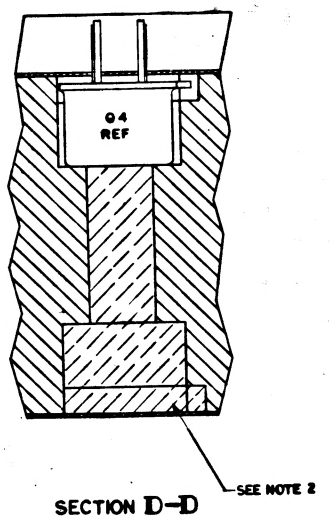
SECTION C-C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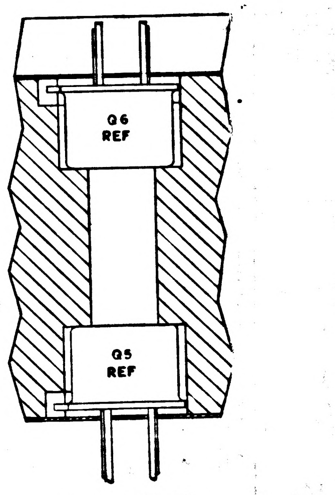
SEE NOTE 2

SECTION D-D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SECTION E-E

INCHES 0 1 2 PHOTOGRAPHIC SCALE ONLY

F-1

1007027

1007027 N

REVISIONS CLASS B TDRR 00715

SYM	DESCRIPTION	DATE	APPR
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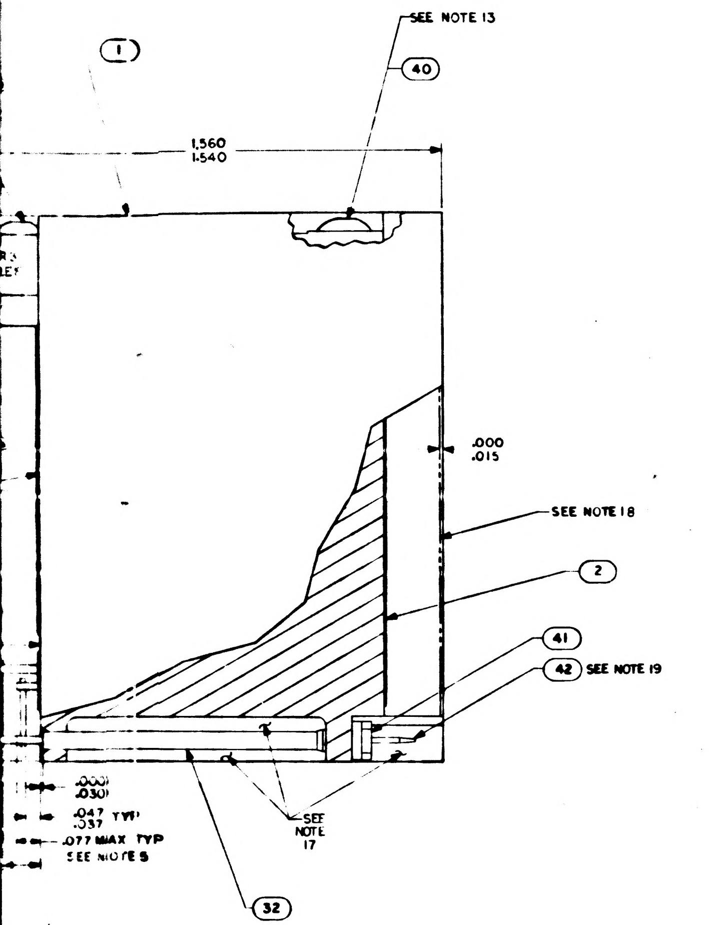
C	REVISED PER TDRR 01712	6-26-63	JJ WK
D	REVISED PER TDRR 01650	7-9-63	JJ WK
E	REVISED PER TDRR 01959	[illegible]	WK
F	REVISED PER TDRR 02166	7-29-63	JJ WK
G	REVISED PER TDRR 02718	8-21-63	JJ
H	REVISED PER TDRR 04131	23 Oct 63	WK
J	PER TDRR 04132	63	WK
K	REVISED PER TDRR 05261	17 Dec 63	WK
L	REVISED PER TDRR 05410	19 Dec 63	WK
M	REVISED PER TDRR 06457	64	W
N	REVISED PER TDRR 07010	30 MAR 64	JJJ AU



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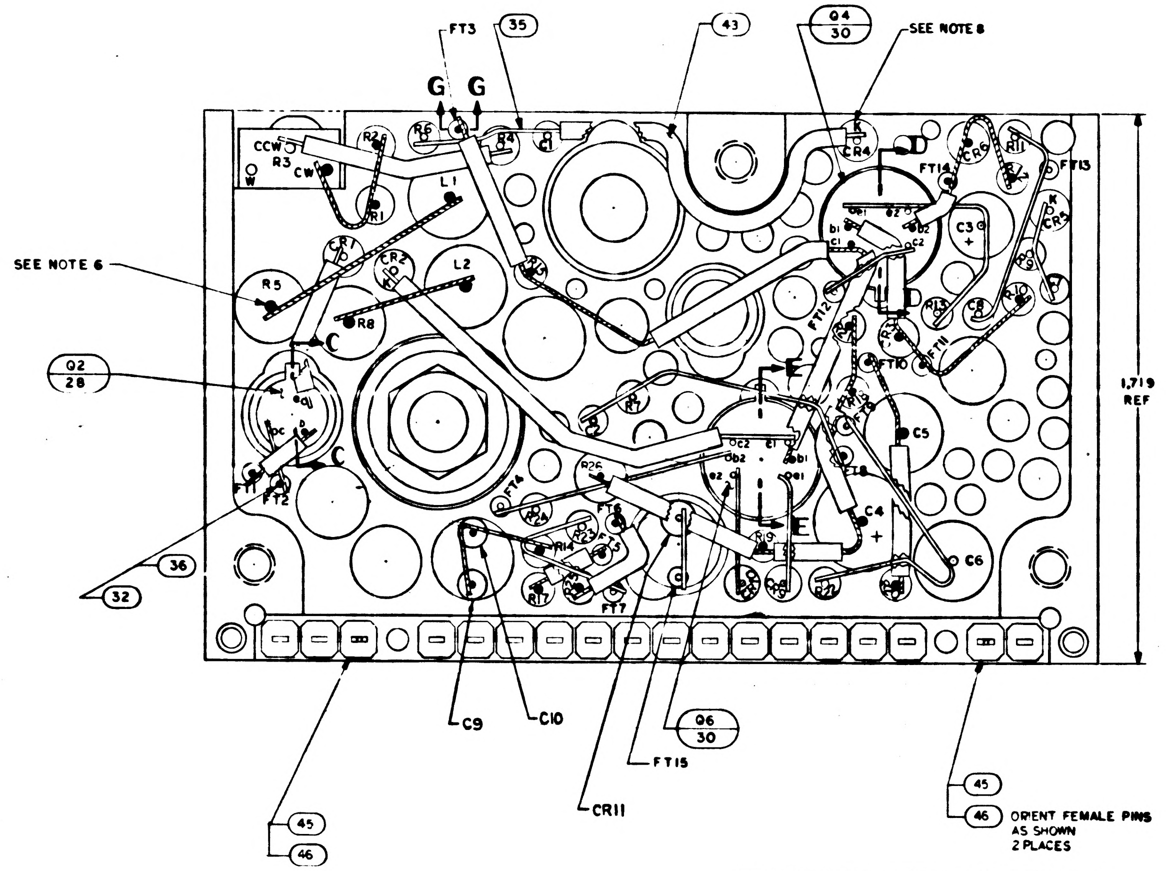
.077 MAX TYP
SEE NOTE 5
SEE NOTE 17
32



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SEE NOTE 6
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FT4
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R14
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R19
C4
C6
R22
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C10
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FT15
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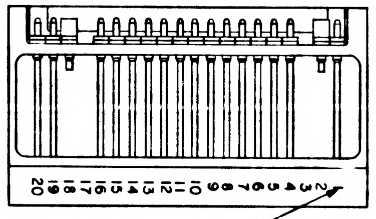
46 ORIENT FEMALE PINS AS SHOWN 2 PLACES



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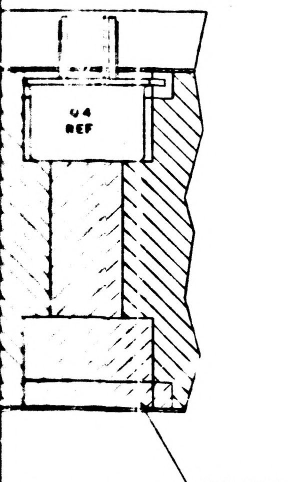
SEE NOTE 9

BINARY CURRENT SWITCH
1007027
REV
SER NO.

DWG REV LTR

WARNING: CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

MARKING VIEW
SCALE 2/1



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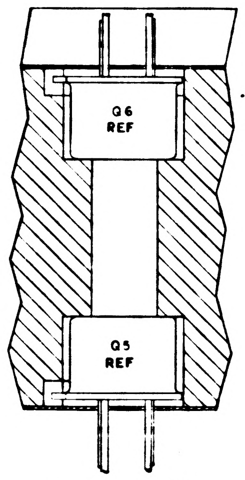
SEE NOTE 2

SECTION D-D



Q6
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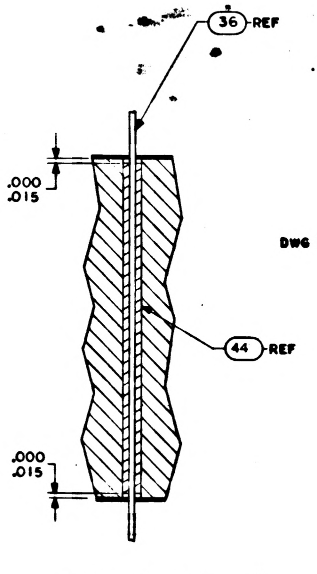
REF

SECTION E-E



36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776-22	INSULATION SLEEVING	44
AR	1006776-21	INSULATION SLEEVING	43
16	1006782-4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093-3	SCREW, BUTTON HEAD	40
1	MS 35650-104	NUT, PLAIN, HEX	39
1	1008020-1	WASHER, FLAT	38
2	1008024-1	WASHER, INSULATOR	37
AR	1006757-8	WIRE, ELEC, .020 DIA	36
AR	1006757-L	WIRE, ELEC, .010 x .020	35
2	1008025-1	INSULATOR BUSHING	34
1	1008021-1	INSULATOR, BUSHING	33
AR	1006776-20	INSULATION SLEEVING	32
3	1010376-4	TRANSISTOR	30
1	1010269-1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388-39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462-6	DIODE	24
4	1010385	DIODE	23
2	1006777-14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777-33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393-039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755-73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777-13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750-15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750-56	RESISTOR, FIXED MF, 10K, 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	15
2	1010369-87	RESISTOR	14
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	13
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750-18	RESISTOR, FIXED MF, 270Ω 1/4W ±2%	11
4	1006750-67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
2	1006750-81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389-80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364-557	RESISTOR, FIXED MF, 39.2K 1/8W ±1%	7
1	1010378-10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055-1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS XX ±.02 XXX ±.005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING

MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Bell DATE 27
CHECKED L. P. Kingsbury
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL WK 3 Jan 63

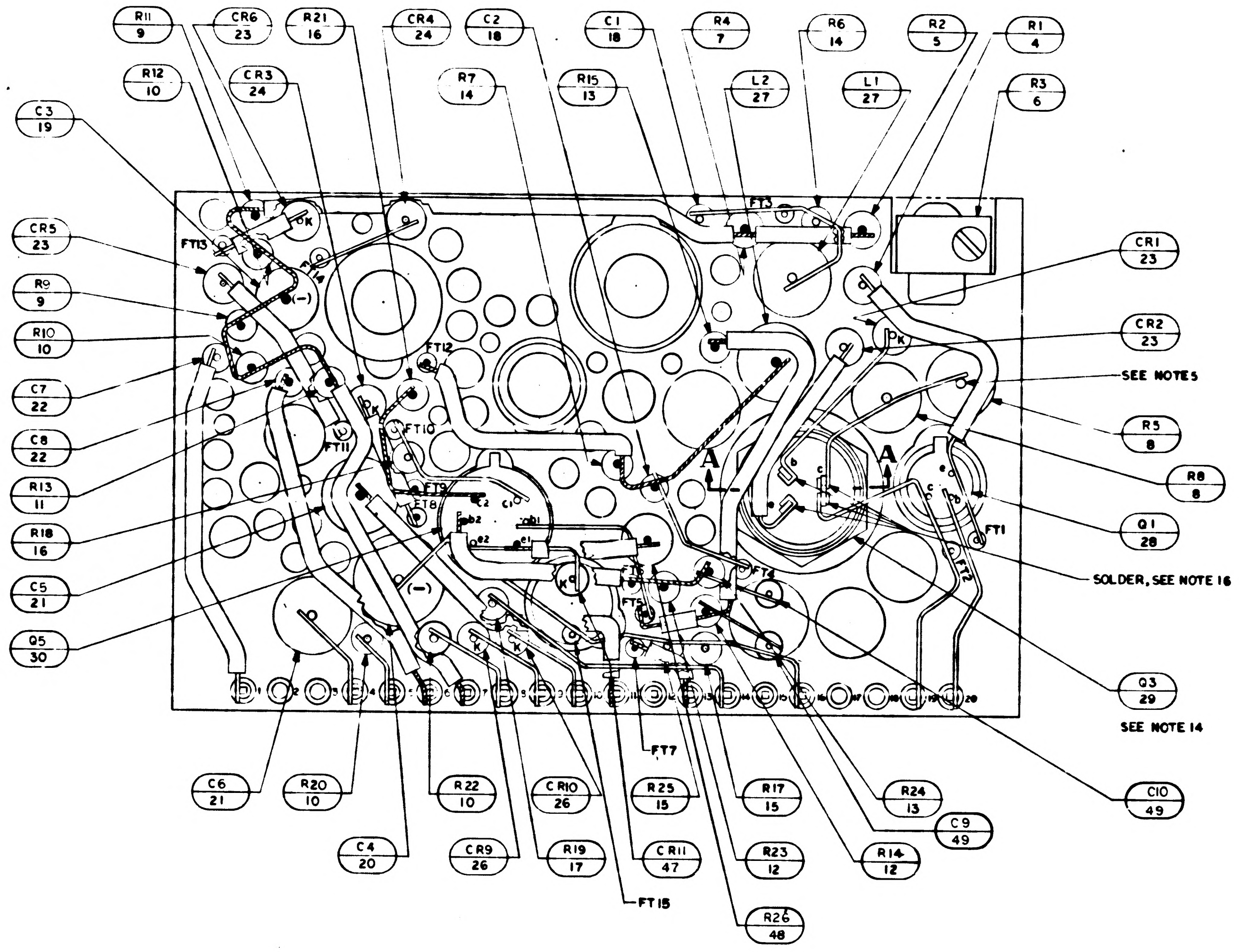
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007027
SCALE 5/1 | WT | SHEET 1 OF 1

1007027 J

27/1007027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C1 18
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L1 27
R3 6
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTES
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
C10 49
C9 49
R24 13
R14 12
R17 15
R23 12
R26 48
CR11 47
R25 15
FT7
FT15
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C4 20
R20 10
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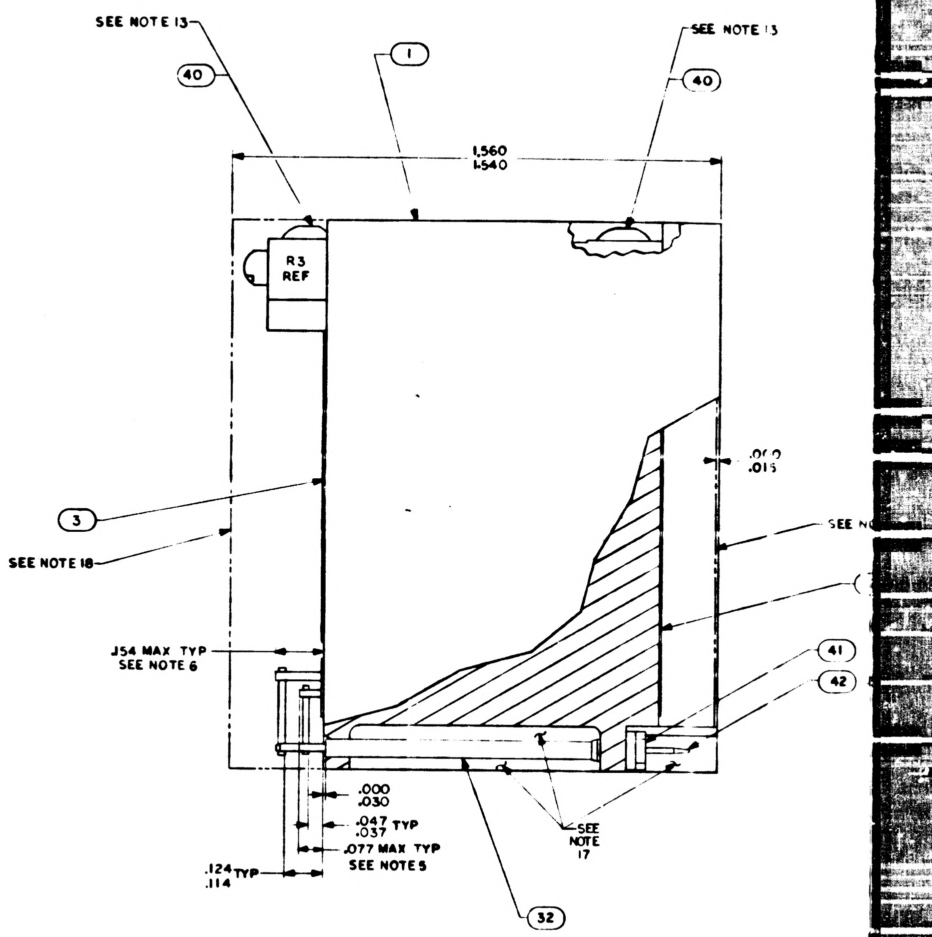
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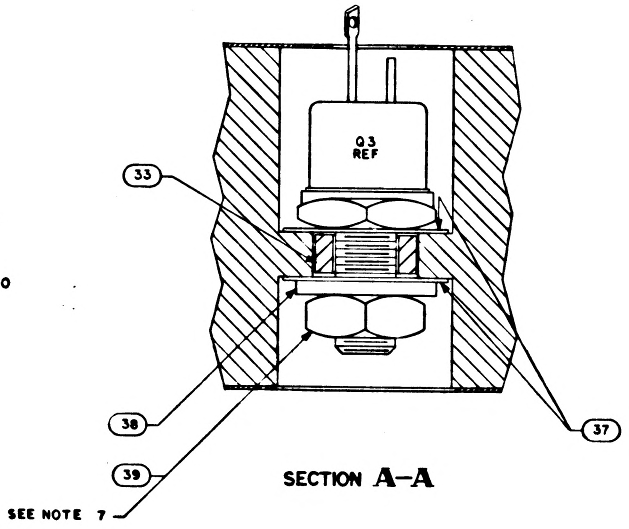
3
SEE NOTE 18
.154 MAX TYP
SEE NOTE 6
41
42
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTES
.124
.114 TYP
SEE NOTE 17
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
~~4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND ~~SERIALIZE AND MARK~~ ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
~~15. MARK .060/.100 RED PER ND 1002010~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND 1002136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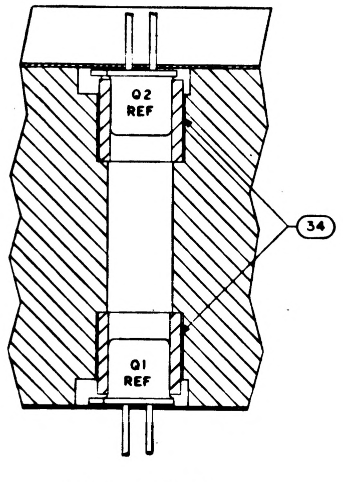
SEE NOTE 7

SECTION A-A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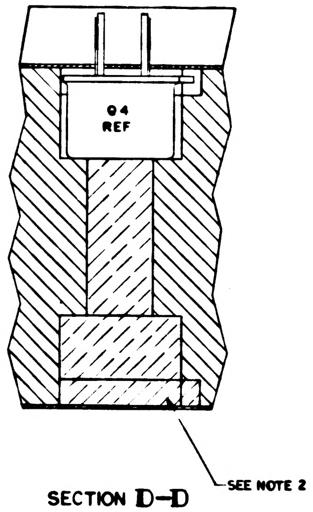
SECTION C-C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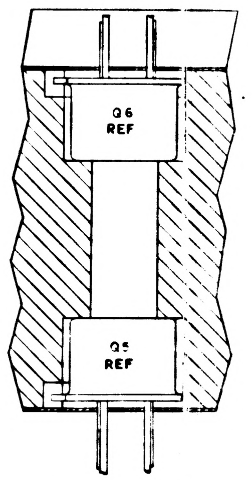
REF
SEE NOTE 2

SECTION D-D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Q5
REF

SECTION E-E

1007027 P

REVISIONS CLASS B TDRR 00916

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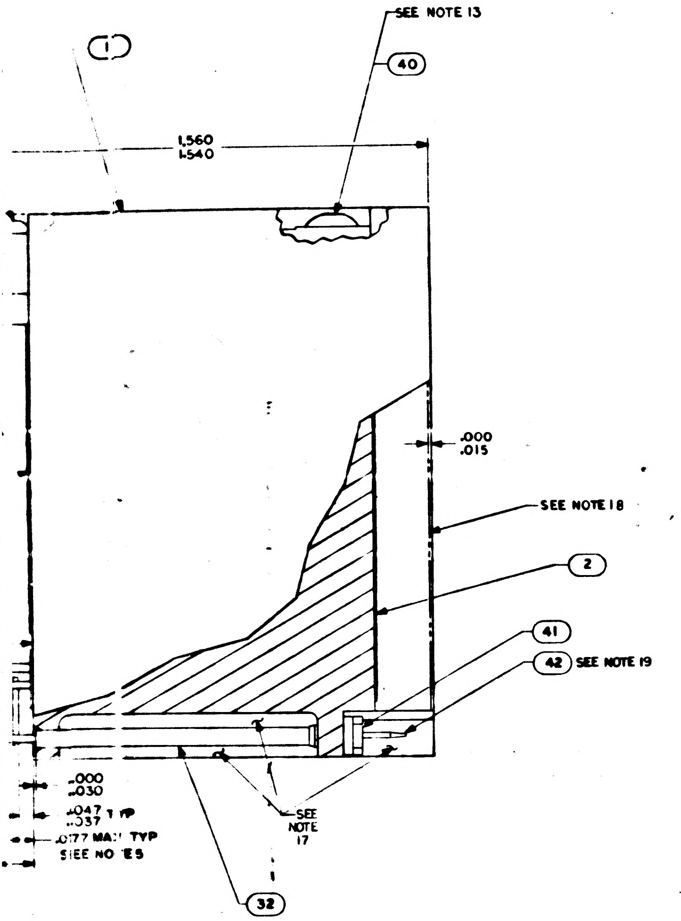
B	REVISED PER TDRR 01257	5-15-63	RT WK
C	REVISED PER TDRR 01712	6-26-63	JJA WK
D	REVISED PER TDRR 01650	7-9-63	JJA WK
E	REVISED PER TDRR 01959	[illegible]	WK
F	REVISED PER TDRR 02166	7-29-63	JJA WK
G	REVISED PER TDRR 02718	[illegible]	JJA
H	REVISED PER TDRR 04131	23 OCT 63	WK
J	PER TDRR 04132	27 OCT 63	WK
K	REVISED PER TDRR 05261	17 DEC 63	WK
L	REVISED PER TDRR 05410	DEC 63	WK
M	REVISED PER TDRR 06457	13 FEB 64	WR
N	REVISED PER TDRR 07010	30 MAR 64	JJJ AU
P	REVISED PER TDRR 07285	6 APR 64	[illegible]



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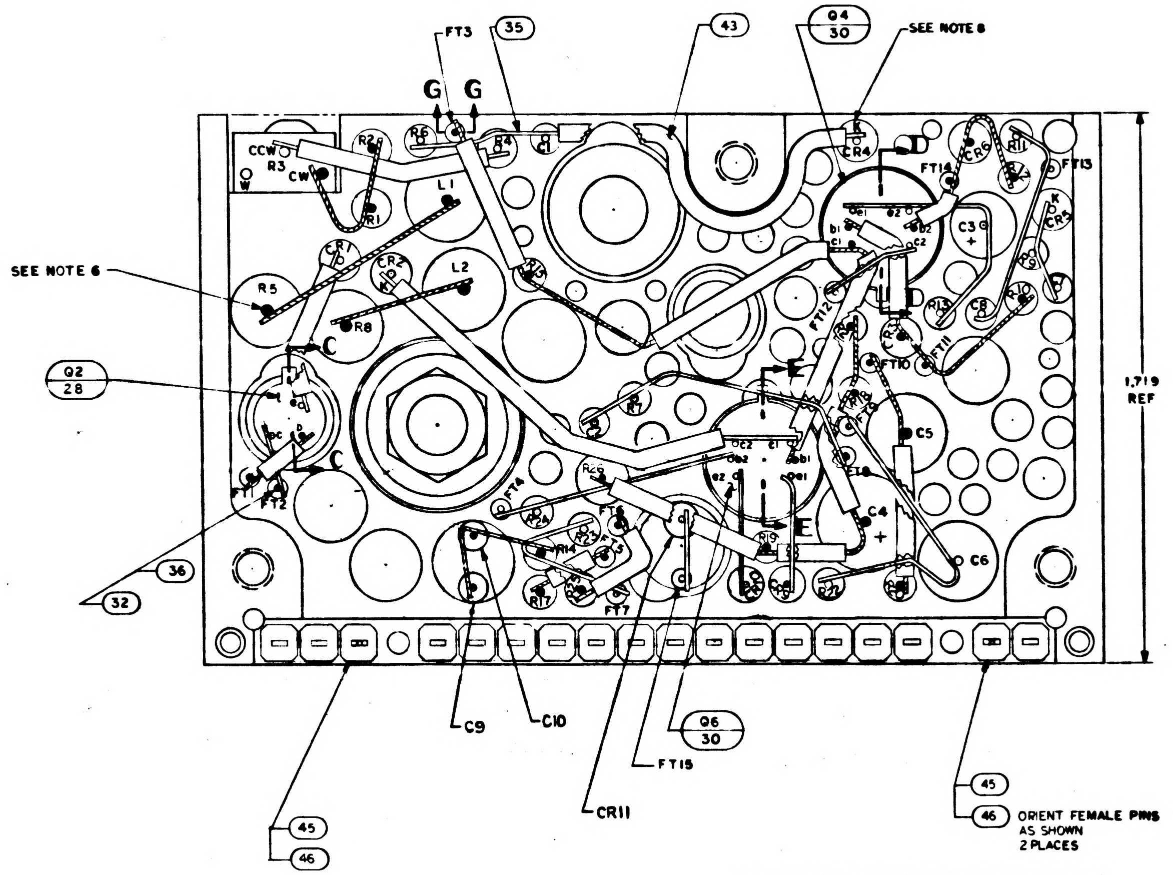
.077 MAX TYP
SEE NOTES
SEE NOTE 17
32



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SEE NOTE 8
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SEE NOTE 6
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CR6
FT1
FT2
FT4
FT5
FT6
FT7
FT10
FT11
FT12
FT13
FT14
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C
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E
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FT15
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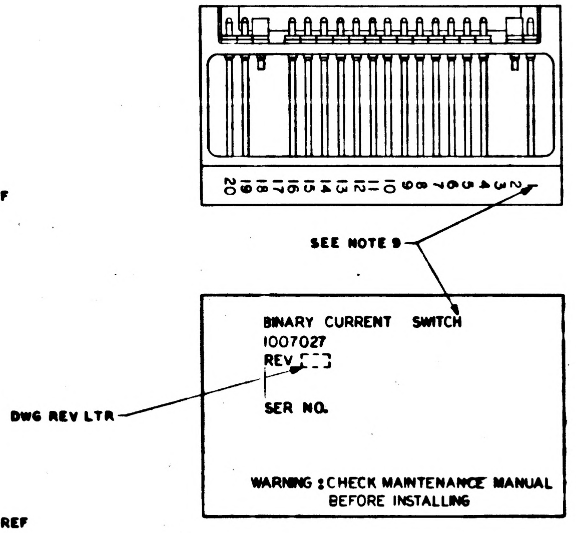
46 ORIENT FEMALE PINS AS SHOWN 2 PLACES



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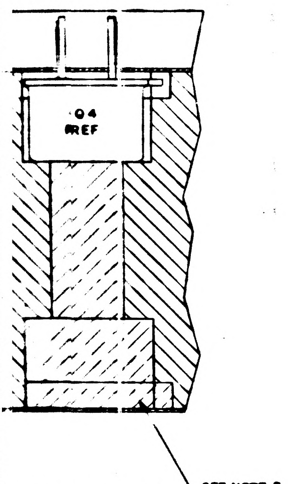
SEE NOTE 9
DWG REV LTR

BINARY CURRENT SWITCH
1007027
REV
SER NO.

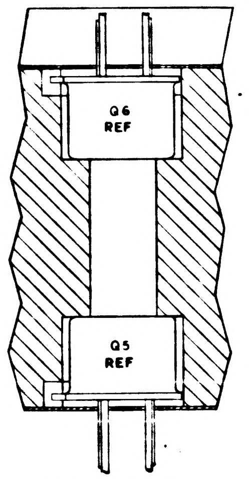
WARNING : CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

MARKING VIEW
SCALE 2/1



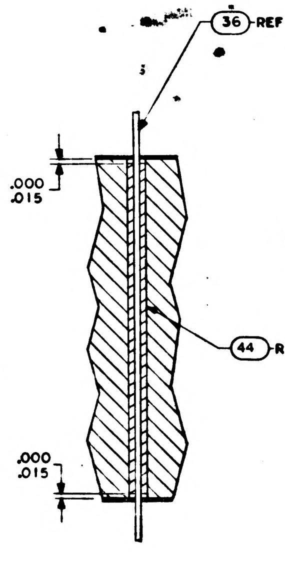
Q4
REF
SEE NOTE 2

SECTION D-D



Q6
REF
Q5
REF

SECTION E-E



36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776-22	INSULATION SLEEVING	44
AR	1006776-21	INSULATION SLEEVING	43
16	1006782-4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093-3	SCREW, BOTTON HEAD	40
1	MS 35650-104	NUT, PLAIN, HEX	39
1	1008020-1	WASHER, FLAT	38
2	1008024-1	WASHER, INSULATOR	37
AR	1006757-8	WIRE, ELEC, .020 DIA	36
AR	1006757-1	WIRE, ELEC, .010 X .020	35
2	1008025-1	INSULATOR BUSHING	34
1	1008021-1	INSULATOR, BUSHING	33
AR	1006776-20	INSULATION SLEEVING	32
3	1010376-4	TRANSISTOR	30
1	1010269-1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388-39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462-6	DIODE	24
4	1010385	DIODE	23
2	1006777-14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777-33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393-039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755-73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777-13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750-15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750-56	RESISTOR, FIXED MF, 10 K, 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	15
2	1010369-87	RESISTOR	14
2	1006750-81	RESISTOR, FIXED MF, 110 K 1/4W ±2%	13
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750-18	RESISTOR, FIXED MF, 270Ω 1/4W ±2%	11
4	1006750-67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
2	1006750-81	RESISTOR, FIXED MF, 110 K, 1/4W ±2%	9
2	1010389-80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364-557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373-10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF, 100 K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055-1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ±.02 XXX ±.005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS 9-497
DRAWN R. Bell DATE 22 [illegible]
CHECKED [illegible]
APPROVAL [illegible] 24 Apr 63
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 3 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

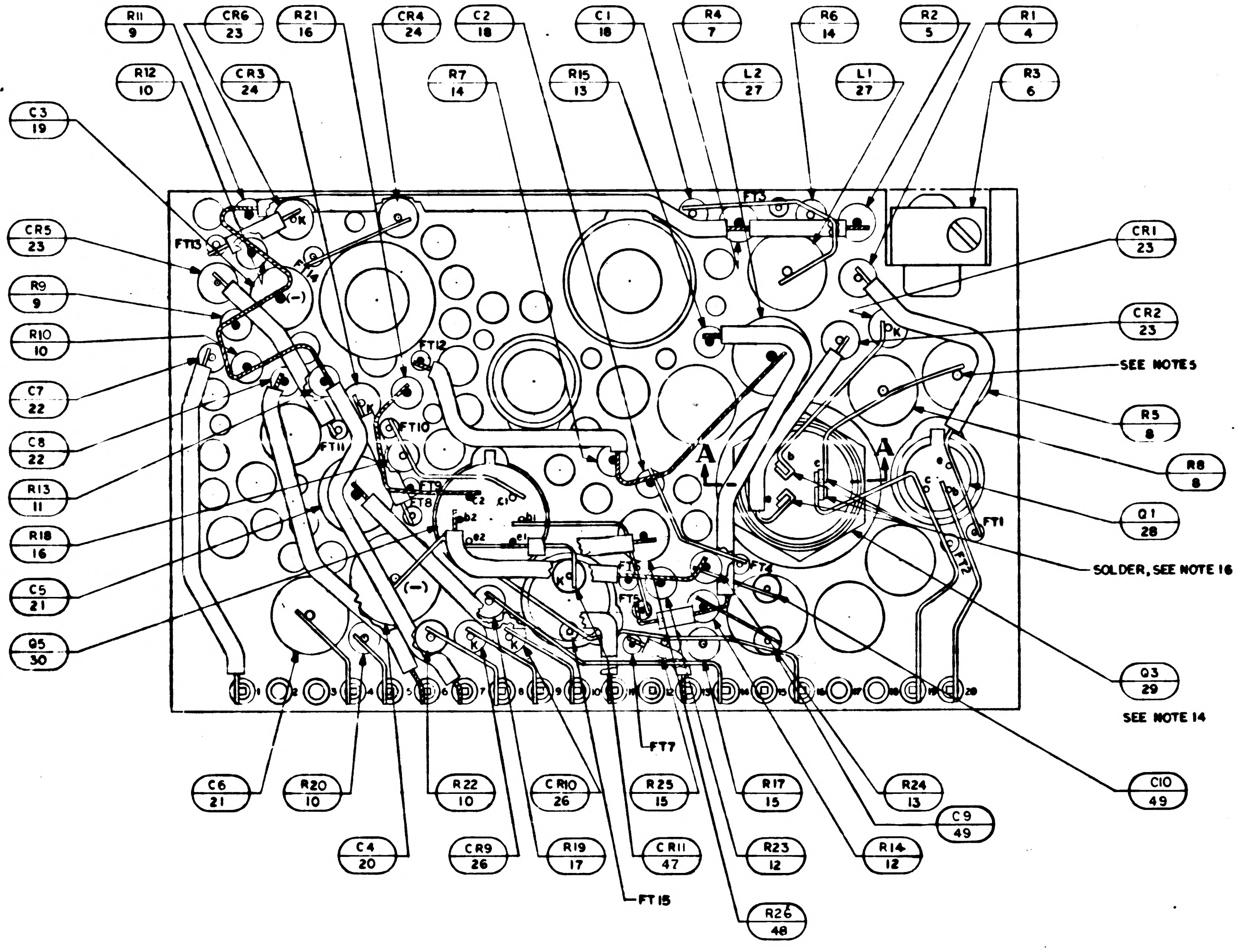
BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO 1007027
SCALE 5/1
WT
SHEET 1 OF 1

J 1007027 P

2

[illegible]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L2 27
L1 27
R3 6
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTES
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
C10 49
C9 49
C6 21
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R22 10
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R25 15
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C4 20
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R26 48
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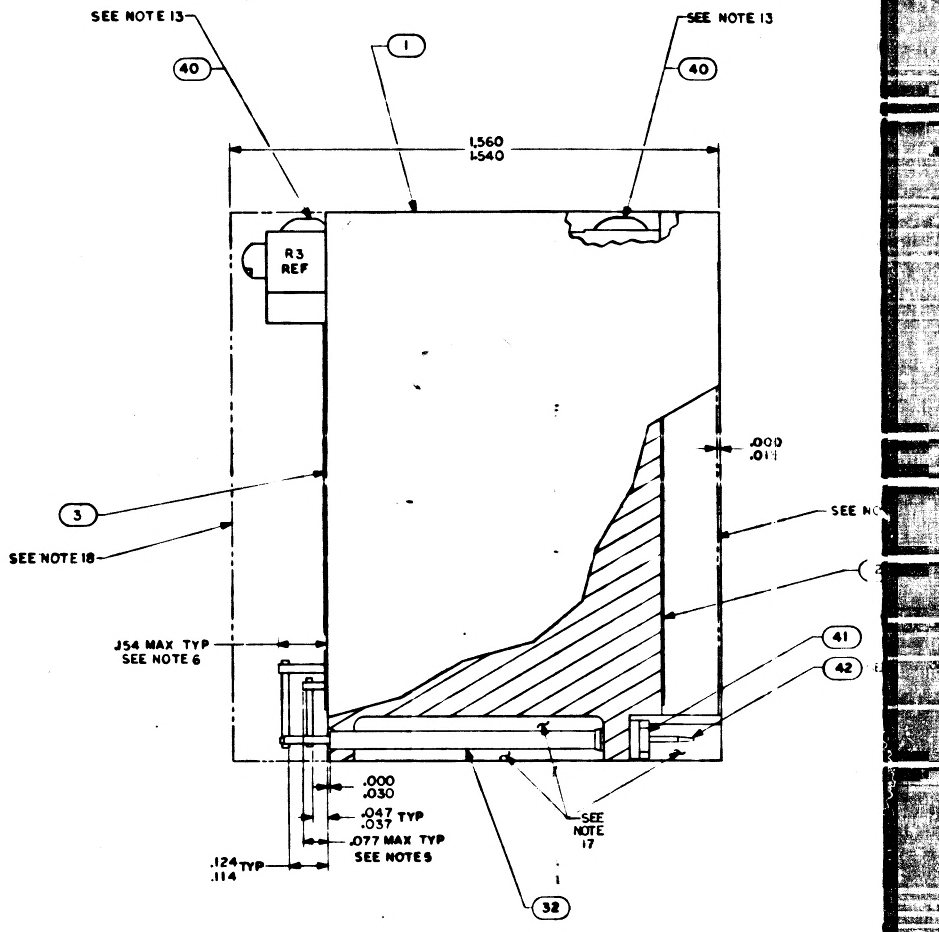
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SEE NOTE 18
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SEE NOTE 6
41
42
.000
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.047 TYP
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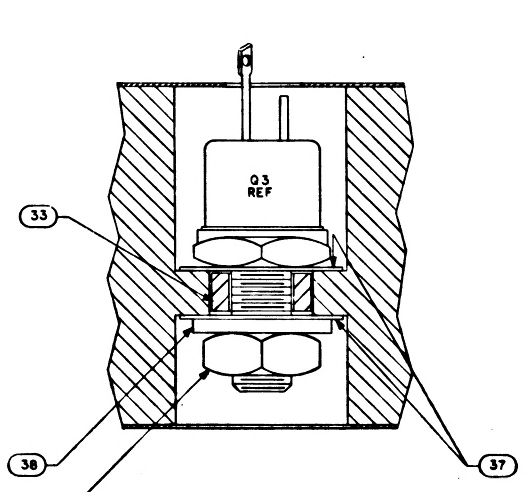
.077 MAX TYP
SEE NOTES
.124 TYP
.114
SEE NOTE 17
32

D
C
B
A

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND ~~SERIALIZE AND MARK~~ ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. ~~MARK .060/.100 RED PER ND 1002010~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND1002136
20. PROCURE PER PS 1007027.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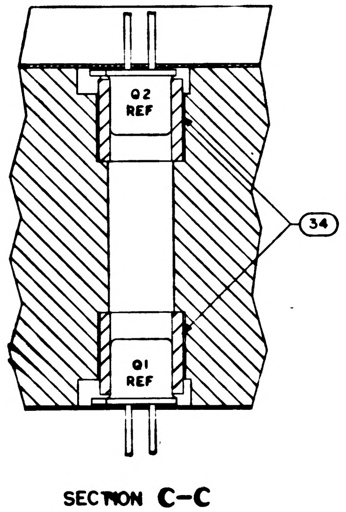
SEE NOTE 7

SECTION A–A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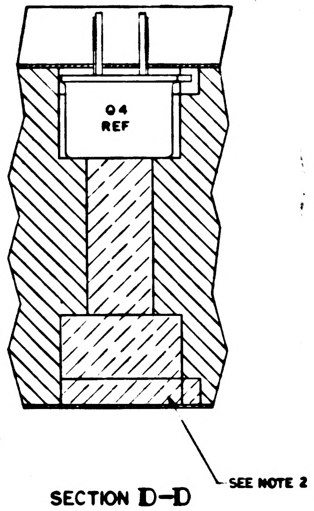
SECTION C–C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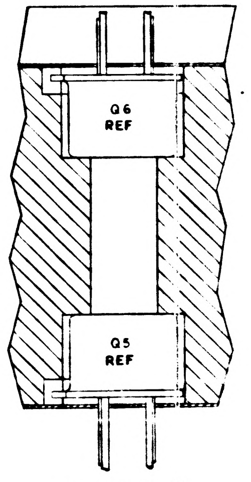
SEE NOTE 2

SECTION D–D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SECTION E–E

1007027 R

SYM	DESCRIPTION	DATE	APPR
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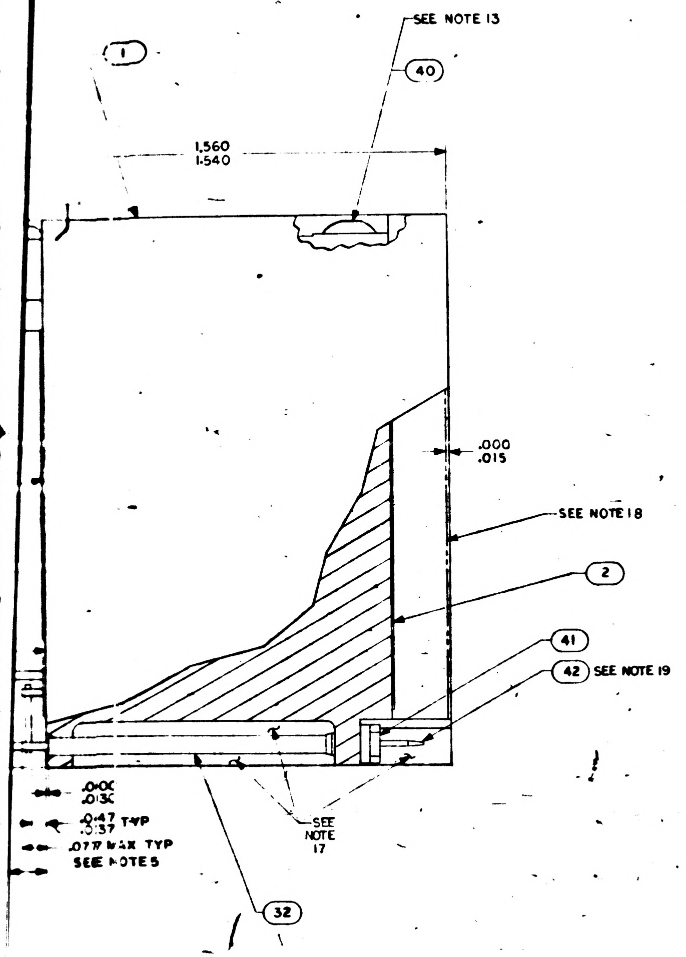
B	REVISED PER TDRR 01257	5-[illegible]	WK
C	REVISED PER TDRR 01712	6-26-63	JJM WK
D	REVISED PER TDRR 01650	[illegible]	WK
E	REVISED PER TDRR 01959	[illegible]	WK
F	REVISED PER TDRR 02166	7-29-63	JJM WK
G	REVISED PER TDRR 02778	8-21-63	JJM
H	REVISED PER TDRR 04131	3 OCT 63	WK
J	PER TDRR 04132	[illegible] 63	WK
K	REVISED PER TDRR 05261	17 DEC 63	WK
L	REVISED PER TDRR 05410	27 DEC 63	WK
M	REVISED PER TDRR 06457	8 [illegible] 64	WK
N	REVISED PER TDRR 07010	30 MAR 64	JJJ AU
P	REVISED PER TDRR 07285	6 APR 64	[illegible]
R	REVISED PER TDRR 07938	4-MAY-64	J.B. CP



SEE NOTE 13
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SEE NOTE 18
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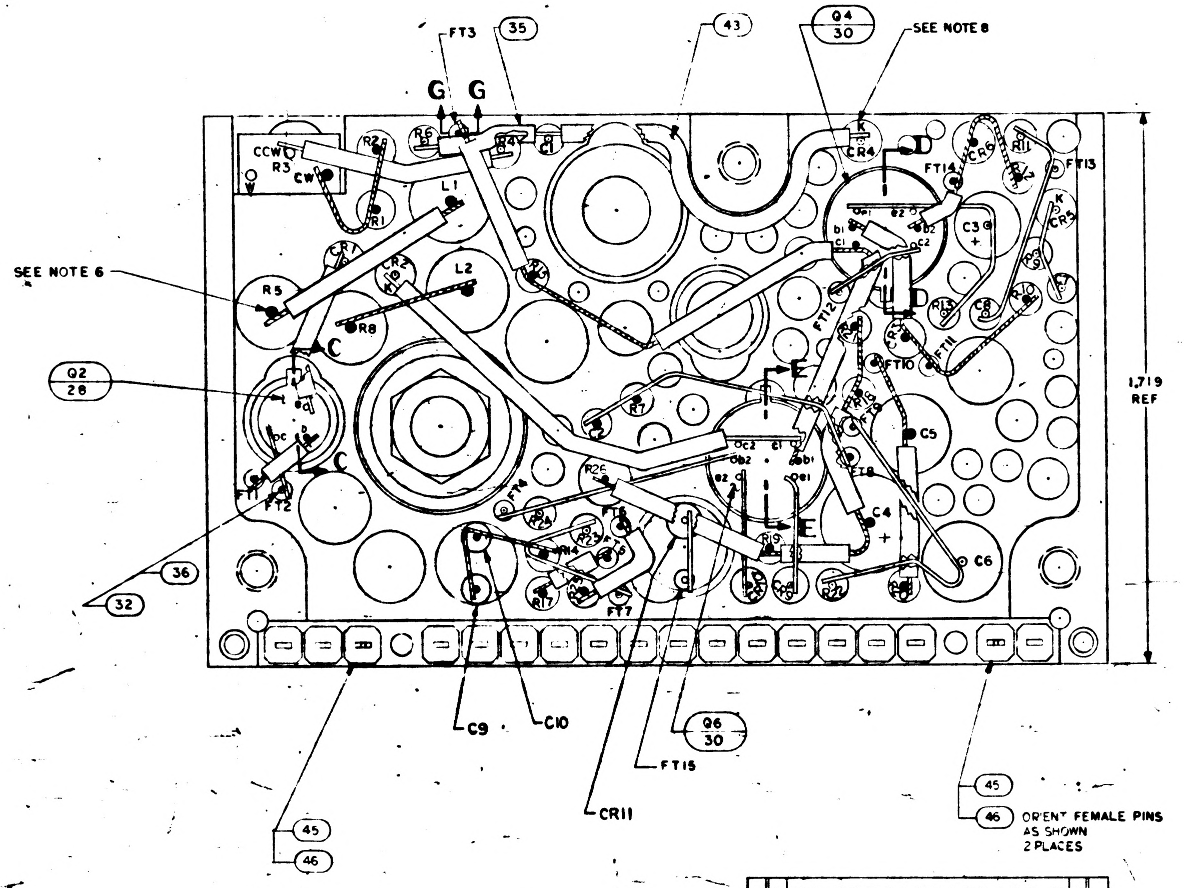
42 SEE NOTE 19
.006
.016
.047 TYP
.037
.077 MAX TYP
SEE NOTES
SEE NOTE 17
32



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R1
L1
L2
R6
C1
CR4
R11
FT13
FT14
C3
SEE NOTE 6
R5
R8
C
Q2
28
C
FT1
FT2
36
32
CR3
CR2
CR1
FT12
FT11
FT10
E
C5
C4
C6
FT8
FT4
FT7
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REF
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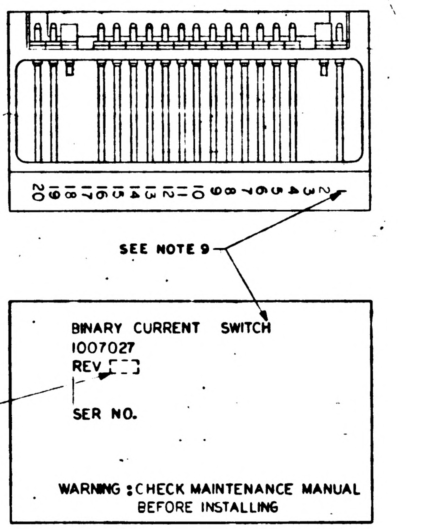
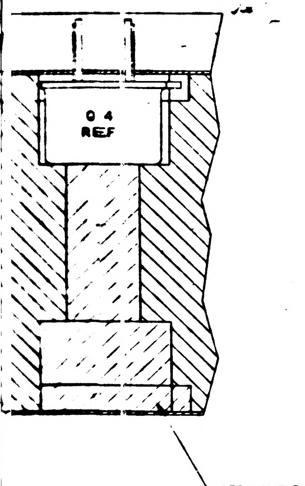
46 ORIENT FEMALE PINS AS SHOWN 2 PLACES
45
46



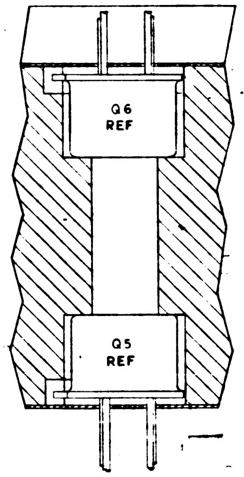
SEE NOTE 9
BINARY CURRENT SWITCH
1007027
REV
SER NO.
DWG REV LTR
WARNING: CHECK MAINTENANCE MANUAL BEFORE INSTALLING

MARKING VIEW
SCALE 2/1



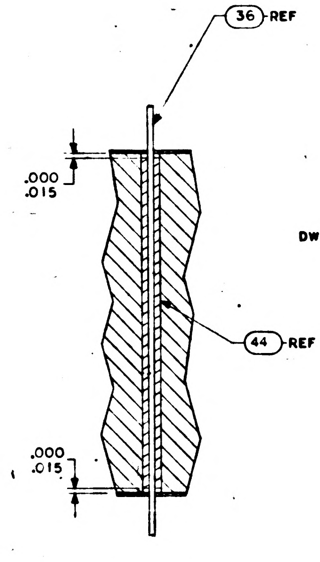
Q4
REF
SEE NOTE 2

SECTION D—D



Q6
REF
Q5
REF

SECTION E-E



36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE MIN	45
AR	1006776-22	INSULATION SLEEVING	44
AR	1006776-21	INSULATION SLEEVING	43
16	1006782-4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093-3	SCREW, BOTTON HEAD	40
1	MS 35650-104	NUT, PLAIN, HEX	39
1	1008020-1	WASHER, FLAT	38
2	1008024-1	WASHER, INSULATOR	37
AR	1006757-8	WIRE, ELEC, .020 DIA	36
AR	1006757-1	WIRE, ELEC, .010 X .020	35
2	1008025-1	INSULATOR BUSHING	34
1	1008021-1	INSULATOR, BUSHING	33
AR	1006776-20	INSULATION SLEEVING	32
3	1010376-4	TRANSISTOR	30
1	1010269-1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388-39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462-6	DIODE	24
4	1010385	DIODE	23
2	1006777-14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777-33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393-039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755-73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777-13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750-15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750-56	RESISTOR, FIXED MF, 10K, 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	15
2	1010369-87	RESISTOR	14
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	13
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750-18	RESISTOR, FIXED MF, 270Ω, 1/4W ±2%	11
4	1006750-67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
2	1006750-81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389-80	RESISTOR, FIXED WW, 10K, 3W ±1%	8
1	1010364-557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373-10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055-1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ±.02 XXX ±.005 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO.
CONTRACT NAS 9-497
DRAWN K. Bell DATE 27 [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 3 [illegible] 63

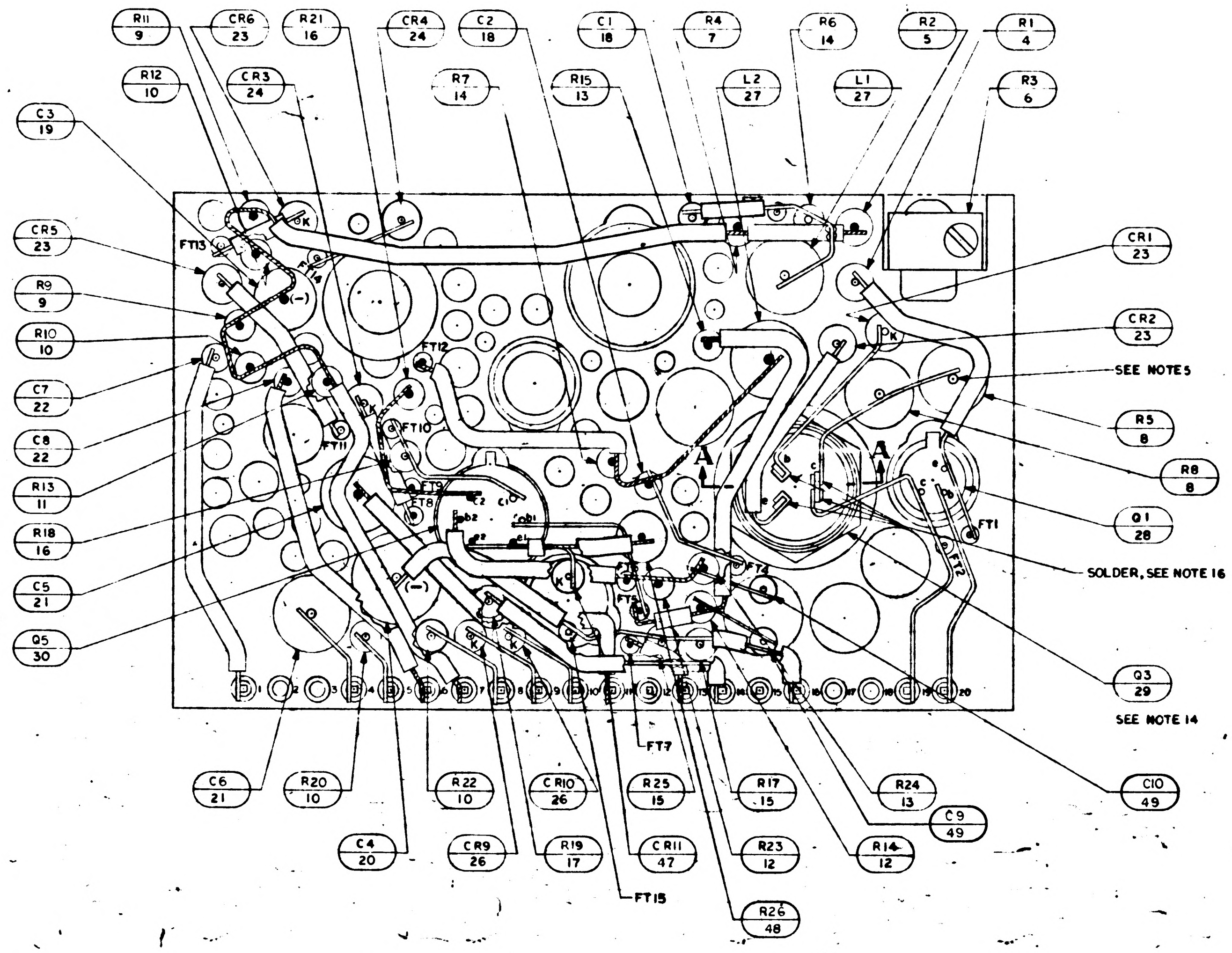
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007027
SCALE 5/1
WT
SHEET 1 OF 1

J 1007027 R

2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CR4 24
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C1 18
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R6 14
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R1 4
R12 10
CR3 24
R7 14
R15 13
L2 27
L1 27
R3 6
C3 19
CR5 23
FT13
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
FT12
FT10
FT11
FT8
FT9
FT3
FT4
FT1
FT2
A
A
(-)
CR1 23
CR2 23
SEE NOTE5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
C10 49
C9 49
R24 13
R14 12
R17 15
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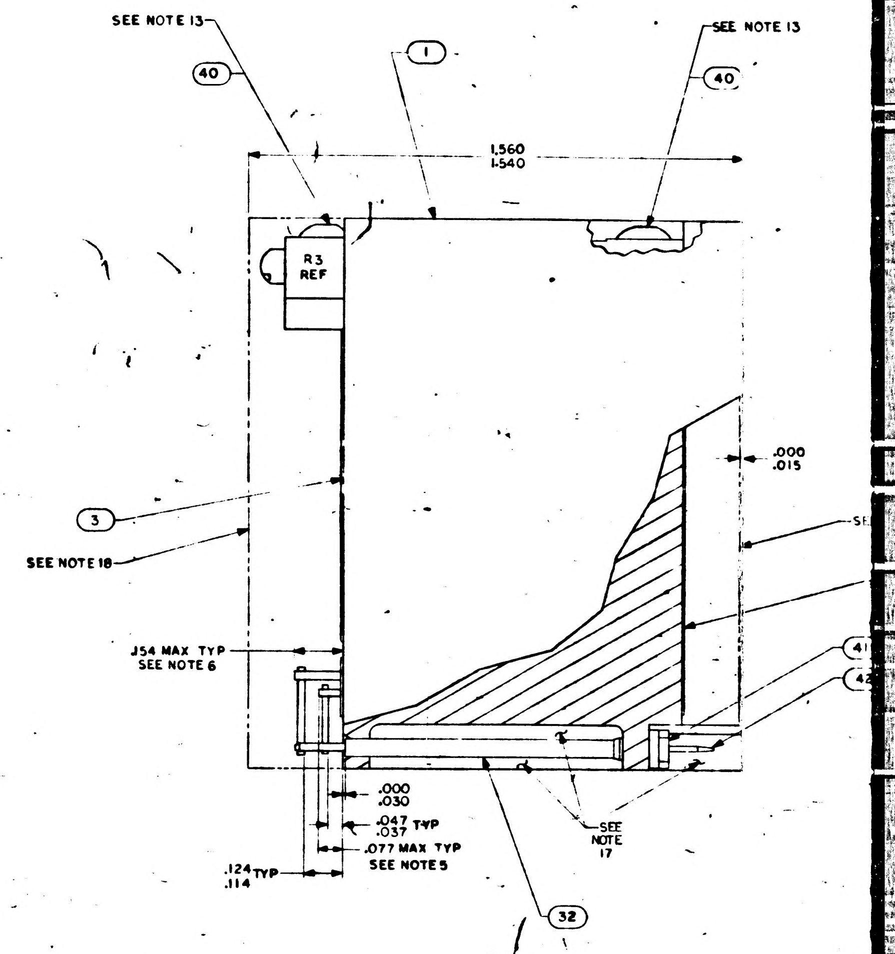
C6 21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SEE NOTE 13
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R3 REF
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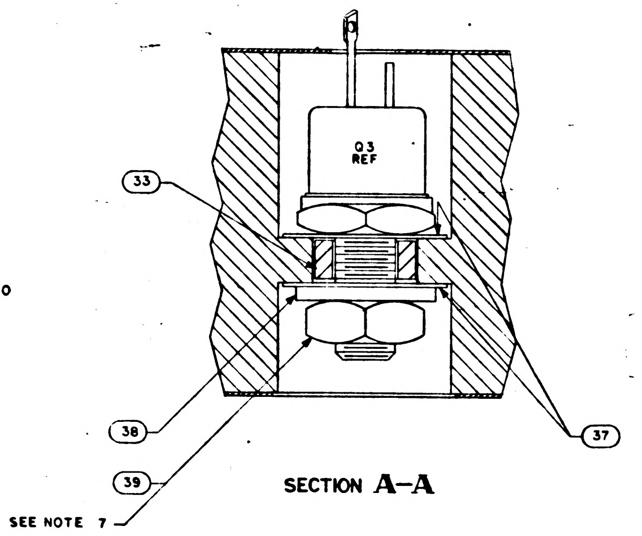
.015
3
SEE NOTE 18
.154 MAX TYP
SEE NOTE 6
41
42
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTE5
.124
.114 TYP
SEE NOTE 17
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND ~~SERIALIZE AND MARK~~ ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009

12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
15. ~~MARK .060/.100 RED PER ND 1002019~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND 1002136
20. PROCURE PER PS 1007027.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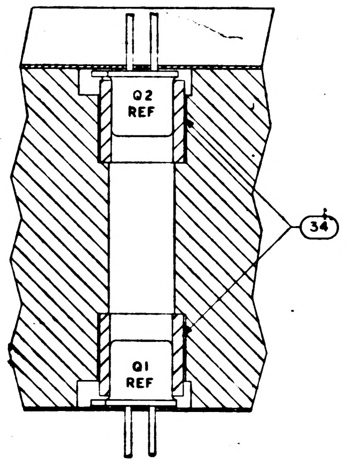
SEE NOTE 7

SECTION A-A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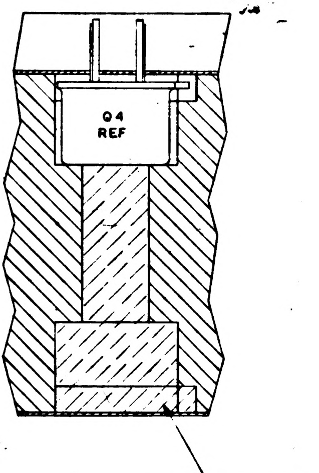
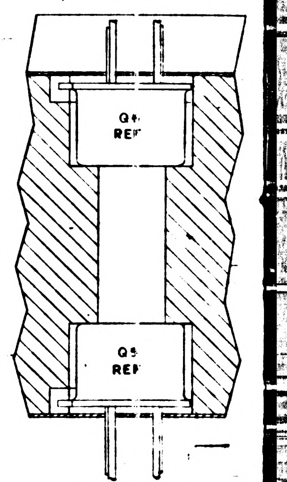
SECTION C-C


Q4 REF
SEE NOTE 2

SECTION D-D


Q4 REF
Q5 REF

SECTION E-E

1

1007027 S

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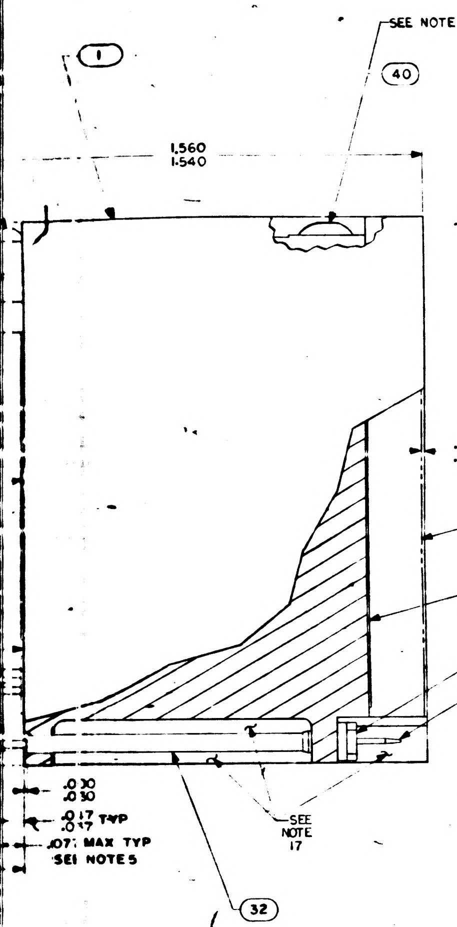
C	REVISED PER TDRR 01712	6-26-63	Wll
D	REVISED PER TDRR 01850	7-7-63	WK
E	REVISED PER TDRR 01959		WK
F	REVISED PER TDRR 02166	7-29-63	WK
G	REVISED PER TDRR 02718		
H	REVISED PER TDRR 04131	3 Oct 63	WK
J	PER TDRR 04132	63	WK
K	REVISED PER TDRR 05261	17 Oct 63	WK
L	REVISED PER TDRR 05410	27 Dec 63	WK
M	REVISED PER TDRR 06457	64	WR
N	REVISED PER TDRR 07010	30 MAR 64	JJJ AU
P	REVISED PER TDRR 07285	64	
R	REVISED PER TDRR 07938	4-MAY-64	J.B. CP
S	REVISED PER TDRR 12205	17 SEP 64	RJM



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SEE NOTE 13
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SEE NOTE 18
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.030
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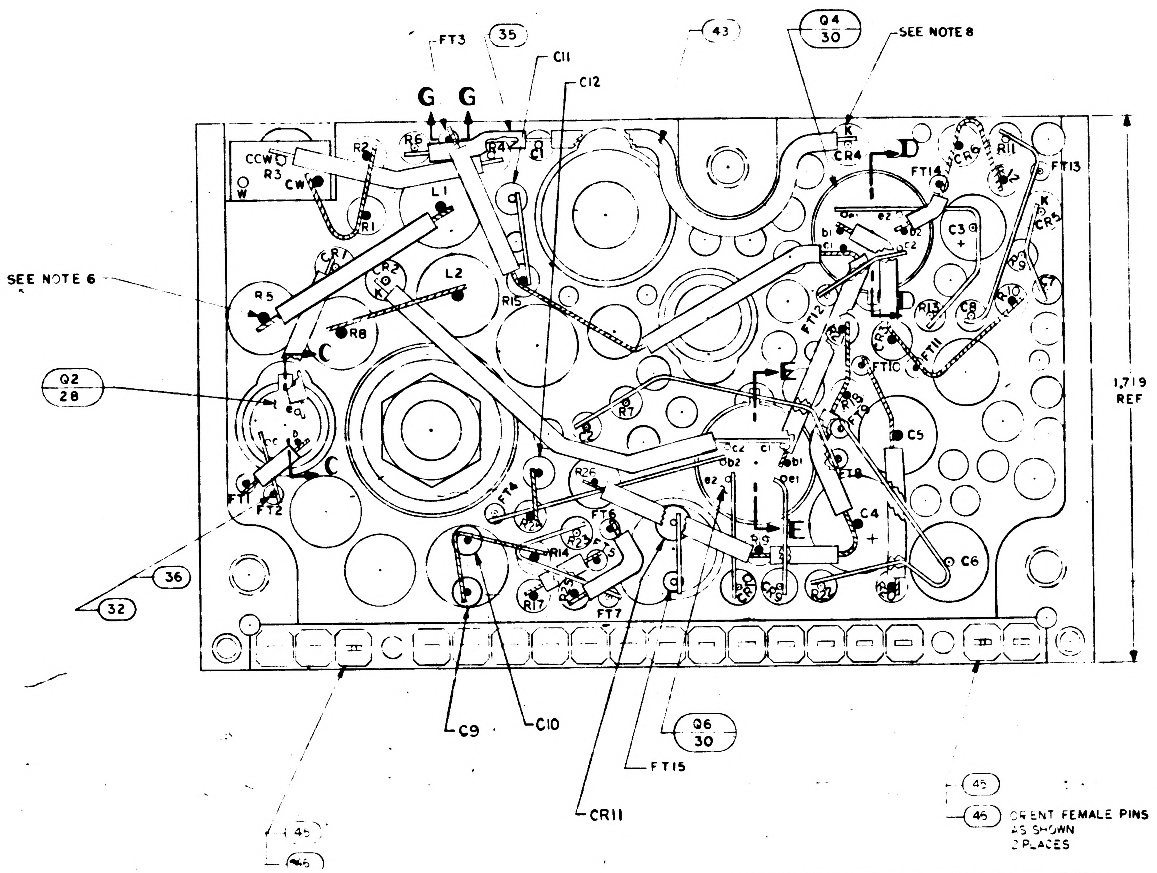
.017
.107 MAX TYP
SEE NOTES
SEE NOTE 17
32



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R1
CR1
CR2
L2
R5
R8
R15
SEE NOTE 6
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C
D
CR4
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FT13
R11
CR3
C3
C2
R13
C8
R10
C7
FT12
FT11
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C6
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FT2
FT4
R14
R17
FT7
R20
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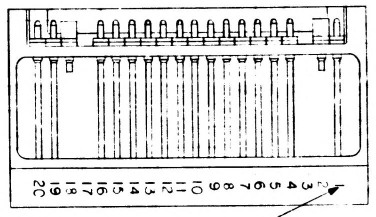
36
32
1.719 REF
45
46 ORIENT FEMALE PINS AS SHOWN 2 PLACES



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SEE NOTE 9

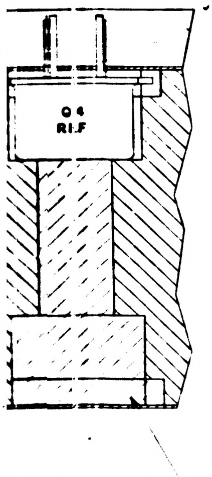
BINARY CURRENT SWITCH
1007027
REV

SER NO.

WARNING : CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

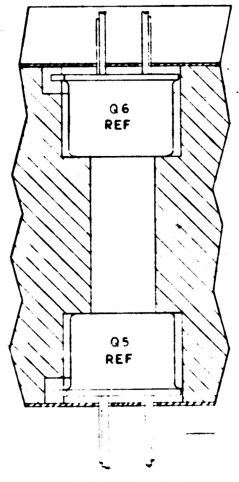
DWG REV LTR

MARKING VIEW
SCALE 2/1



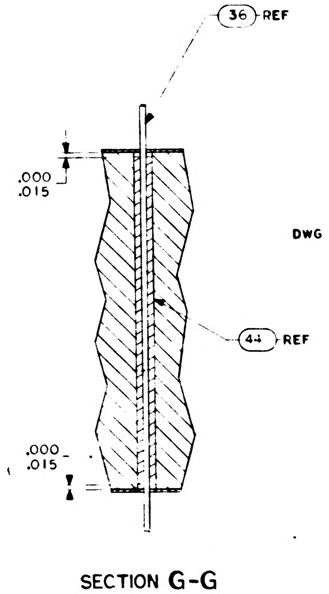
SECTION D-D

SEE NOTE 2



Q6
REF
Q5
REF

SECTION E-E



36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1006777-1	CAPACITOR, 10 UUF, 100V, ±10%	50
	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
2	1006781-1	CONTACT, WRAPOST FEMALE MIN	46
2	1006774	INSULATOR, WRAPOST FEMALE ~~MIN~~	45
AR	1006776-22	INSULATION SLEEVING	44
AR	1006776-21	INSULATION SLEEVING	43
6	1006782-4	CONTACT, WRAPOST MALE MIN	42
6	1006775	INSULATOR, WRAPOST ~~MALE MIN~~	41
2	1000093-3	SCREW, BOTTON HEAD	40
1	MS 35650-104	NUT, PLAIN · HEX	39
1	1008020-1	WASHER, FLAT	38
2	1008024-1	WASHER, INSULATOR	37
AR	1006757-8	WIRE, ELEC, .020 DIA	36
AR	1006757-1	WIRE, ELEC, .010 x .020	35
2	1008025-1	INSULATOR BUSHING	34
1	1008021-1	INSULATOR, BUSHING	33
AR	1006776-20	INSULATION SLEEVING	32
3	1010376-4	TRANSISTOR	30
1	1010269-1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388-39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462-6	DIODE	24
4	1010385	DIODE	23
2	1006777-18	CAP., FIXED CER, 330 UUF, 100V ±10%	22
2	1006777-33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393-039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755-73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777-13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750-15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750-56	RESISTOR, FIXED MF, 10 K, 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	15
2	1010369-87	RESISTOR	14
2	1006750-81	RESISTOR, FIXED MF, 110K 1/4W ±2%	13
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750-1	RESISTOR, FIXED MF, 51 Ω 1/4W ±2%	11
4	1006750-67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
2	1006750-81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389-80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364-557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010378-10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055-1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX±.02 XXX±.005 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497
DRAWN R. Dell Gam DATE 7-63
CHECKED
APPROVAL 3 Apr 63
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

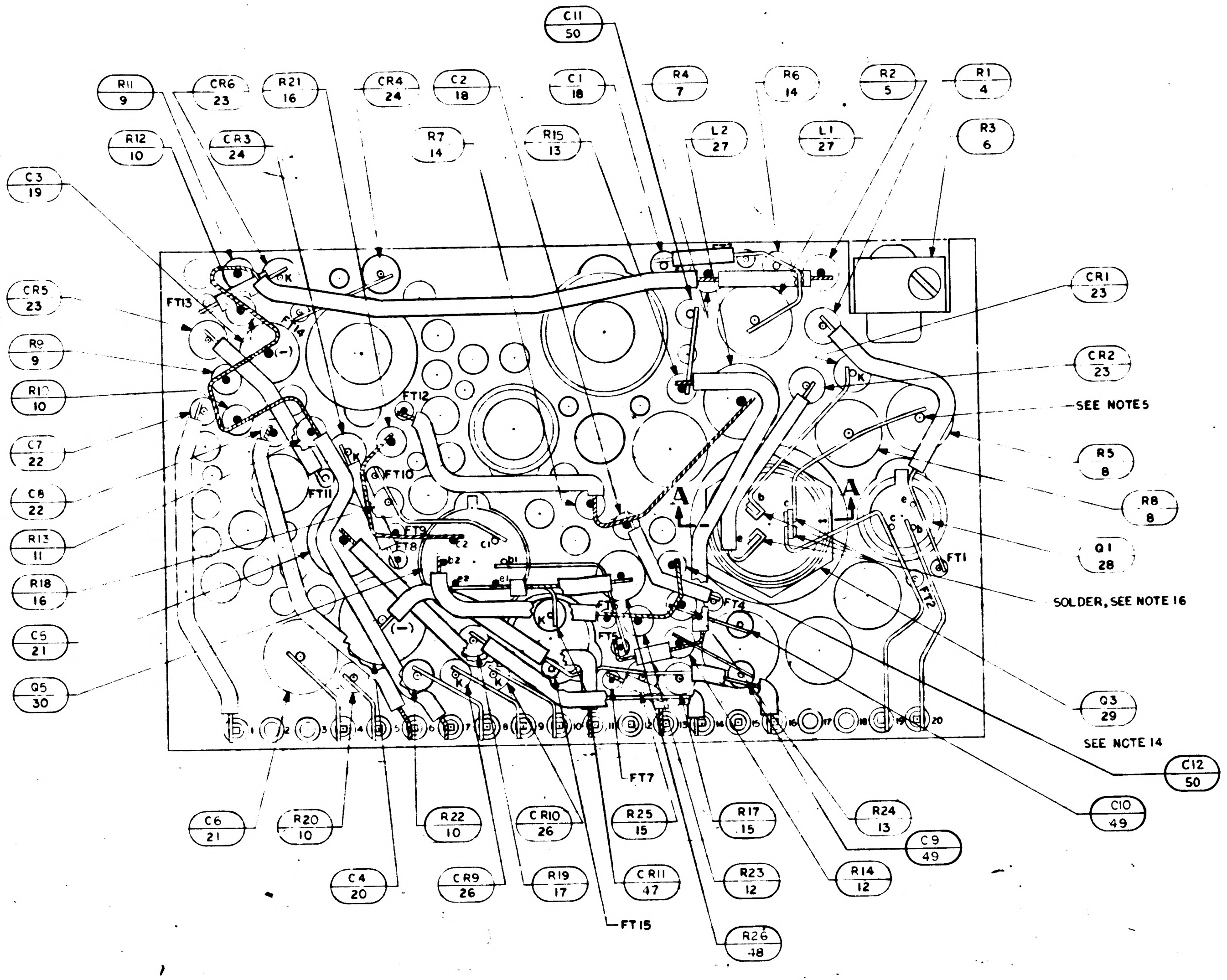
BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO. 1007027
SCALE 5/1
WT
SHEET 1 OF 1

J 1007027 S

2710007027

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO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R7 14
R15 13
L2 27
L1 27
R3 6
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTE 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
C12 50
C10 49
C9 49
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R26 48
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R25 15
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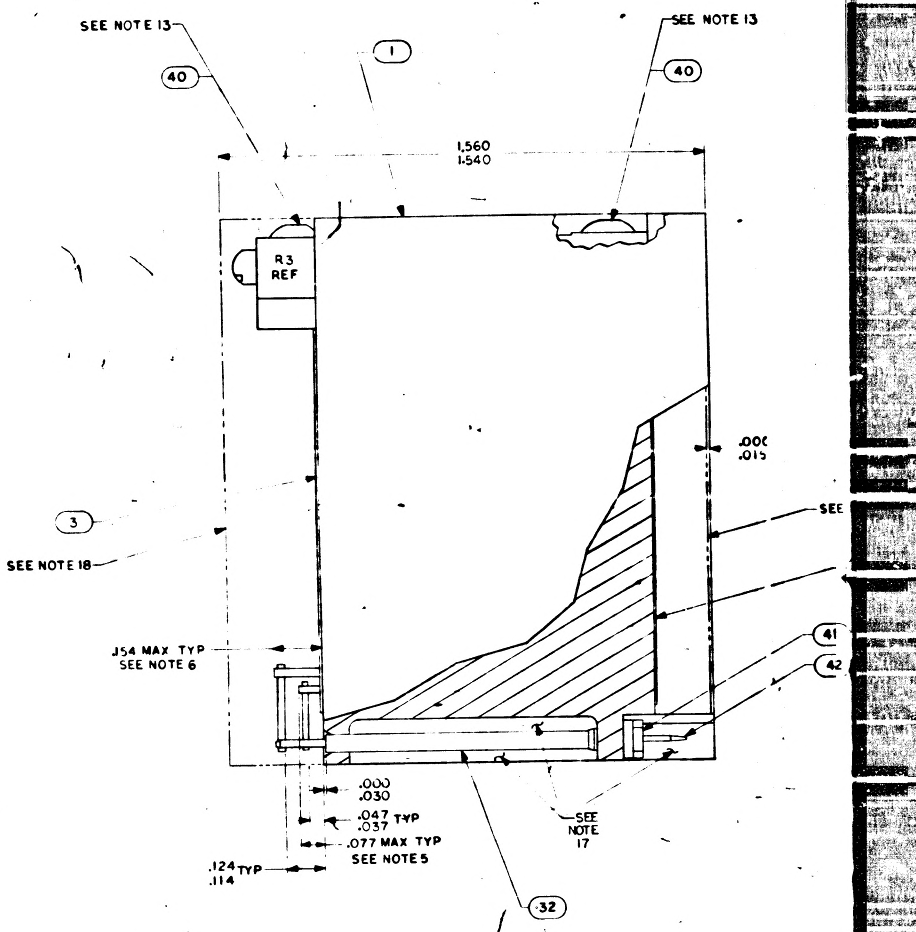
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SEE NOTE 13
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R3 REF
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SEE NOTE 18
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SEE NOTE 6
41
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SEE NOTE 5
.124
.114 TYP
SEE NOTE 17
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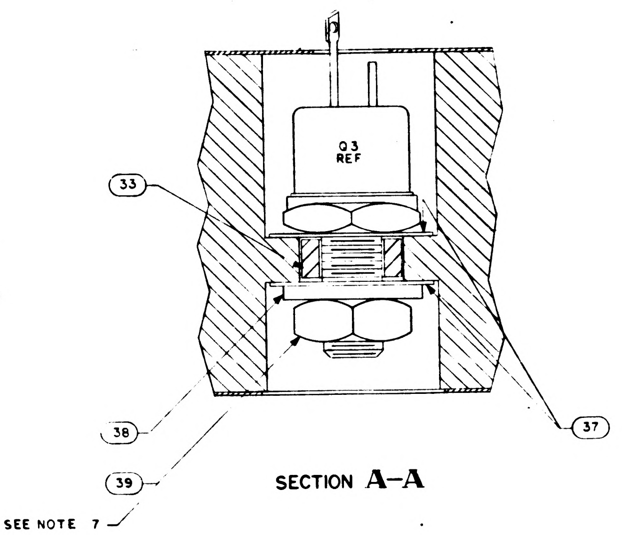
Q3 REF
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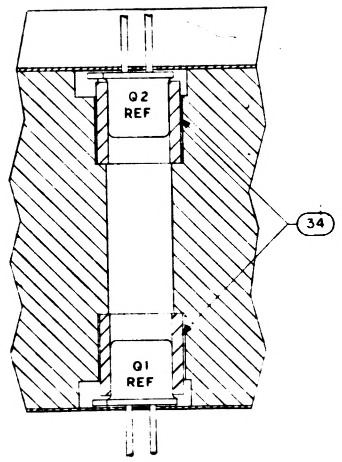
38
39
SEE NOTE 7

SECTION A–A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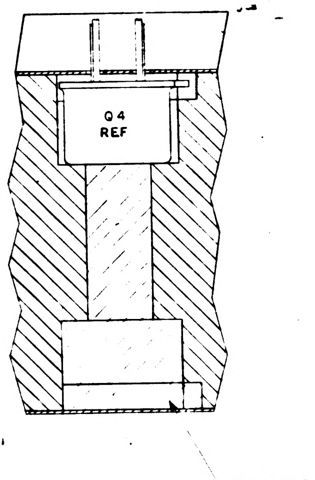
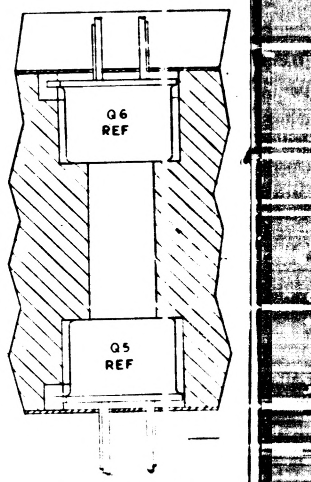
Q1 REF
34

SECTION C–C


Q4 REF
SEE NOTE 2

SECTION D–D


Q6 REF
Q5 REF

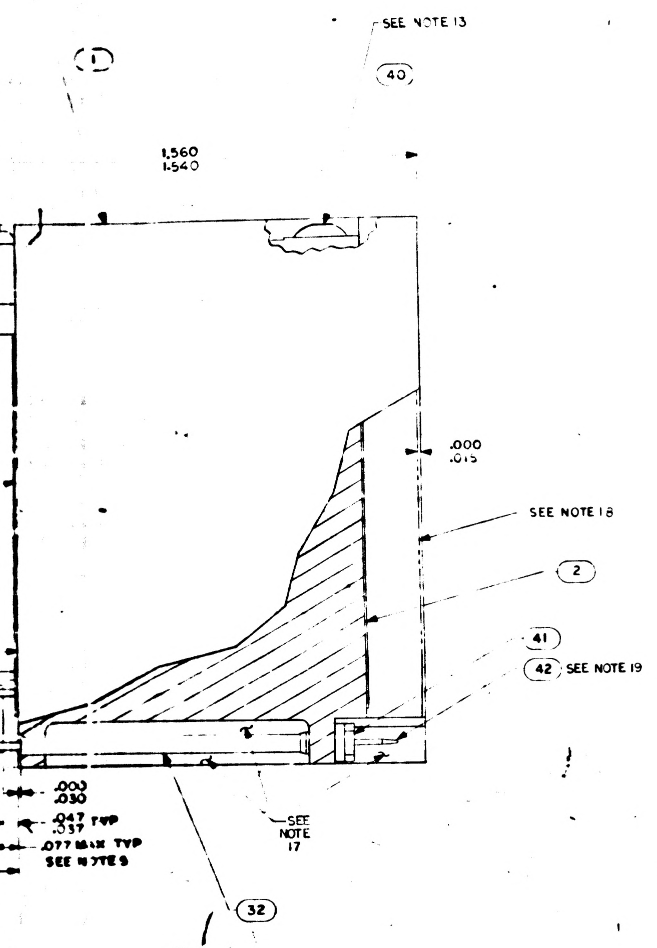
SECTION E–E

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
15. ~~MARK .060/.100 RED PER ND 1002019~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER [illegible] BLACK POLYURETHANE FOAM UNLESS OTHERWISE SPECIFIED. PERIPHERAL FINAL UNIT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND 1002136
20. PROCURE PER PS 1007027.

1007027 T

SYM	DESCRIPTION	DATE	APPR
A	REVISED PER TDRR [illegible]	[illegible]	WK
B	REVISED PER TDRR 01257	5-15-63	O.T. WK
C	REVISED PER TDRR 01712	6 26 63	JJM WK
D	REVISED PER TDRR [illegible]	[illegible]	WK
E	REVISED PER TDRR [illegible]	[illegible]	WK
F	REVISED PER TDRR [illegible]	7-19-63	WK
G	REVISED PER TDRR [illegible]	8 11 63	[illegible]
H	REVISED PER TDRR [illegible]	[illegible]	WK
J	REVISED PER TDRR [illegible]	[illegible]	WK
K	REVISED PER TDRR 05261	OCT 63	WK
L	REVISED PER TDRR 05410	DEC 63	WK
M	REVISED PER TDRR 06457	64	WK
N	REVISED PER TDRR 07010	30 MAR 64	JJJ AU
P	REVISED PER TDRR 07285	6 APR 64	[illegible]
R	REVISED PER TDRR 07938	4-MAY-64	JB CP
S	REVISED PER TDRR 12205	17 SEP 64	RJM
T	REVISED PER TDRR 12623	28 SEP 64	JWP


SEE NOTE 13
D
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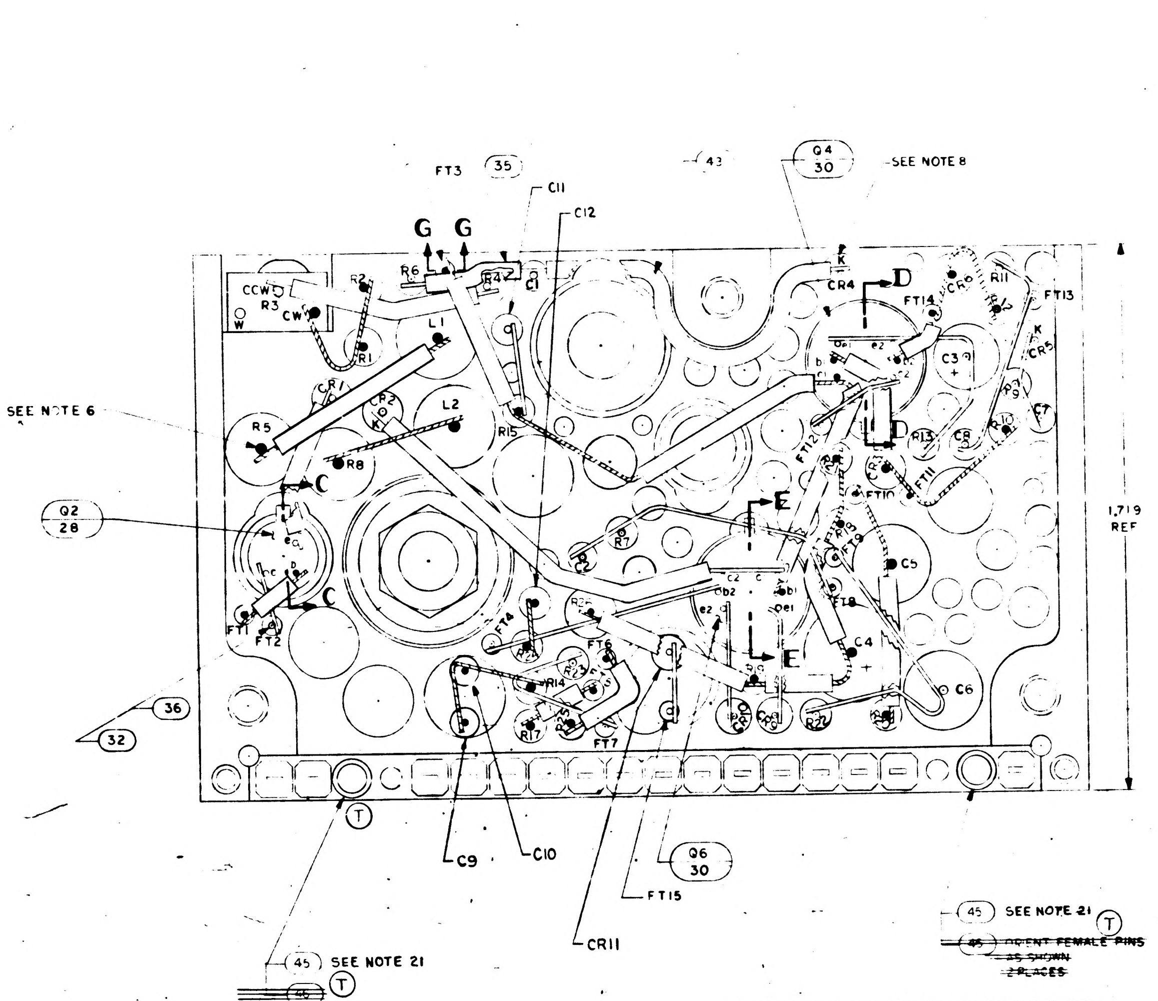
1.560
1.540
.000
.015
SEE NOTE 18
2
41
42 SEE NOTE 19
.003
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTES
SEE NOTE 17
32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Q4
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SEE NOTE 8
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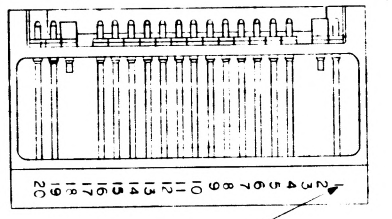
C12
G G
CCW
R3
CW
W
R6
R2
R4
C1
R1
L1
CR4
D
FT14
CR6
R11
R12
FT13
CR5
C3
R9
C7
R10
C8
R13
SEE NOTE 6
R5
CR1
CR2
L2
R15
R8
FT12
FT11
FT10
C
Q2
28
E
R7
C2
C5
FT9
FT8
1.719 REF
FT1
FT2
FT4
R24
R26
FT6
R23
R14
R17
FT7
C4
C6
R22
CR10
CR9
36
32
T
C9
C10
CR11
FT15
Q6
30
45 SEE NOTE 21
T
45 SEE NOTE 21
~~46 ORIENT FEMALE PINS AS SHOWN 2 PLACES~~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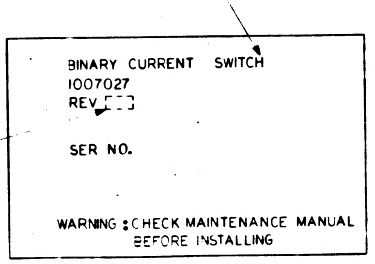
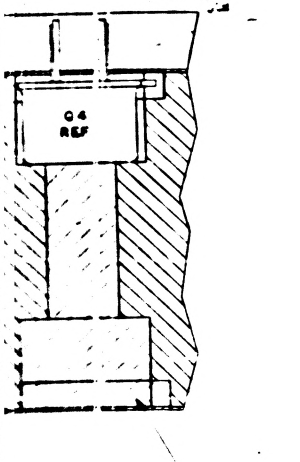
SEE NOTE 9


BINARY CURRENT SWITCH
1007027
REV

SER NO.

WARNING : CHECK MAINTENANCE MANUAL BEFORE INSTALLING

MARKING VIEW
SCALE 2/1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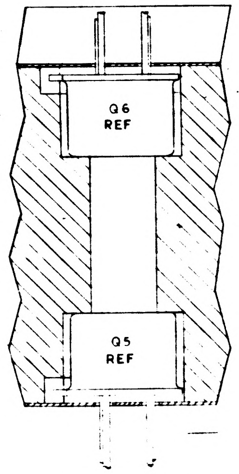
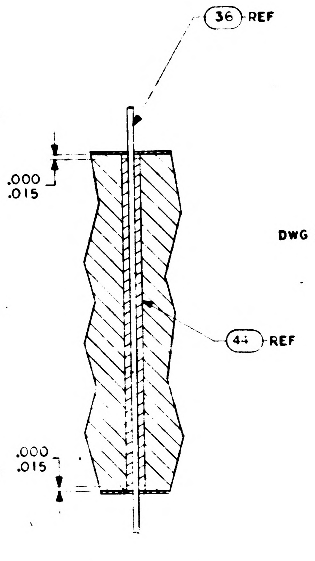
SEE NOTE 2

SECTION D-D


Q6 REF
Q5 REF

SECTION E-E


36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1006777-1	CAPACITOR, 10 UUF, 100V, ±10%	50
	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
~~2~~	~~1006781-1~~	~~CONTACT, WRAPOST FEMALE MIN~~	46
2	1008256	POLARIZING PIN	45
AR	1006776-22	INSULATION SLEEVING	44
AR	1006776-21	INSULATION SLEEVING	43
6	1006782-4	CONTACT, WRAPOST MALE MIN	42
6	1006775	INSULATOR, WRAPOST ~~MALE MIN~~	41
2	1000093-3	SCREW, BOTTON HEAD	40
1	MS 35650-104	NUT, PLAIN, HEX	39
1	1008020-1	WASHER, FLAT	38
2	1008024-1	WASHER, INSULATOR	37
AR	1006757-8	WIRE, ELEC, .020 DIA	36
AR	1006757-1	WIRE, ELEC, .010 x .020	35
2	1008025-1	INSULATOR BUSHING	34
1	1008021-1	INSULATOR, BUSHING	33
AR	1006776-20	INSULATION SLEEVING	32
3	1010376-4	TRANSISTOR	30
1	1010269-1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388-39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010462-6	DIODE	24
4	1010385	DIODE	23
2	1006777-18	CAP. FIXED CER, 330 UUF, 100V ±10%	22
2	1006777-33	CAP. FIXED CER. .022 UF, 100V ±10%	21
1	1010393-039	CAP. FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755-73	CAP. FIXED TANT. 2.2 UF, 35V ~~±10%~~	19
2	1006777-13	CAP. FIXED CER, 100 UUF, 100V ±10%	18
1	1006750-15	RESISTOR, FIXED MF. 200Ω, 1/4W ±2%	17
2	1006750-56	RESISTOR, FIXED MF. 10 K, 1/4W ±2%	16
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	15
2	1010369-87	RESISTOR	14
2	1006750-81	RESISTOR, FIXED MF. 110 K 1/4W ±2%	13
2	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750-1	RESISTOR, FIXED MF. 51 Ω 1/4W ±2%	11
4	1006750-67	RESISTOR, FIXED MF. 30K, 1/4W ±2%	10
2	1006750-81	RESISTOR, FIXED MF, 110 K, 1/4W ±2%	9
2	1010389-80	RESISTOR, FIXED WW. 10K, 3 W ±1%	8
1	1010364-557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373-10	RESISTOR, VAR. 10K, 1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF. 100K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF. 178K 1/8W ±1%	4
1	1008055-1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ± .02 XXX ± .005 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible] 3 Apr 63
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

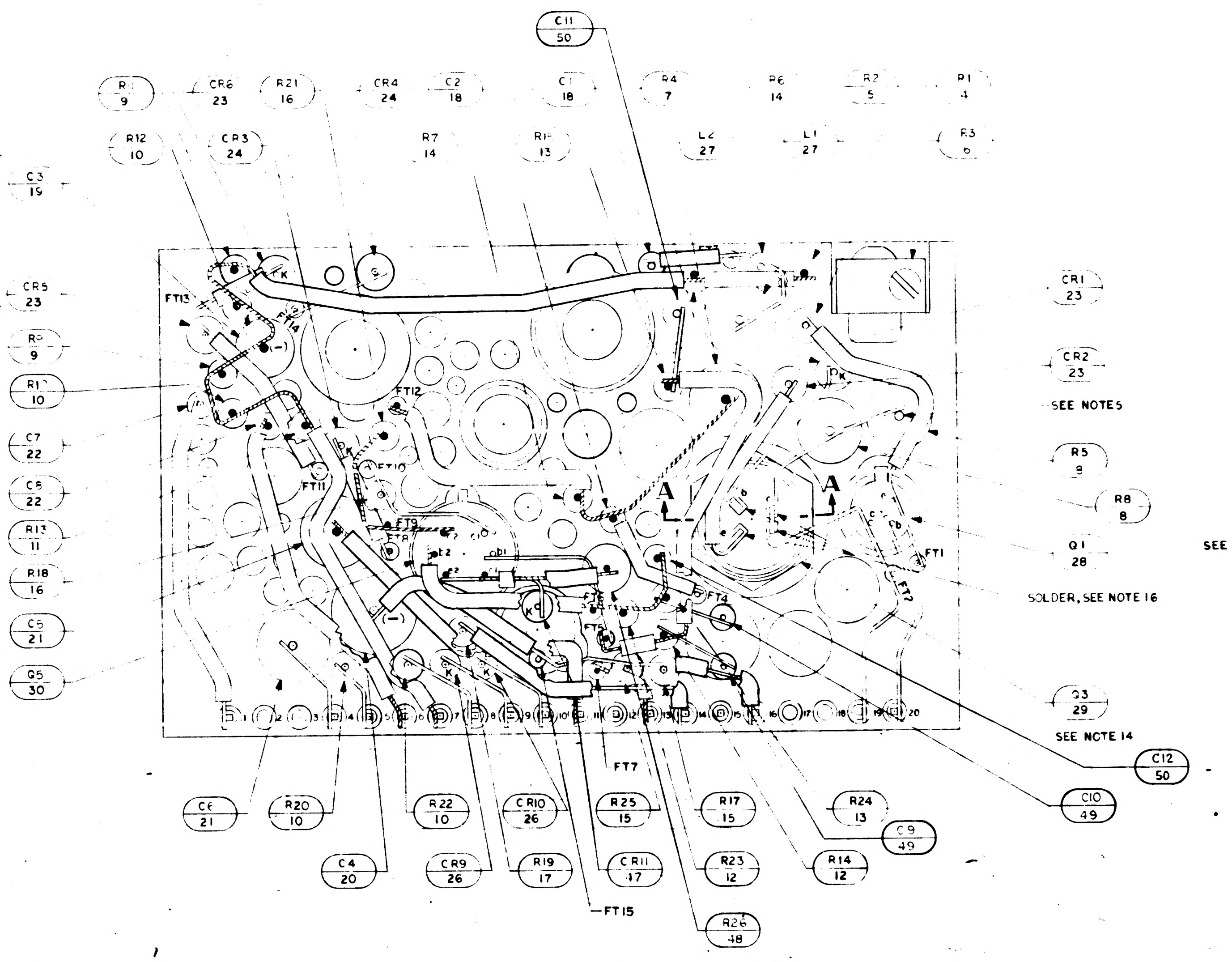
BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO 1007027
SCALE 5/1
WT
SHEET 1 OF 1

1007027 J T

1007027

2/1007027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R 9
CR6 23
R21 16
CR4 24
C2 18
C1 18
R4 7
R6 14
R2 5
R1 4
R12 10
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R7 14
R11 13
L2 27
L1 27
R3 6
C3 15
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTE 5
R5 9
R8 8
Q1 28
SOLDER, SEE NOTE 16
23 29
SEE NOTE 14
C12 50
C10 49
C9 49
C6 21
R20 10
R22 10
CR10 26
R25 15
R17 15
R24 13
C4 20
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R14 12
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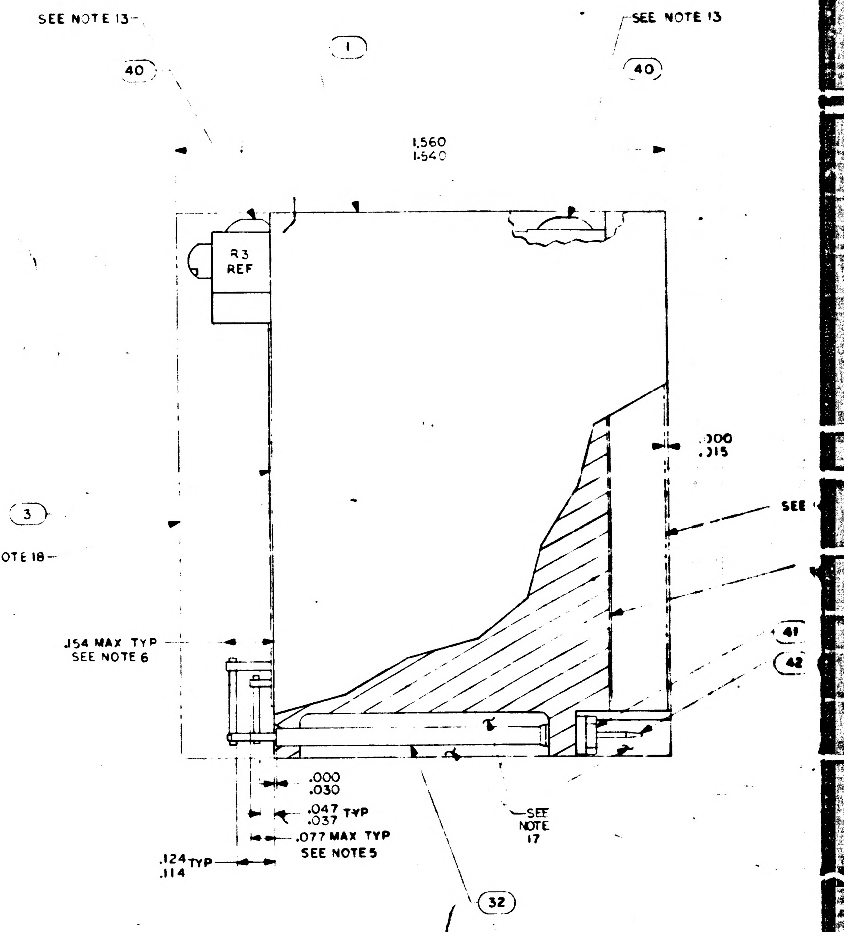
FT12
FT13
FT15
A
K


SEE NOTE 13
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SEE NOTE 13
40
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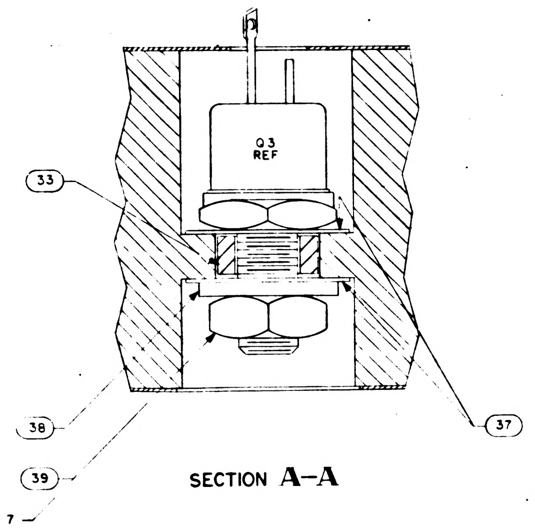
1.560
1.540
R3 REF
.300
.015
SEE
3
SEE NOTE 18
.154 MAX TYP
SEE NOTE 6
41
42
.000
.030
.047 TYP
.037
.077 MAX TYP
SEE NOTE 5
SEE NOTE 17
.124 TYP
.114
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009

12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
15. ~~MARK .060/.100 RED PER ND 1002019~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002[illegible] BLACK POLYURETHANE FOAM UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF [illegible]. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND1002136
20. **PROCURE PER PS 1007027.**
21. BOND FIND NO. 45 IN PLACE WITH ND1002004, TYPE 1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Q3 REF
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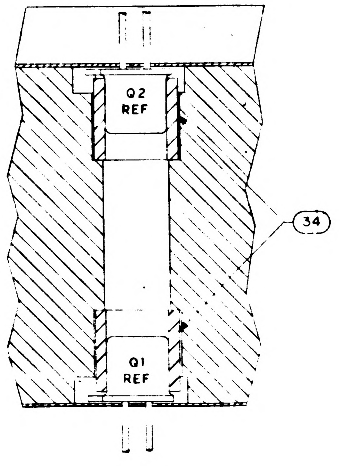
37
SEE NOTE 7

SECTION A-A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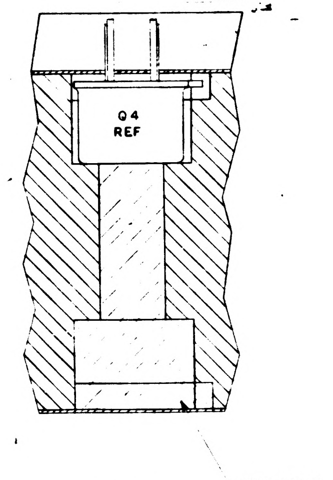
34
Q1 REF

SECTION C-C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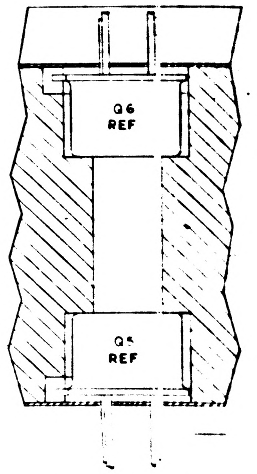
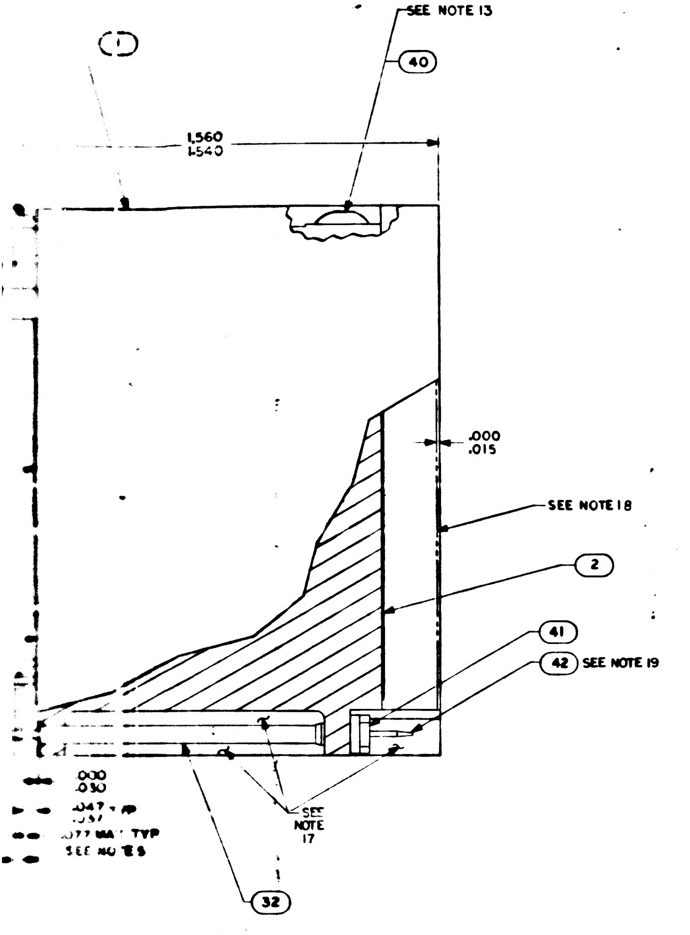
SEE NOTE 2

SECTION D-D


Q6 REF
Q5 REF

SECTION E-E

SYM	DESCRIPTION	DATE	APPR
	REVISIONS CLASS B TDRR 00716		
A	REVISED PER TDRR 06007	[illegible]	WK
B	REVISED PER TDRR 01257	5-15-63	O.T. WK
C	REVISED PER TDRR 01912	6-26-63	JJA WK
D	REVISED PER TDRR 01650	7-9-63	JJA WK
E	REVISED PER TDRR 01959	7-20-63	WK
F	REVISED PER TDRR 02166	7-29-63	J.A. WK
G	REVISED PER TDRR 02718	8-21-63	JJA
H	REVISED PER TDRR 04131	3 OCT 63	WK
J	PER TDRR 04132	22 OCT 63	WK
K	REVISED PER TDRR 05261	17 DEC 63	WK
L	REVISED PER TDRR 05410	27 DEC 63	WK
M	REVISED PER TDRR 06457	[illegible] 64	WR
N	REVISED PER TDRR 07010	30 MAR 64	JJJ AU
P	REVISED PER TDRR 07285	6 APR 64	[illegible]
R	REVISED PER TDRR 07938	4-MAY-64	J.B. CP
S	REVISED PER TDRR 12205	17 SEP 64	R.M. CW
T	REVISED PER TDRR 12623	28 SEP 64	JWO CP
U	REVISED PER TDRR 12754	29 SEPT 64	[illegible]


SEE NOTE 13
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SEE NOTE 18
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42 SEE NOTE 19
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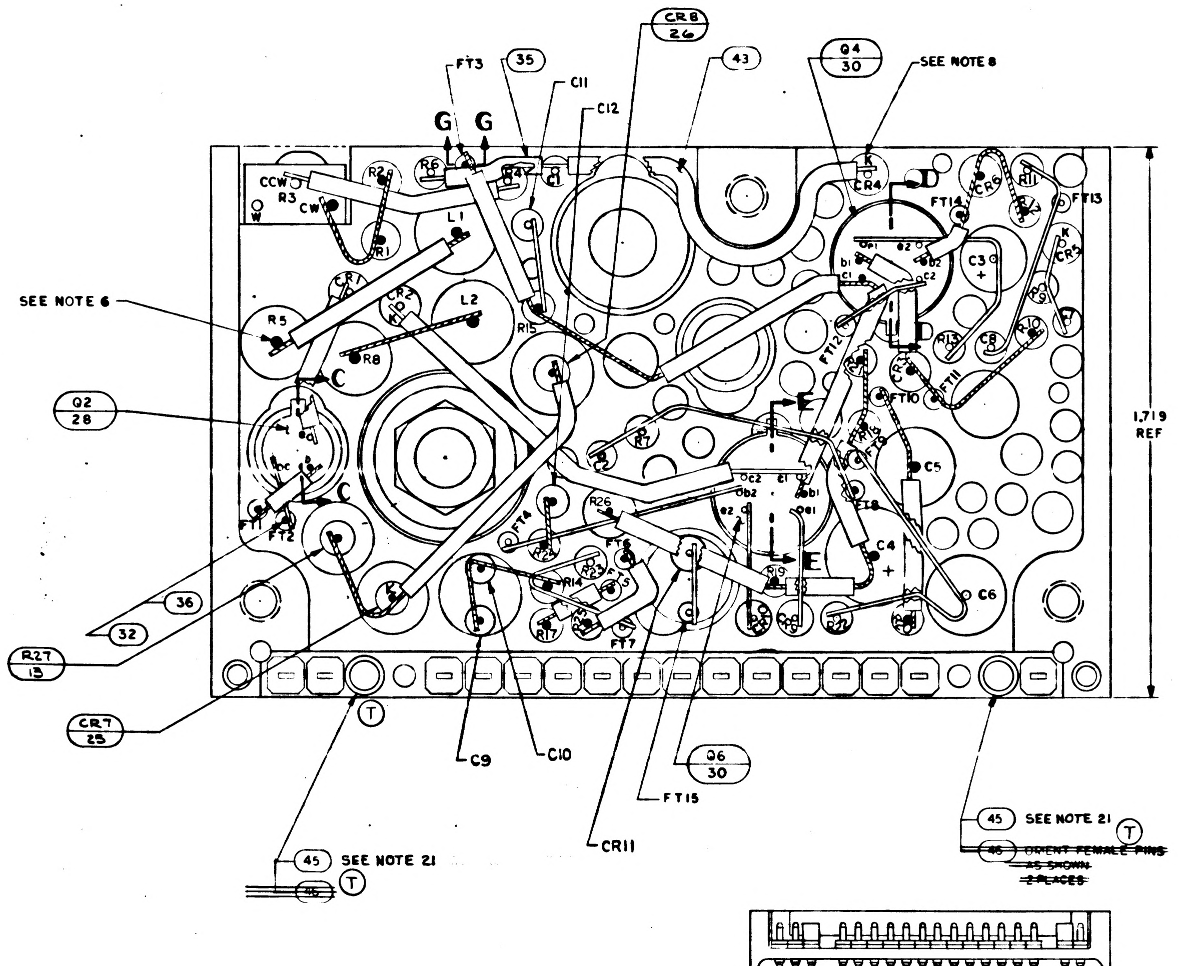
.047 TYP
.037
.077 MAX TYP
SEE NOTES
SEE NOTE 17
32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CR1
CR2
L2
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R15
R5
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C4
C6
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R27
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CR7
25
T
C9
C10
Q6
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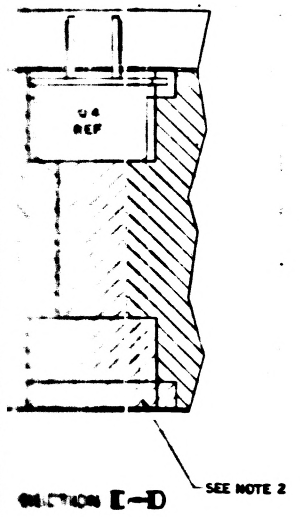
45 SEE NOTE 21
T
~~46 CONTACT FEMALE PINS AS SHOWN 2 PLACES~~
45 SEE NOTE 21
T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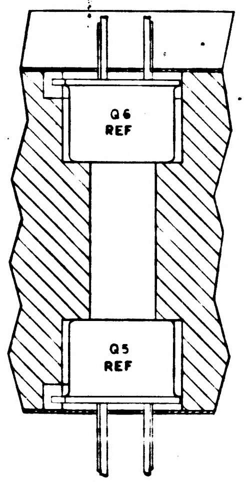
SEE NOTE 2

SECTION D-D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REF
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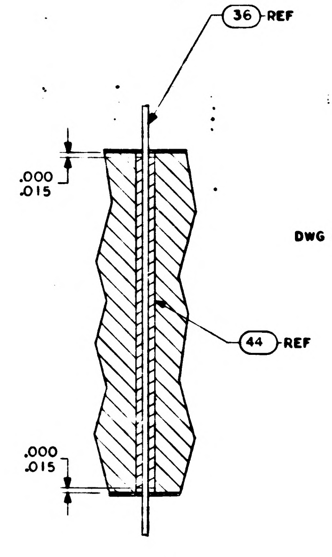
REF

SECTION E-E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44 REF
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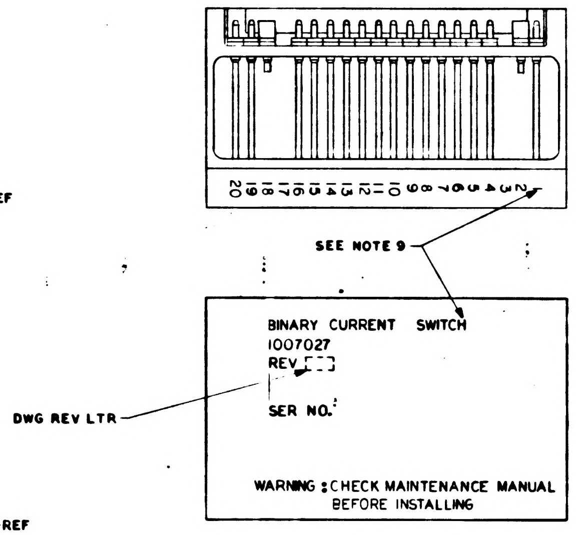
.015

SECTION G-G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SEE NOTE 9
DWG REV LTR

BINARY CURRENT SWITCH
1007027
REV
SER NO.
WARNING: CHECK MAINTENANCE MANUAL BEFORE INSTALLING

MARKING VIEW
SCALE 2/1

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
2	1006777-1	CAPACITOR, 10 UUF, 100V, ±10%	50
⊠	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
~~2~~	~~1006781-1~~	~~CONTACT, WRAPOST FEMALE MIN~~	46
2	1008256	POLARIZING PIN	45
AR	1006776-22	INSULATION SLEEVING	44
AR	1006776-21	INSULATION SLEEVING	43
16	1006782-4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093-3	SCREW, BOTTON HEAD	40
1	MS 35650-104	NUT, PLAIN, HEX	39
1	1008020-1	WASHER, FLAT	38
2	1008024-1	WASHER, INSULATOR	37
AR	1006757-8	WIRE, ELEC, .020 DIA	36
AR	1006757-1	WIRE, ELEC, .010 X .020	35
2	1008025-1	INSULATOR BUSHING	34
1	1008021-1	INSULATOR, BUSHING	33
AR	1006776-20	INSULATION SLEEVING	32
3	1010376-4	TRANSISTOR	30
1	1010269-1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388-39	INDUCTOR, 0.01 HY 75 MA 5%	27
3	1010394	DIODE	26
1	1010286-20	DIODE, ZENER	25
2	1010462-6	DIODE	24
4	1010385	DIODE	23
2	1006777-24	CAP., FIXED CER, .001 UF, 100V ±10%	22
2	1006777-33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393-039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755-73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777-13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750-15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750-56	RESISTOR, FIXED MF, 10 K, 1/4W ±2%	16
~~2~~	~~1006750-53~~	~~RESISTOR, FIXED MF, 7.5K, 1/4W ±2%~~	15
2	1010369-87	RESISTOR	14
1	1006750-78	RESISTOR, FIXED MF, 82K, 1/4W ±2%	13
4	1006750-53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750-1	RESISTOR, FIXED MF, 51 Ω, 1/4W ±2%	11
4	1006750-67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
4	1006750-81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389-80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364-557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373-10	RESISTOR, VAR. 10K, 1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055-1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

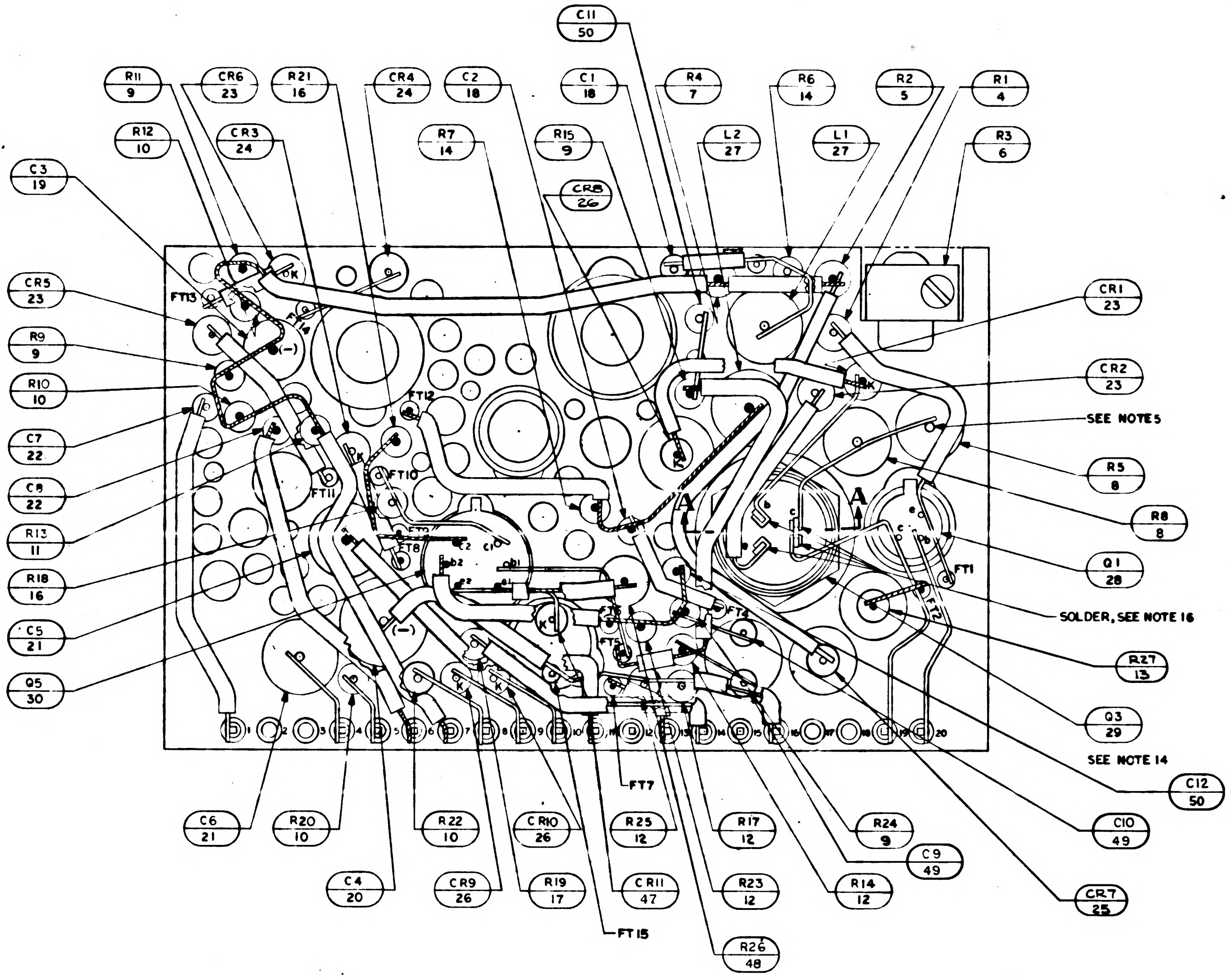
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ± .02 XXX ± .005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
CONTRACT NAS 9-497
DRAWN R. Bell DATE 27 [illegible]
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL W. K. [illegible] 3 Jan 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO 1007027
SCALE 5/1
WT
SHEET 1 OF 1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CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
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FT12
FT10
FT11
FT8
FT1
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CR2 23
SEE NOTE 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
R27 13
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C10 49
C9 49
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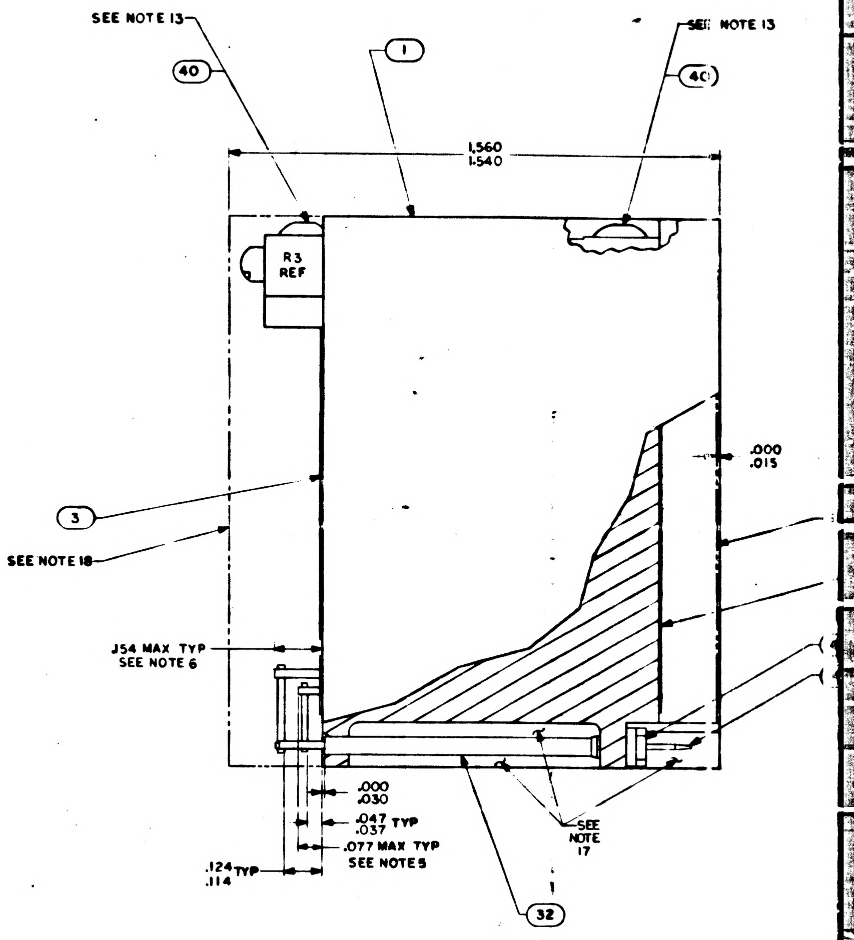
R26 48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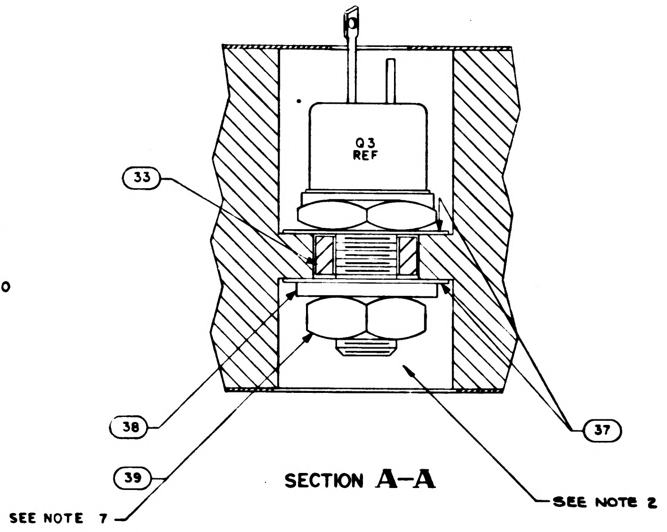
SEE NOTE 18
.154 MAX TYP
SEE NOTE 6
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTES
.124
.114 TYP
SEE NOTE 17
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLES SHOWN ON SECTIONS A-A & D-D PER ND1002117 BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
~~4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
~~15. MARK .060/.100 RED PER ND 1002019~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND1002136
20. PROCURE PER PS 1007027.
21. BOND FIND NO. 45 IN PLACE WITH ND1002004, TYPE 1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SEE NOTE 7
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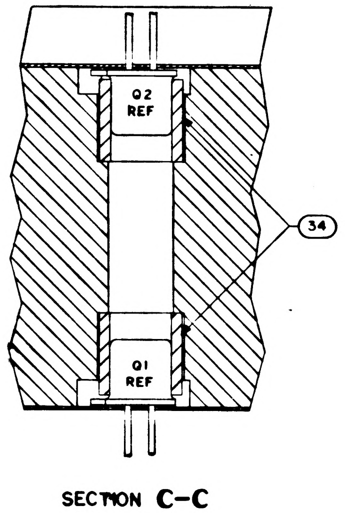
SEE NOTE 2

SECTION A-A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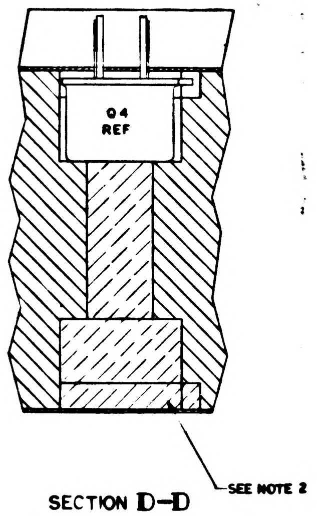
SECTION C-C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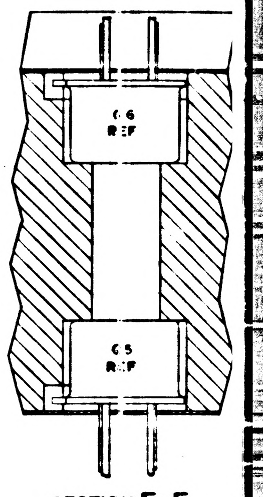
SEE NOTE 2

SECTION D-D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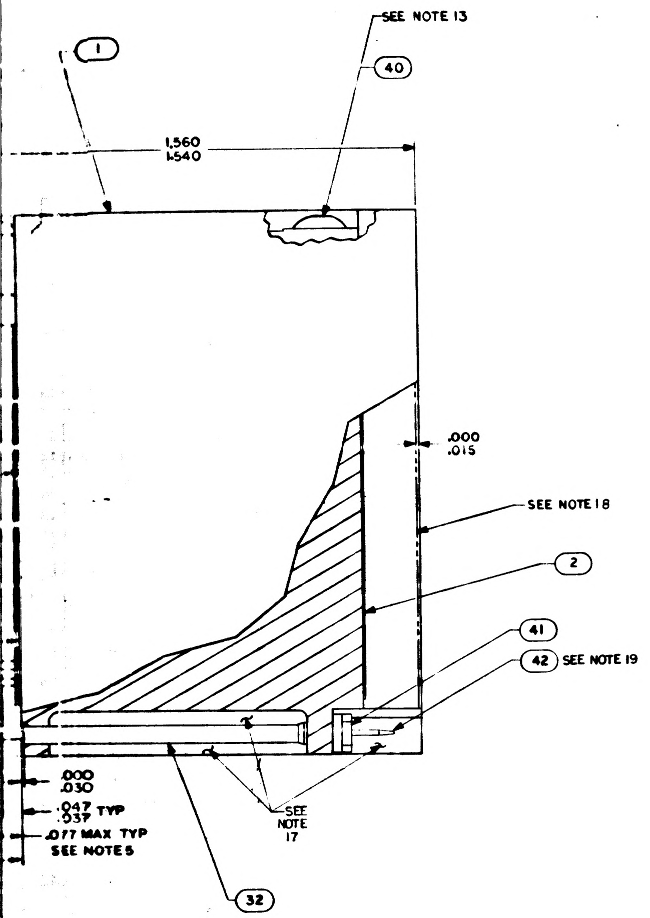
C5 REF

SECTION E-E

1007027 V

REVISIONS CLASS B TDRR 00716

SYM	DESCRIPTION	DATE	APPR
A	REVISED PER TDRR 00007	4-25-63	WK
B	REVISED PER TDRR 01257	5-15-63	B.E. WK
C	REVISED PER TDRR 01712	6-26-63	J.J.M. WK
D	REVISED PER TDRR 01850	7-7-63	WK
E	REVISED PER TDRR 01959	7-20-63	WK
F	REVISED PER TDRR 02166	7-29-63	WK
G	REVISED PER TDRR 02718	8-27-63	J.S.P.
H	REVISED PER TDRR 04131	23 OCT 63	WK
J	PER TDRR 04132	63	WK
K	REVISED PER TDRR 05261	17 DEC 63	WK
L	REVISED PER TDRR 05410	27 DEC 63	WK
M	REVISED PER TDRR 06457	18 FEB 64	W
N	REVISED PER TDRR 07010	30 MAR 64	J.J.J. AU
P	REVISED PER TDRR 07285	6 APR 64	
R	REVISED PER TDRR 07938	4-MAY-64	J.P.
S	REVISED PER TDRR 12205	17 SEP 64	
T	REVISED PER TDRR 12623	28 SEP 64	JW
U	REVISED PER TDRR 12754	29 SEPT 64	LGC
V	REVISED PER TDRR 17343	12 MAR 65	J.J.



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SEE NOTE 13
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1.560
1.540
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.015
SEE NOTE 18
2
41
42 SEE NOTE 19
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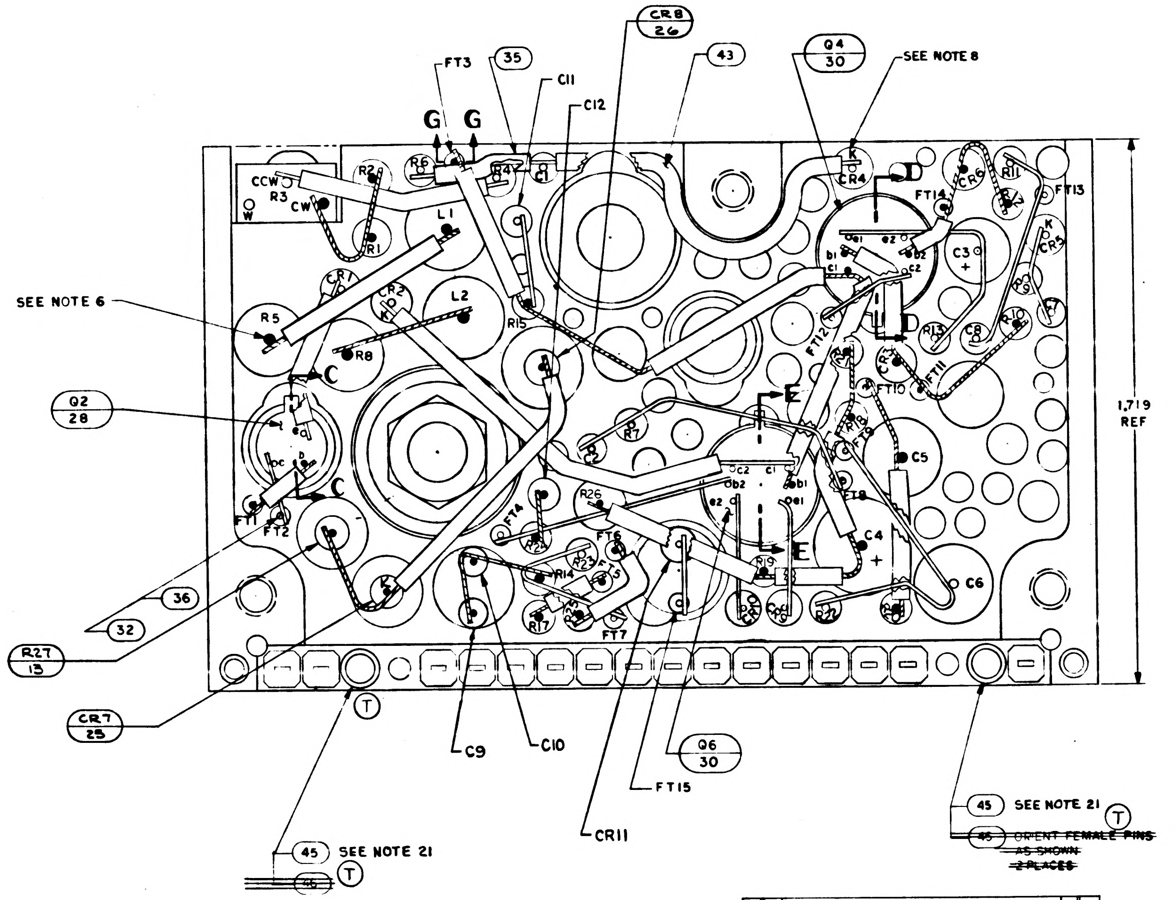
.037
.077 MAX TYP
SEE NOTE 5
SEE NOTE 17
32



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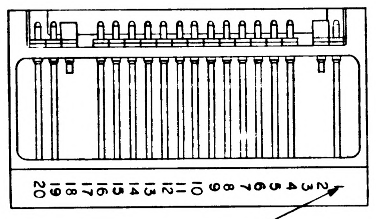
CCW
R3
CW
R2
R6
R4
L1
R1
CR1
CR2
L2
R15
R5
R8
SEE NOTE 6
C
Q2
28
C
FT1
FT2
36
32
R27
13
CR7
25
T
C9
C10
CR11
FT15
Q6
30
45 SEE NOTE 21
T
CR4
FT14
C3
CR5
FT13
R11
C8
FT12
FT11
FT10
E
C5
C4
C6
FT8
FT4
R26
FT6
FT7
R17
E
1.719
REF
45 SEE NOTE 21
~~45 ORIENT FEMALE PINS AS SHOWN 2 PLACES~~
T



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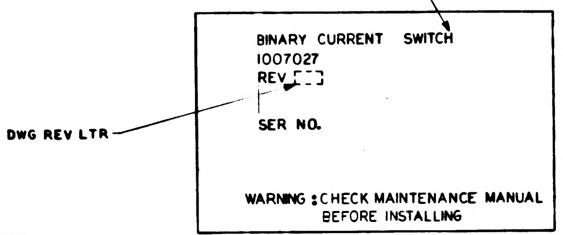
SEE NOTE 9



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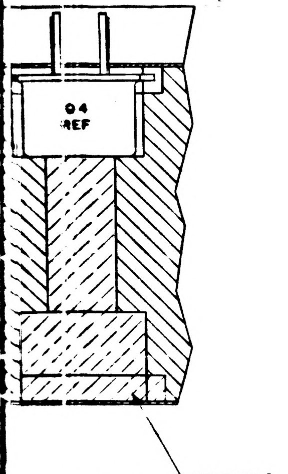
WARNING : CHECK MAINTENANCE MANUAL BEFORE INSTALLING

MARKING VIEW
SCALE 2/1



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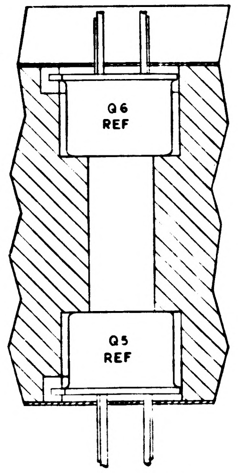
REF
SEE NOTE 2

SECTION D-D



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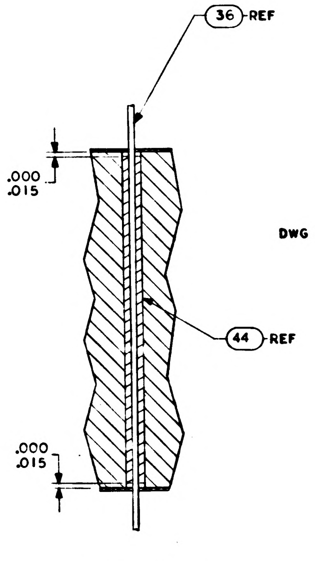
REF
Q5
REF

SECTION E-E



36 REF
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.015
44 REF
.000
.015

SECTION G-G

2	1006777-1	CAPACITOR, 10 UUF, 100V, ±10%	50
☒	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
~~2~~	~~1006781-1~~	~~CONTACT, WRAPOST FEMALE MIN~~	46
2	1008256	POLARIZING PIN	45
AR	1006776-22	INSULATION SLEEVING	44
AR	1006776-21	INSULATION SLEEVING	43
16	1006782-4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093-3	SCREW, BOTTON HEAD	40
1	MS 35650-104	NUT, PLAIN, HEX	39
1	1008020-1	WASHER, FLAT	38
2	1008024-1	WASHER, INSULATOR	37
AR	1006757-8	WIRE, ELEC, .020 DIA	36
AR	1006757-1	WIRE, ELEC, .010 x .020	35
2	1008025-1	INSULATOR BUSHING	34
1	1008021-1	INSULATOR, BUSHING	33
AR	1006776-20	INSULATION SLEEVING	32
3	1010376-4	TRANSISTOR	30
1	1010269-1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388-39	INDUCTOR, 0.01 HY 75 MA 5%	27
3	1010394	DIODE	26
1	1010286-20	DIODE, ZENER	25
2	1010462-6	DIODE	24
4	1010385	DIODE	23
2	1006777-24	CAP., FIXED CER, .001 UF, 100V ±10%	22
2	1006777-33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393-039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755-73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777-13	CAP., FIXED CER, 100UUF 100V ±10%	18
1	1006750-15	RESISTOR, FIXED MF. 200Ω, 1/4W ±2%	17
2	1006750-56	RESISTOR, FIXED MF. 10 K, 1/4W ±2%	16
~~2~~	~~1006750-53~~	~~RESISTOR, FIXED MF. 7.5K, 1/4W ±2%~~	15
2	1010369-87	RESISTOR	14
1	1006750-78	RESISTOR, FIXED MF. 2K, 1/4W ±2%	13
4	1006750-53	RESISTOR, FIXED MF. 7.5K, 1/4W ±2%	12
1	1006750-1	RESISTOR, FIXED MF. 51 Ω, 1/4W ±2%	11
4	1006750-67	RESISTOR, FIXED MF. 30K, 1/4W ±2%	10
4	1006750-81	RESISTOR, FIXED MF. 110K, 1/4W ±2%	9
2	1010389-80	RESISTOR, FIXED WW. 10K, 3 W ±1%	8
1	1010364-557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373-10	RESISTOR, VAR. 10K, 1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF. 100K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF. 178K 1/8W ±1%	4
1	1008055-1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ±.02 XXX ±.005 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING

MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
NAS-9-497

DRAWN R. Bell DATE 27 Mar 63
CHECKED L.P. Kingsbury 2 Apr 63
APPROVAL 3 Apr 63
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

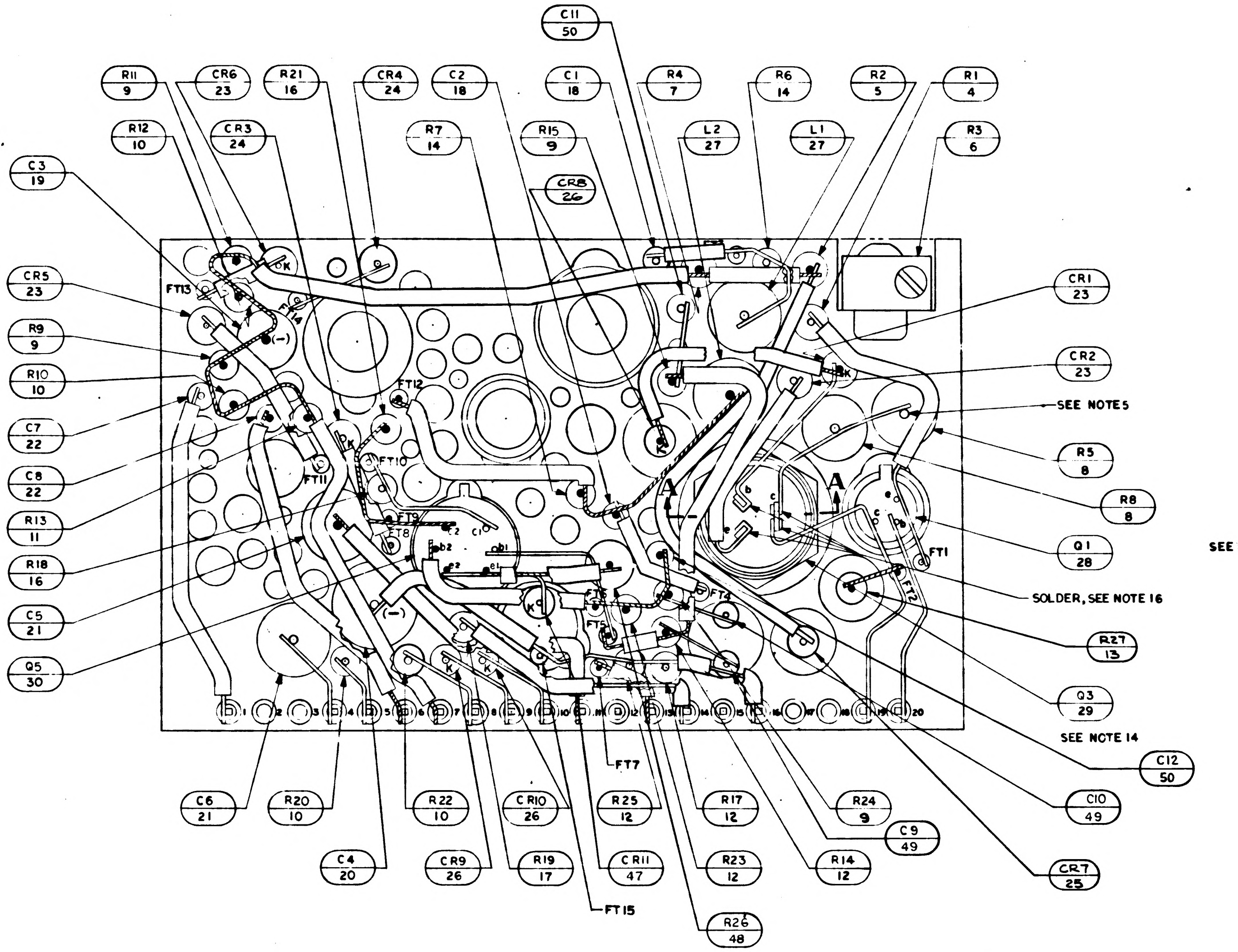
BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO 1007027
SCALE 5/1
WT
SHEET 1 OF 1

1007027 V J

1007027 REV LTR V SH NO. 1

2/1007027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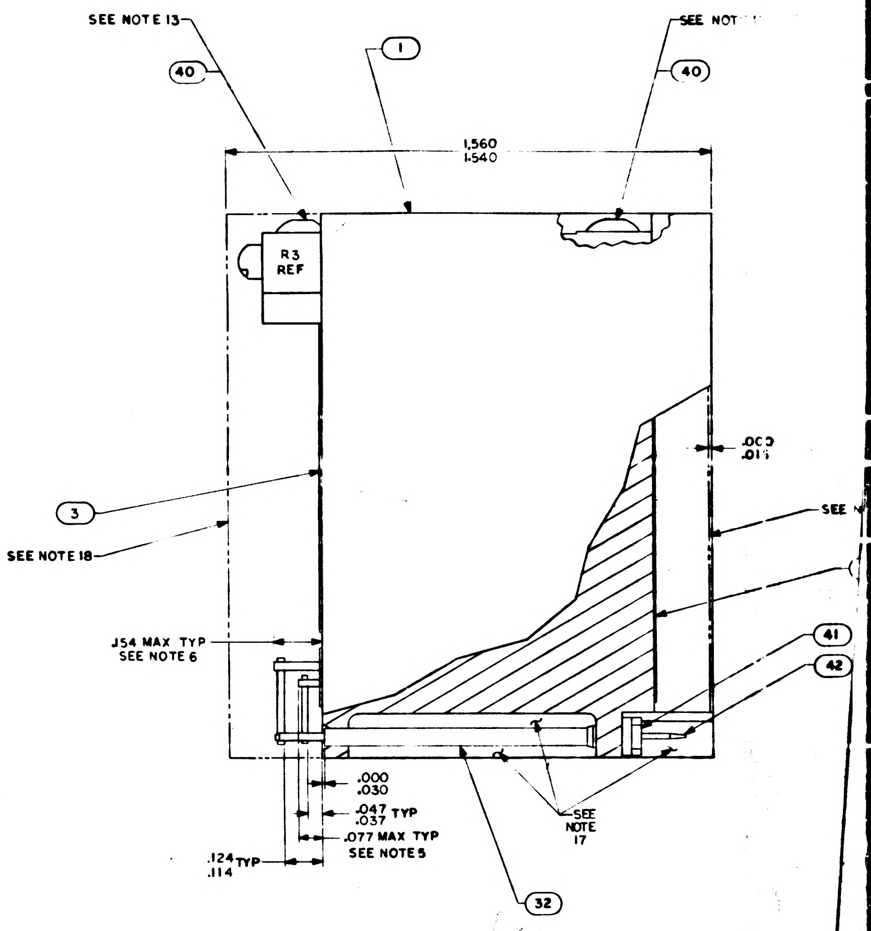
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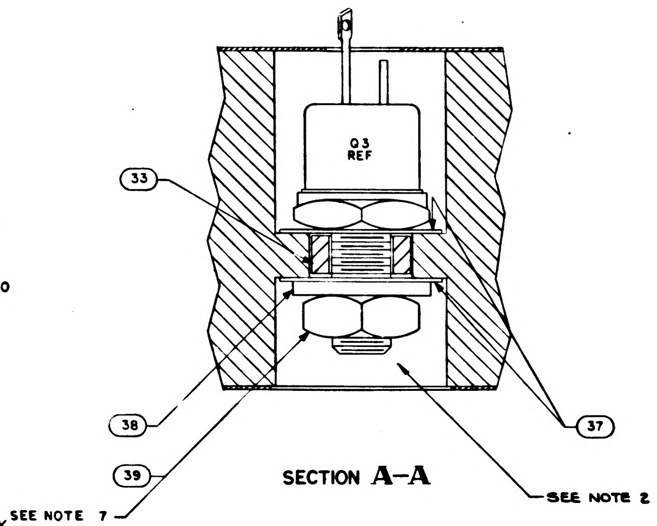
SEE NOTE 6
41
42
.000
.030
.047 TYP
.037
.077 MAX TYP
SEE NOTE 5
SEE NOTE 17
.124
.114 TYP
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLES SHOWN ON SECTIONS A-A & D-D PER ND1002117 BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
~~4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
~~15. MARK .060/.100 RED PER ND 1002019~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND1002136
20. **PROCURE PER PS 1007027.**
21. BOND FIND NO. 45 IN PLACE WITH ND1002004, TYPE I
22. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND 1002187 TYPE I.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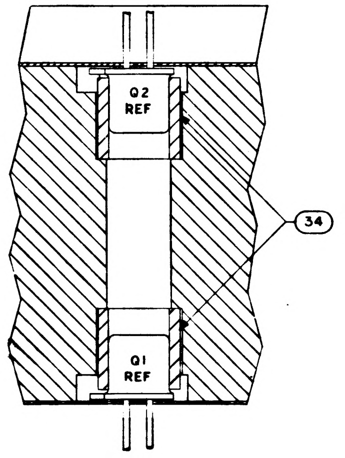
SEE NOTE 7
SEE NOTE 2

SECTION A-A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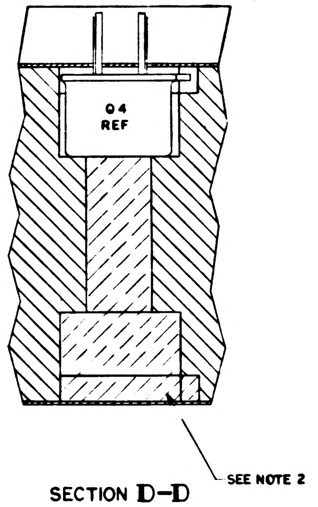
SECTION C-C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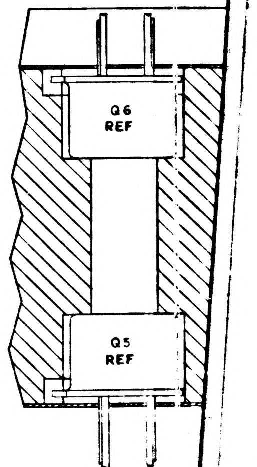
SEE NOTE 2

SECTION D-D


Q6 REF
Q5 REF

SECTION E-E

1007027	REV LTR V	SH NO. 1

1/1007027

REVISIONS (CLASS ③ TDRR 00775

SYM	DESCRIPTION	DATE	APPR
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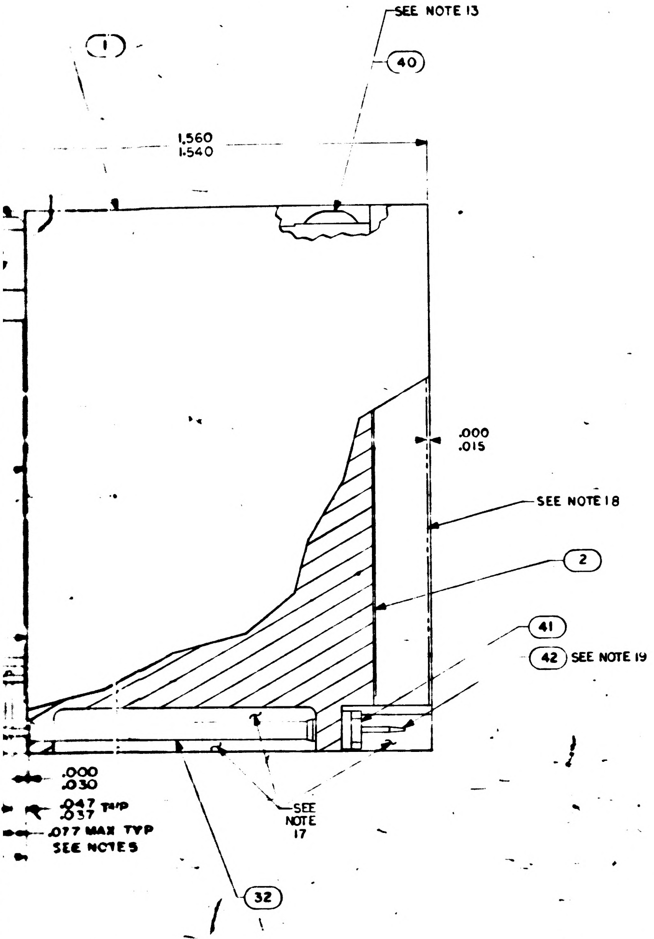
B	REVISED PER TDRR 01257	5-16-63	WK
C	REVISED PER TDRR 01712	6-26-63	WK
D	REVISED PER TDRR 01650	7-9-63	WK
E	REVISED PER TDRR 01959	[illegible]	WK
F	REVISED PER TDRR 02166	7-29-63	WK
G	REVISED PER TDRR 02718	[illegible]	WK
H	REVISED PER TDRR 04131	3 OCT 63	WK
J	PER TDRR 04132	[illegible] 63	WK
K	REVISED PER TDRR 05261	[illegible] 63	WK
L	REVISED PER TDRR 05410	27 DEC 63	WK
M	REVISED PER TDRR 06457	[illegible] 64	WK
N	REVISED PER TDRR 07010	30 MAR 64	JJJ AU
P	REVISED PER TDRR 07285	[illegible] 64	[illegible]
R	REVISED PER TDRR 07938	4-MAY-64	J.R. CP
S	REVISED PER TDRR 12205	17 SEP 64	RJM CWF
T	REVISED PER TDRR 12623	28 SEP 64	JWP CJP
U	REVISED PER TDRR 12754	29 SEPT 64	LGC
V	REVISED PER TDRR 17343	12 MAR 65	JJJ EF
W	REVISED PER TDRR 19477	1 JUN [illegible]	EN EF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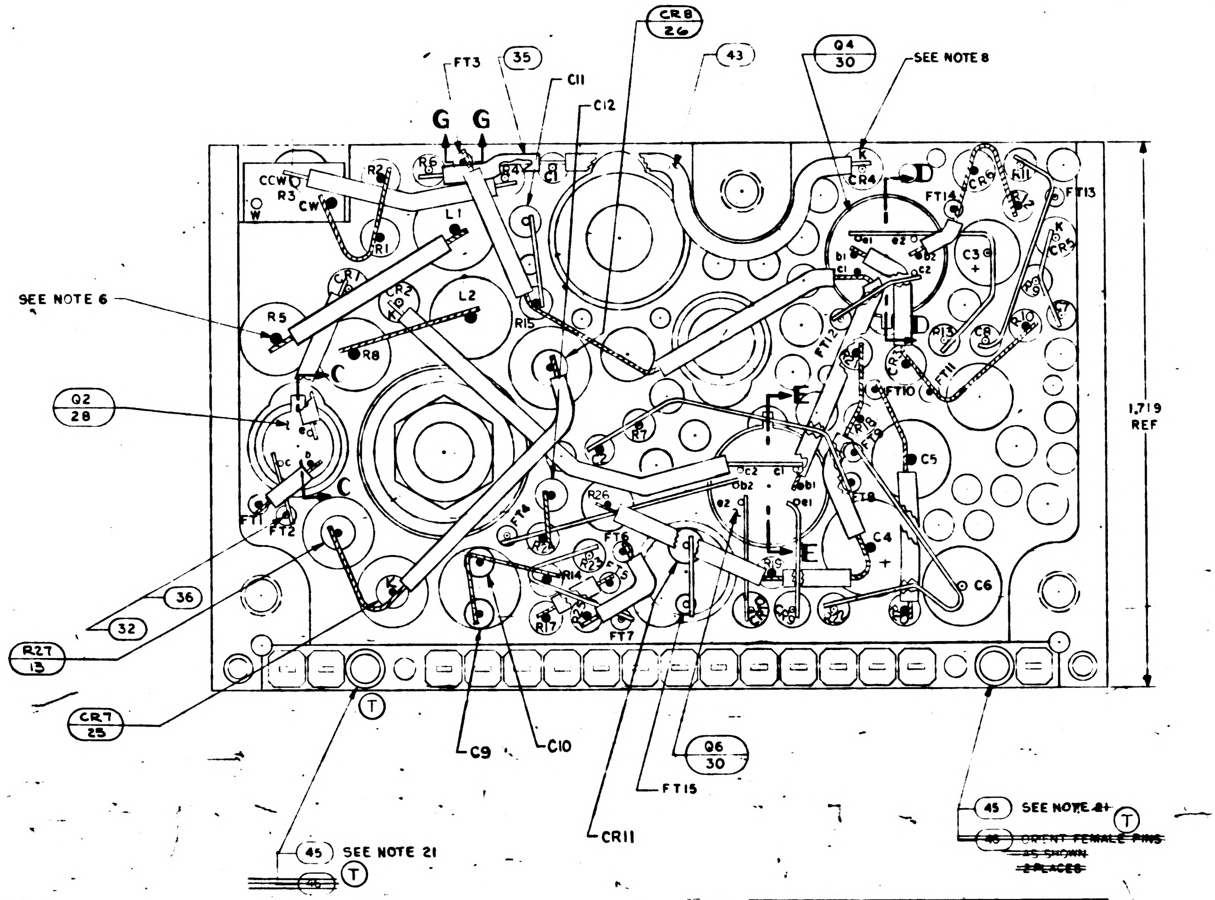
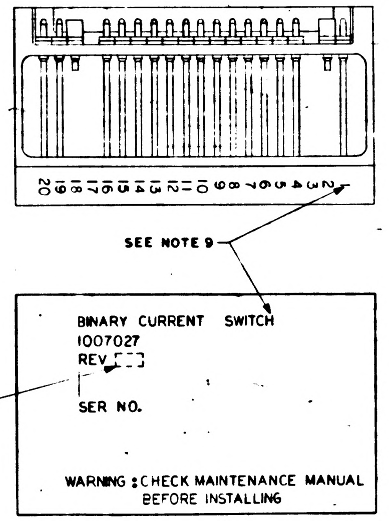
SEE NOTE 13
40
1.560
1.540
.000
.015
SEE NOTE 18
2
41
42 SEE NOTE 19
.000
.030
.047 TYP
.037
.077 MAX TYP
SEE NOTES
SEE NOTE 17
32


CR8 26
FT3
35
C11
C12
43
Q4 30
SEE NOTE 8
G G
D
E
C
SEE NOTE 6
Q2 28
36
32
R27 13
CR7 25
C9
C10
CR11
FT15
Q6 30
1.719 REF
T
45 SEE NOTE 21
46
45 SEE NOTE 21
~~46 ORIENT FEMALE PINS AS SHOWN 2 PLACES~~
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R17 R18 R19 R22 R23 R24 R26
C1 C2 C3 C4 C5 C6 C7 C8
CR1 CR2 CR4 CR5 CR9
L1 L2
FT1 FT2 FT4 FT5 FT6 FT7 FT8 FT9 FT10 FT11 FT12 FT13 FT14
CCW CW W K

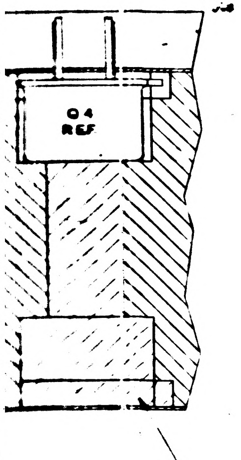

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
SEE NOTE 9
DWG REV LTR

BINARY CURRENT SWITCH
1007027
REV [ ]

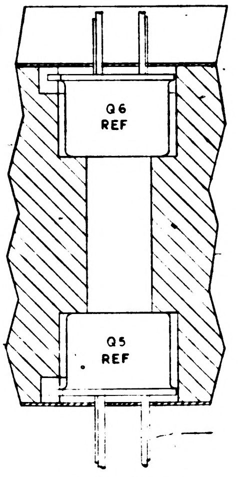
SER NO.

WARNING : CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

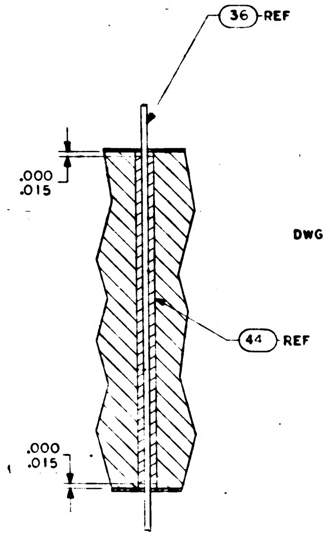
MARKING VIEW
SCALE 2/1


Q4 REF
SEE NOTE 2

SECTION D–D


Q6 REF
Q5 REF

SECTION E–E


36 REF
.000
.015
44 REF
.000
.015

SECTION G–G

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1006777-1	CAPACITOR, 10 UUF, 100V, ±10%	50
☒	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
~~2~~	~~1006781-1~~	~~CONTACT, WRAPOST FEMALE MIN~~	46
2	1008256	POLARIZING PIN	45
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
6	1006782 - 4	CONTACT, WRAPOST ~~MALE MIN~~	42
6	1006775	INSULATOR, WRAPOST ~~MALE MIN~~	41
2	1000093 - 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006757—8	WIRE, ELEC, .020 DIA	36
AR	1006757—1	WIRE, ELEC, .010 X .020	35
2	1008025—1	INSULATOR BUSHING	34
1	1008021—1	INSULATOR, BUSHING	33
AR	1006776—20	INSULATION SLEEVING	32
3	1010376 - 4	TRANSISTOR	30
1	1010269 - 1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388 - 39	INDUCTOR, 0.01 HY 75 MA 5%	27
3	1010394	DIODE	26
1	1010286-20	DIODE, ZENER	25
2	1010462 - 6	DIODE	24
4	1010385	DIODE	23
2	1006777—24	CAP., FIXED CER., .001 UF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER., .022UF, 100V ±10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755 —73	CAP., FIXED TANT, 2.2 UF, ~~35V ±10%~~	19
2	1006777 —13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750 —15	RESISTOR, FIXED MF, 200Ω, 1/4W ±2%	17
2	1006750— 56	RESISTOR, FIXED MF, 10 K, 1/4W ±2%	16
~~2~~	~~1006750—53~~	~~RESISTOR, FIXED MF, 7.5K, 1/4W ±2%~~	15
2	1010369 — 87	RESISTOR	14
1	1006750- 78	RESISTOR, FIXED MF, 82K, 1/4W ±2%	13
4	1006750 —53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750 —1	RESISTOR, FIXED MF, 51 Ω 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±2%	10
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±2%	9
2	1010389 —80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364 —557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373 —10	RESISTOR, VAR. 10K, 1W ±5%	6
1	1010364—635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055- 2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ±.02 XXX ±.005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —/—
HEAT TREATMENT —/—
FINAL FINISH —/—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT NAS 9-497
DRAWN R. Bell Jr. DATE [illegible] 63
CHECKED [illegible]
APPROVAL [illegible] 3 Apr 63
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 3 Apr 63

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO. 80230
SIZE J
NASA DRAWING NO. 1007027
SCALE 5/1
WT
SHEET 1 OF 1

J 1007027 W

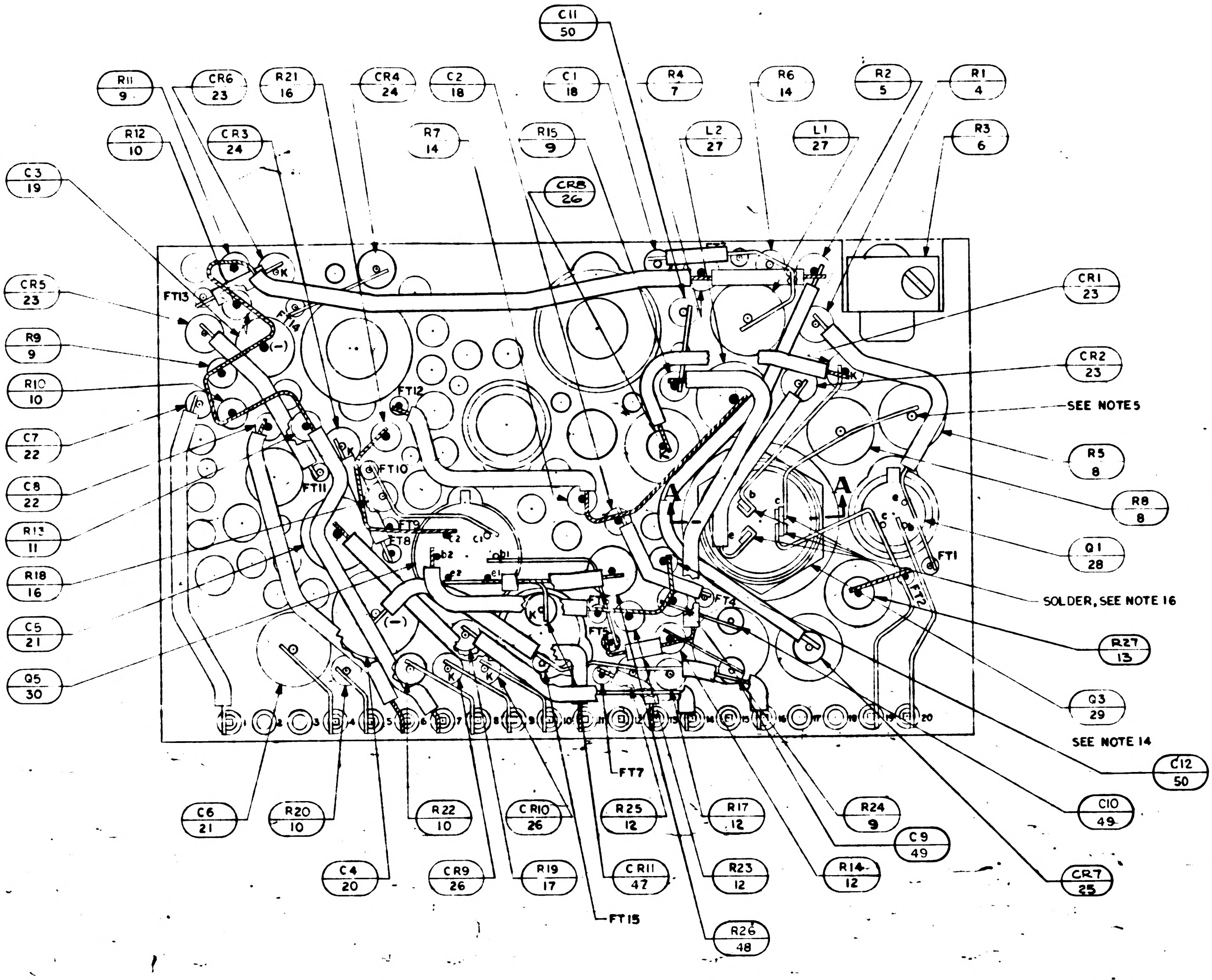
1007027	REV LTR W	SH NO. 1

2/1007027

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

1007027

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE	100 % OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03±.03 OF EXTERNAL EDGE


C11 50
R11 9
CR6 23
R21 16
CR4 24
C2 18
C1 18
R4 7
R6 14
R2 5
R1 4
R12 10
CR3 24
R7 14
R15 9
L2 27
L1 27
R3 6
C3 19
CR8 26
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTES 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
R27 13
Q3 29
SEE NOTE 14
C12 50
C10 49
C9 49
CR7 25
R24 9
R14 12
R17 12
R26 48
R23 12
R25 12
CR11 47
R19 17
CR9 26
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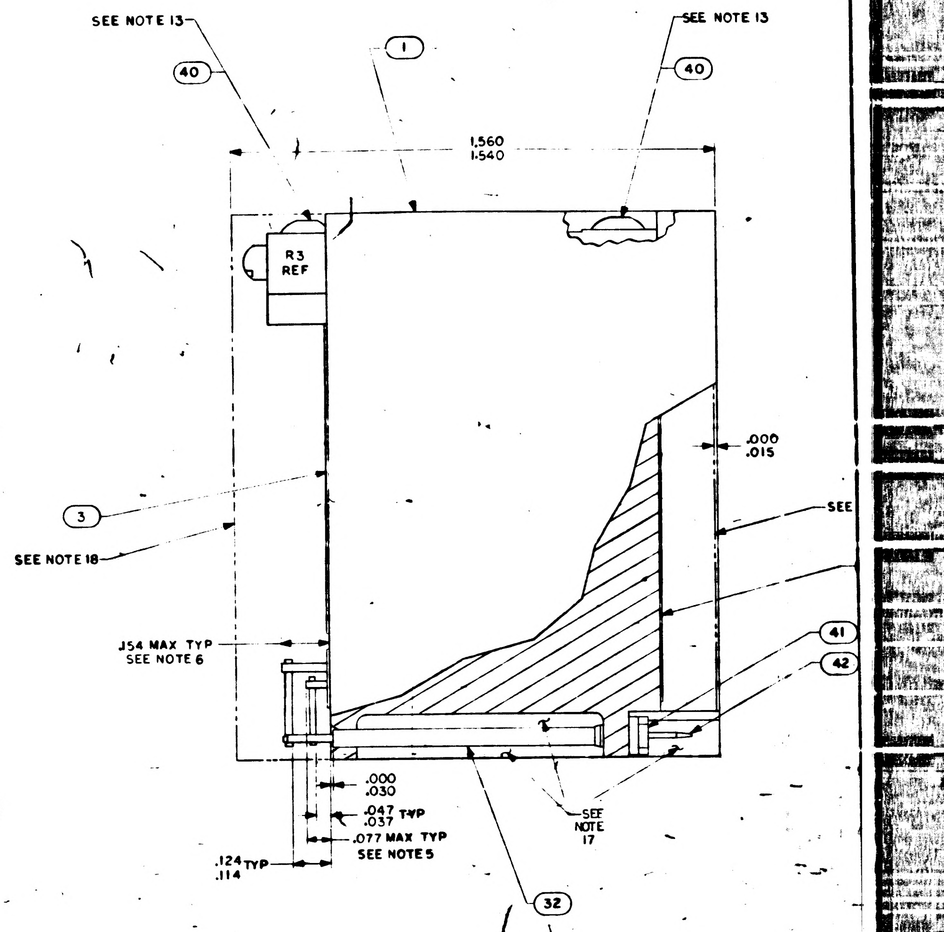
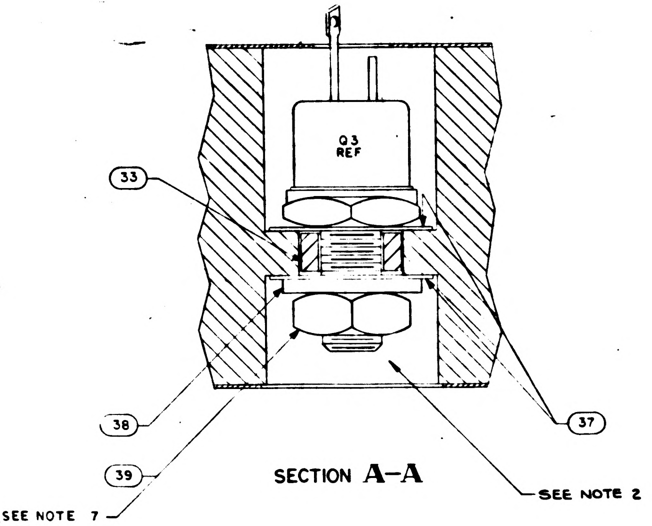
FT12
FT13
FT15
A
A


SEE NOTE 13
40
1
SEE NOTE 13
40
1.560
1.540
R3 REF
.000
.015
3
SEE
SEE NOTE 18
41
42
.154 MAX TYP
SEE NOTE 6
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTE 5
.124
.114 TYP
SEE NOTE 17
32

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLES SHOWN ON SECTIONS A-A & D-D PER ND1002117 BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009

12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
15. ~~MARK .060/.100 RED PER ND 1002019~~
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED. PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND1002136
20. PROCURE PER PS 1007027.
21. BOND FIND NO. 45 IN PLACE WITH ND1002004, TYPE I
22. BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK AND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND 1002187 TYPE I.
23. CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.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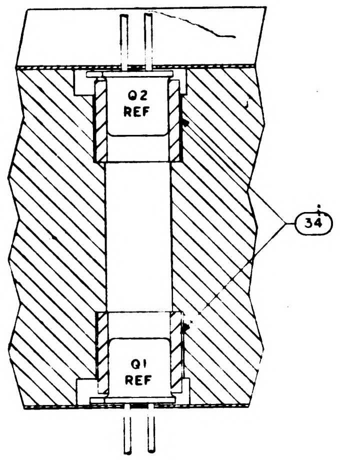
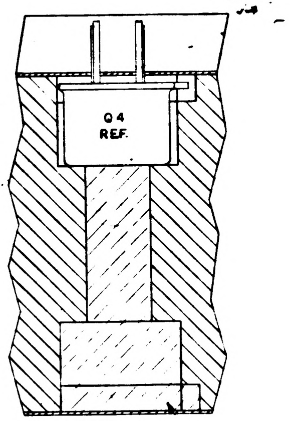
38
39
37
SEE NOTE 7
SEE NOTE 2

SECTION A–A

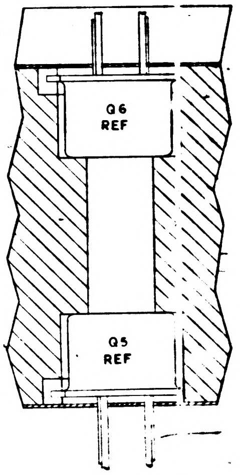

Q2 REF
Q1 REF
34

SECTION C–C



SEE NOTE 2

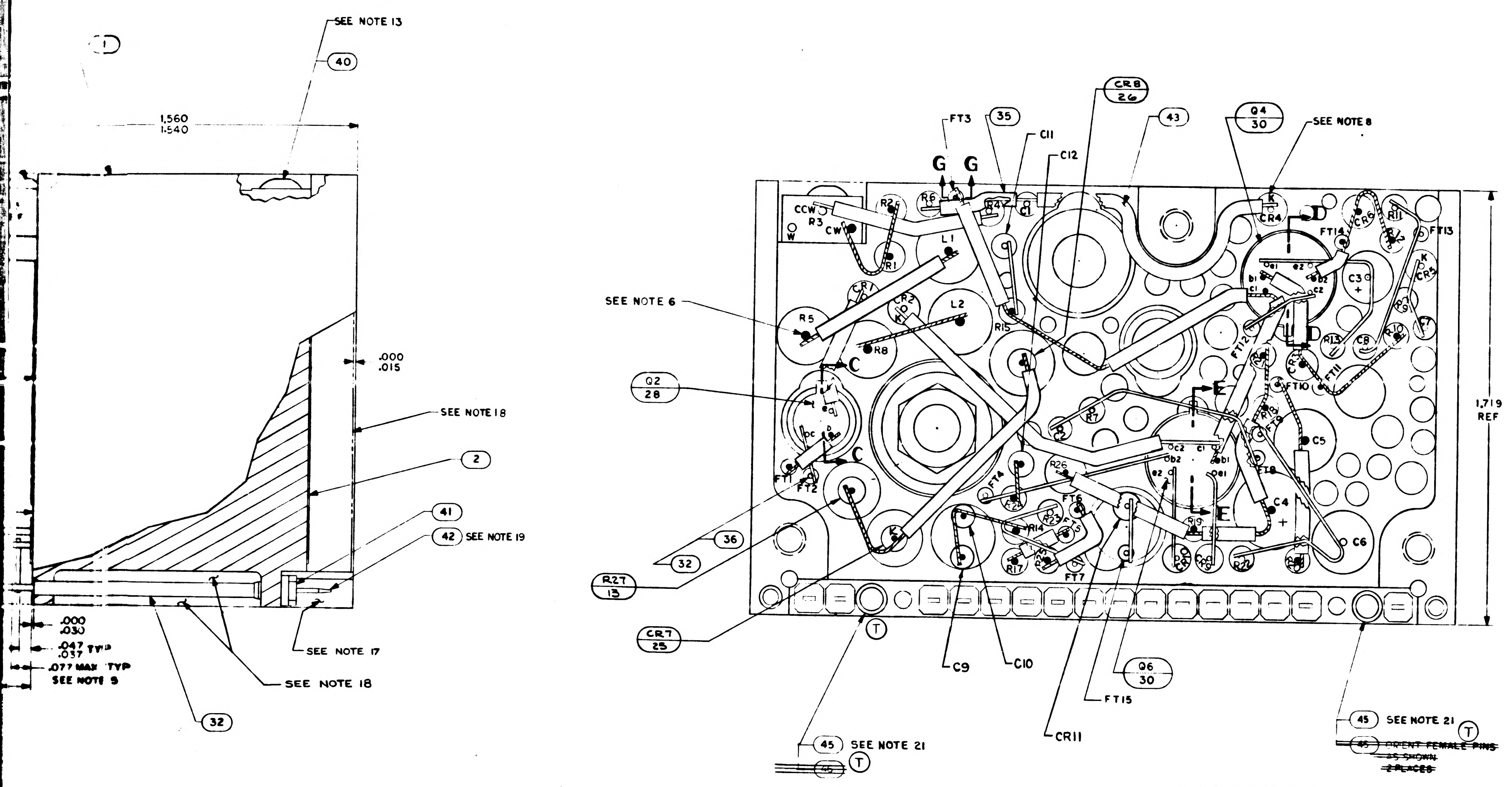
SECTION D–D


Q6 REF
Q5 REF

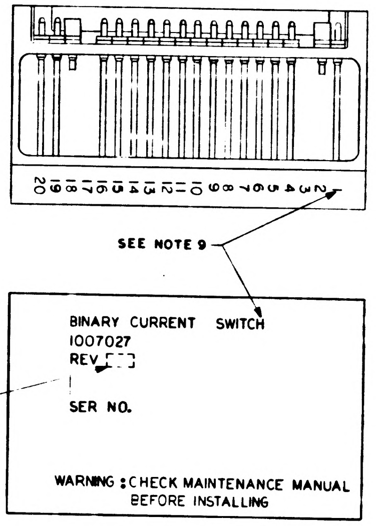
SECTION E–E

1007027	REV LTR	SH NO.
	W.	1

1/1007027

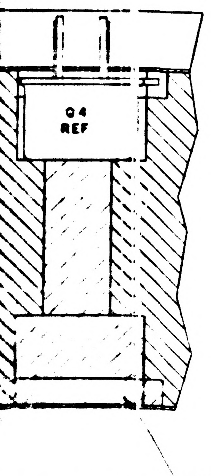


SEE NOTE 13
40
1.560
1.540
.000
.015
SEE NOTE 18
2
41
42 SEE NOTE 19
SEE NOTE 17
.000
.030
.047 TYP
.037
.077 MAX TYP
SEE NOTE 5
SEE NOTE 18
32
FT3
35
C11
C12
CR8
26
43
Q4
30
SEE NOTE 8
G G
CCW
CW
R3
R2
R6
R4
L1
L2
CR1
CR2
R1
R5
R8
R15
CR4
D
FT14
CR5
R11
FT13
C3
C2
CR6
R10
R13
C8
FT12
FT11
FT10
E
C5
C4
C6
R7
R26
R14
FT8
FT7
FT6
R12
R9
FT1
FT2
C
SEE NOTE 6
Q2
28
1.719
REF
36
32
R27
13
CR7
25
T
C9
C10
CR11
Q6
30
FT15
45 SEE NOTE 21
45 SEE NOTE 21
~~45 ORIENT FEMALE PINS AS SHOWN 2 PLACES~~



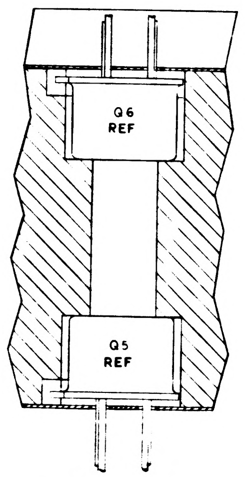
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
SEE NOTE 9
BINARY CURRENT SWITCH
1007027
REV
DWG REV LTR
SER NO.
WARNING: CHECK MAINTENANCE MANUAL BEFORE INSTALLING

MARKING VIEW
SCALE 2/1



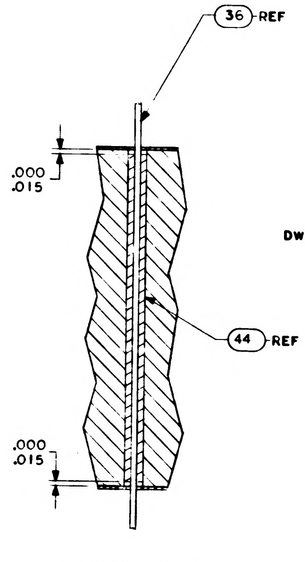
Q4
REF
SEE NOTE 2

SECTION D-D



Q6
REF
Q5
REF

SECTION E-E



36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

REVISIONS CLASS B TDRR 00715

SYM	DESCRIPTION	DATE	APPR
A	REVISED PER TDRR 00007	4-25-63	WK
B	REVISED PER TDRR 01257	5-15-63	B.T. WK
C	REVISED PER TDRR 01712	6-26-63	J.J.M. WK
D	REVISED PER TDRR 01850	7-7-63	JJM WK
E	REVISED PER TDRR 01959	7-30-63	EPK WK
F	REVISED PER TDRR 02166	7-29-63	JJM WK
G	REVISED PER TDRR 02718	8-21-63	J.J.P. WK
H	REVISED PER TDRR 04131	OCT 63	EPK WK
J	PER TDRR 04132	63	WK
K	REVISED PER TDRR 05261	DEC 63	EPK WK
L	REVISED PER TDRR 05410	DEC 63	EPK WK
M	REVISED PER TDRR 06457	64	EPK WK
N	REVISED PER TDRR 07010	30 MAR 64	JJJ AU
P	REVISED PER TDRR 07285	6 APR 64	
R	REVISED PER TDRR 07938	MAY -64	J.B. CP
S	REVISED PER TDRR 12205	7 SEP 64	RJN
T	REVISED PER TDRR 12623	8 SEP 64	JWP CP
U	REVISED PER TDRR 12754	9 SEP 64	LGC
V	REVISED PER TDRR 17343	12 MAR 65	JJJ
W	REVISED PER TDRR 19477	JUN 65	EH
Y	REVISED PER TDRR 19547	65	EM

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1006777-1	CAPACITOR, 10 UUF, 100V, ±10%	50
	1010043	SCHEMATIC	REF
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AR	1006776 -21	INSULATION SLEEVING	43
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1	1010830-20	DIODE, ZENER	25
2	1010833-1	DIODE	24
4	1010385	DIODE	23
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1	1006750 -15	RESISTOR, FIXED MF. 200Ω, 1/4W ±2%	17
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1	1010364 -557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373 -10	RESISTOR, VAR. 10K .1W ±5%	6
1	1010364-635	RESISTOR, FIXED MF. 100 K, 1/8W ±1%	5
1	1010364-683	RESISTOR, FIXED MF. 178K 1/8W ±1%	4
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1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007154	
1007153	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ±.02 XXX ±.005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
CONTRACT NAS 9-497
DRAWN R. Dell DATE 27 June 63
CHECKED 2 Aug 63
APPROVAL 3 Apr 63
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Sep 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO 80230 SIZE J NASA DRAWING NO 1007027
SCALE 5/1 WT SHEET 1 OF 1

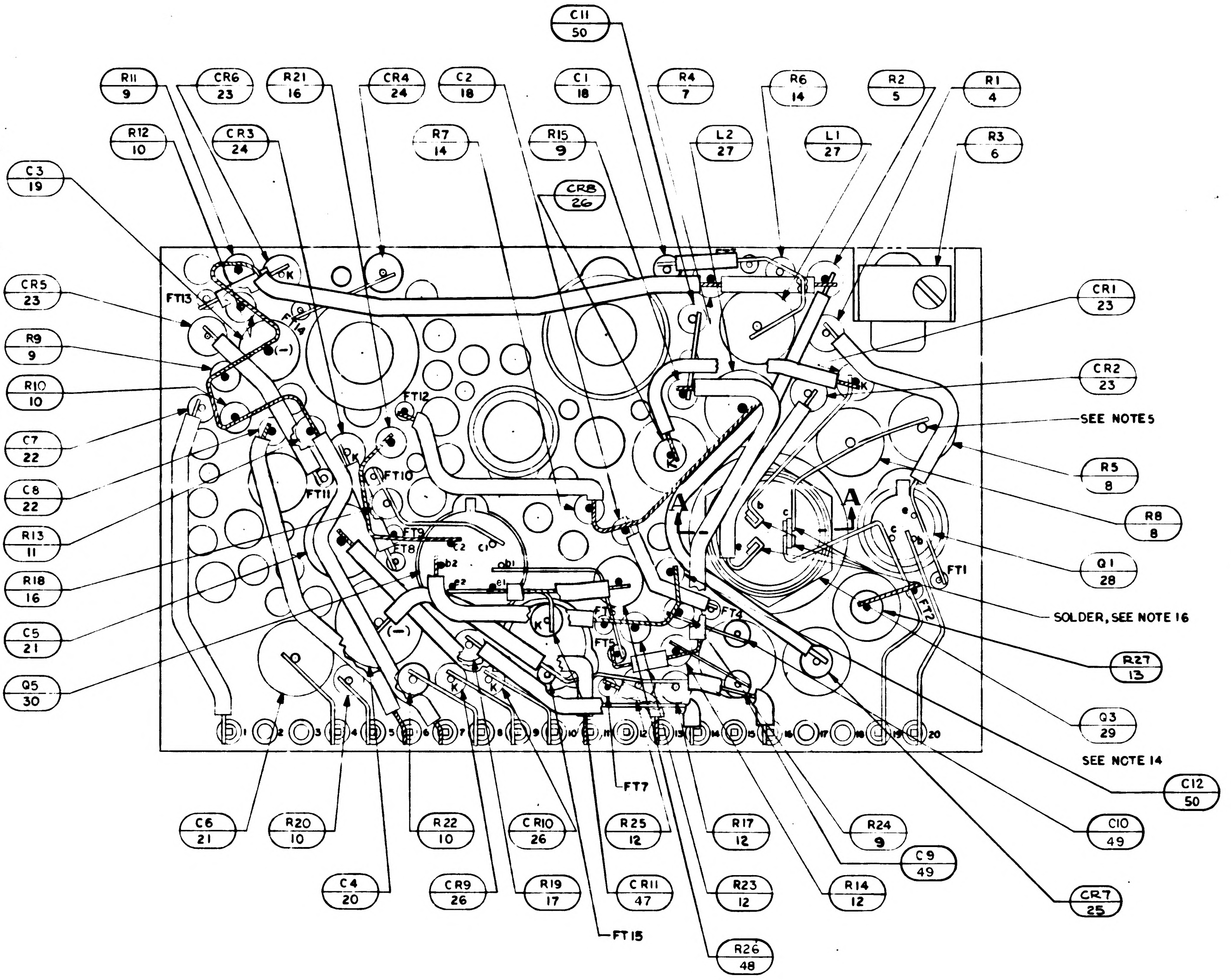
1007027 Y

1007027 REV LTR Y SH NO 1

2/1007027

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .26 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE	100 % OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03±.03 OF EXTERNAL EDGE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R11 9
CR6 23
R21 16
CR4 24
C2 18
C1 18
R4 7
R6 14
R2 5
R1 4
R12 10
CR3 24
R7 14
R15 9
L2 27
L1 27
R3 6
CR8 26
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
FT13
FT12
FT11
FT10
FT9
FT8
FT6
FT5
FT4
FT3
FT2
FT1
A
CR1 23
CR2 23
SEE NOTE 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
R27 13
Q3 29
SEE NOTE 14
C12 50
C10 49
C9 49
CR7 25
R24 9
R14 12
R26 48
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FT7
FT15
R19 17
CR10 26
CR9 26
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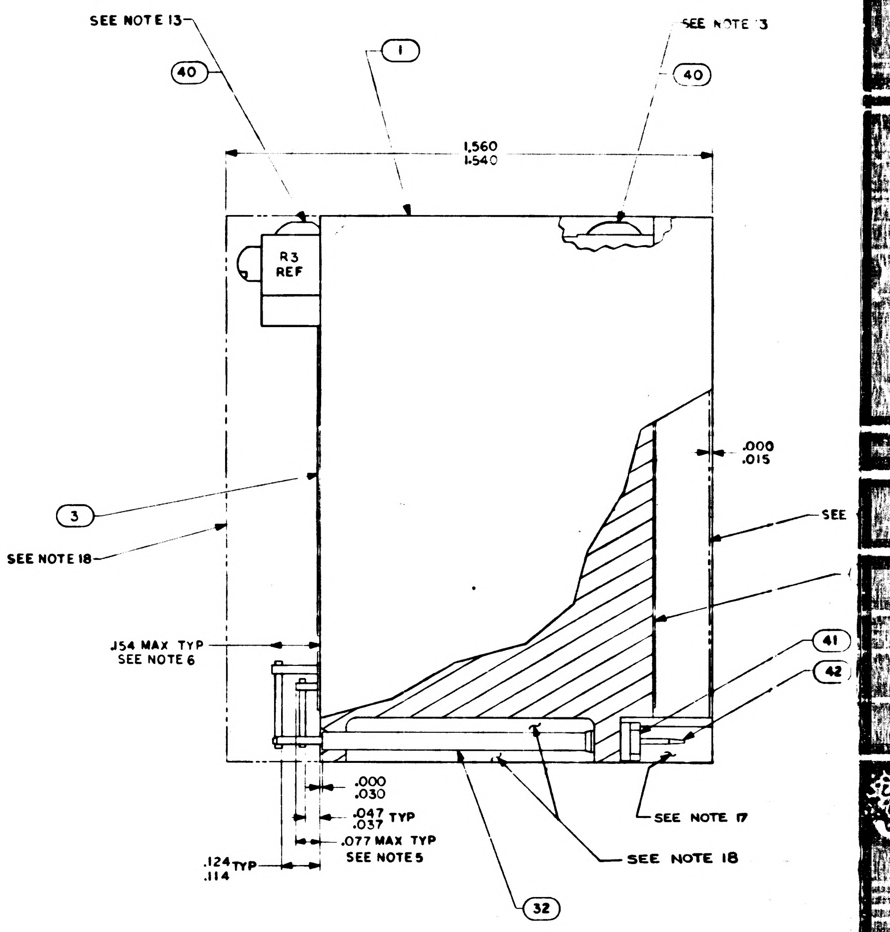
C4 20
R20 10
C6 21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SEE NOTE 13
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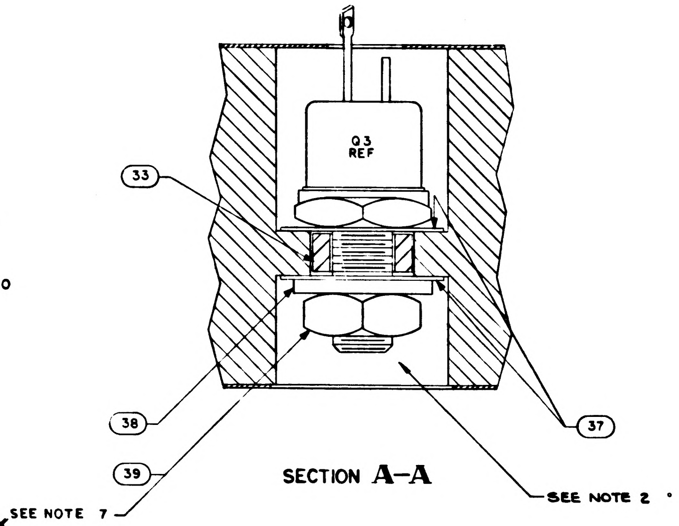
1.540
R3 REF
.000
.015
3
SEE NOTE 18
SEE
.154 MAX TYP
SEE NOTE 6
41
42
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTE 5
.124
.114 TYP
SEE NOTE 17
SEE NOTE 18
32

NOTES:

25. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND1002110 TYPE II, AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLES SHOWN ON SECTIONS A-A & D-D PER ND1002117 BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND SERIALIZE AND MARK ALL OTHER CHRACTERS .12 HIGH (WHITE) PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009 METHOD H.

12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. ~~MARK .060/.100 RED PER ND 1002019~~
16. SOLDER PER ND 1002071
17. INDICATED AREA TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.
19. MUST MEET REQUIREMENTS OF ND1002136
2 PROCURE PER PS 1007027.
2 BOND FIND NO. 45 IN PLACE WITH ND1002004, TYPE 1
2 ~~BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK~~ ND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS ER ND 1002187 TYPE 1.
23 ~~LEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. DHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND OATING AS INDICATED IN TABLE I.~~
24. EAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL COHOL PRIOR TO ENCAPSULATION.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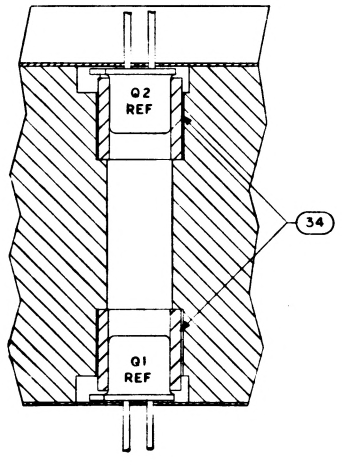
SEE NOTE 7
SEE NOTE 2

SECTION A-A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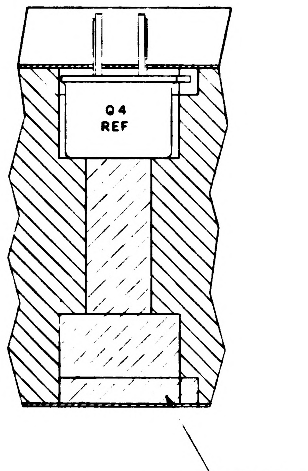
Q1 REF
34

SECTION C-C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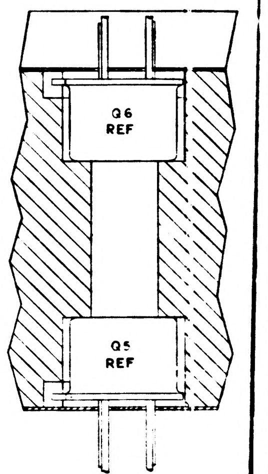
SEE NOTE 2

SECTION D-D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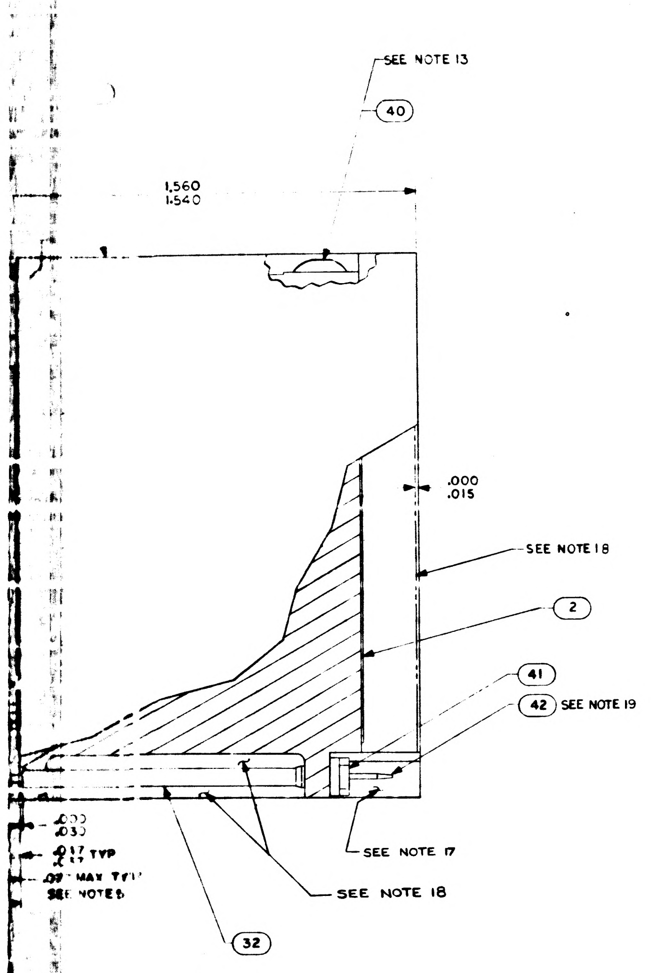
Q5 REF

SECTION E-E

1007027	REV LTR Y	SH NO. 1

1/1007027

SYM	DESCRIPTION	DATE	APPR
	REVISIONS CLASS 3 TDRR 00716		
A	REVISED PER TDRR 00007	[illegible]	WK
B	REVISED PER TDRR 01257	5-15-63	WK
C	REVISED PER TDRR 01712	6-26-63	JJM WK
D	REVISED PER TDRR 01850	7-9-63	WK
E	REVISED PER TDRR 01959	7-20-63	WK
F	REVISED PER TDRR 02166	7-29-63	WK
G	REVISED PER TDRR 02718	8-21-63	WK
H	REVISED PER TDRR 04131	3 OCT 63	WK
J	PER TDRR 04132	63	WK
K	REVISED PER TDRR 05261	DEC 63	WK
L	REVISED PER TDRR 05410	27 DEC 63	WK
M	REVISED PER TDRR 06457	64	W
N	REVISED PER TDRR 07010	30 MAR 64	JJ AU
P	REVISED PER TDRR 07285	6 APR 64	
R	REVISED PER TDRR 07938	4-MAY-64	J.B. CP
S	REVISED PER TDRR 12205	7 SEP 64	JN
T	REVISED PER TDRR 12623	8 SEP 64	JWP
U	REVISED PER TDRR 12754	29 SEP 64	
V	REVISED PER TDRR 17343	12 MAR 65	
W	REVISED PER TDRR 19477	1 JUN 65	
Y	REVISED PER TDRR 19547	3 JUN 65	EM
Z	REVISED PER TDRR 24380	6 DEC 65	HTJ



SEE NOTE 13
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.000
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SEE NOTE 18
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42 SEE NOTE 19
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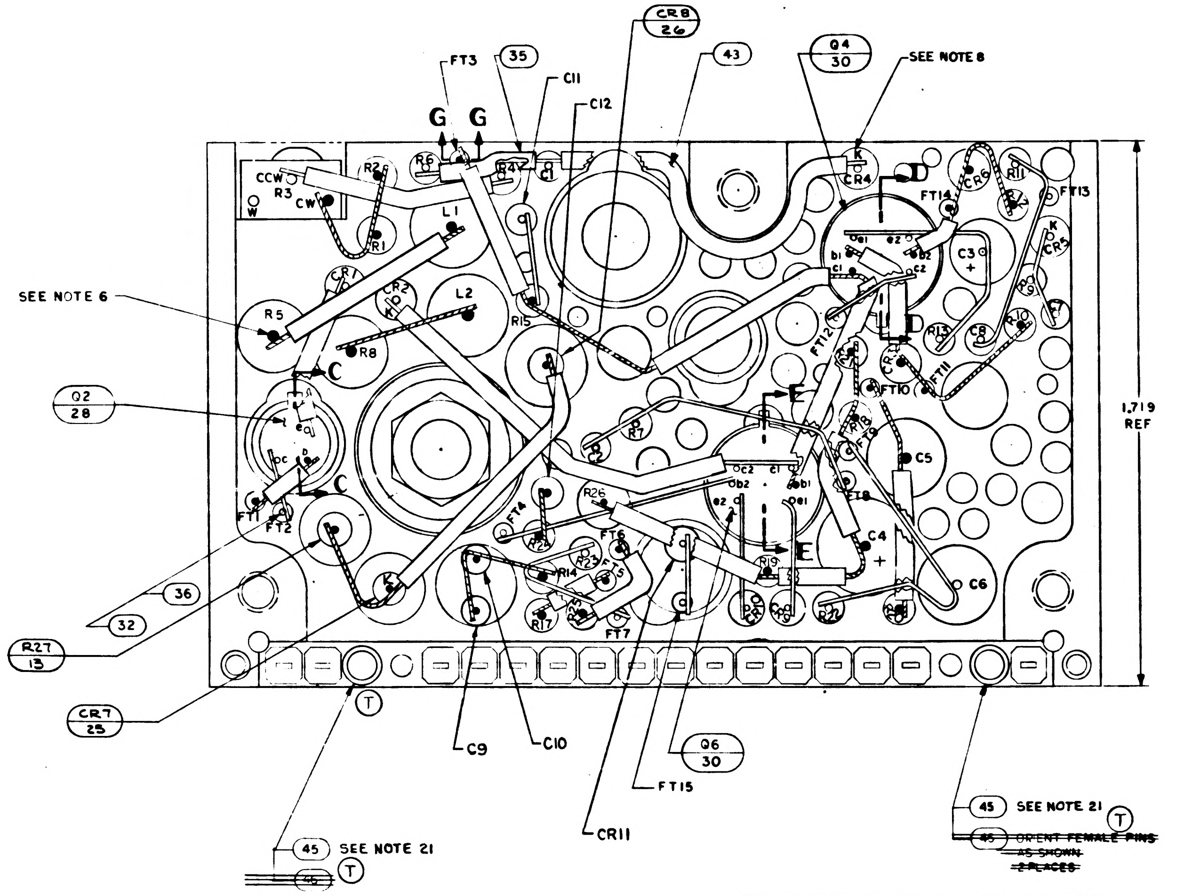
.030
.017 TYP
.07 MAX TYP
SEE NOTE 8
SEE NOTE 17
SEE NOTE 18
32



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SEE NOTE 8
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R6
R4
C1
L1
R1
CR4
FT14
FT13
R11
CR1
R2
L2
R8
R15
C3
CR3
SEE NOTE 6
R5
C
Q2
28
R13
C8
R10
C7
FT11
E
FT10
FT9
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REF
C5
C
FT1
FT2
36
32
R27
13
CR7
25
FT4
R26
FT6
R14
R17
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C9
C10
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SEE NOTE 21
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FT15
Q6
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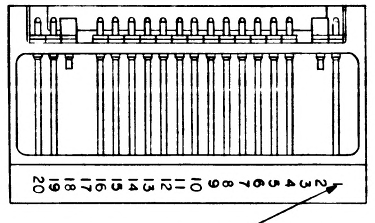
45 SEE NOTE 21
T



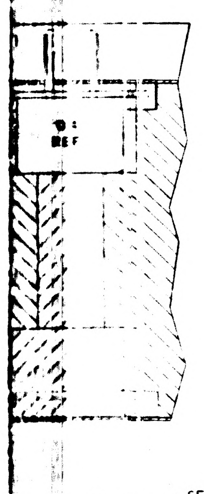
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2
SEE NOTE 9

BINARY CURRENT SWITCH
1007027

SER NO.

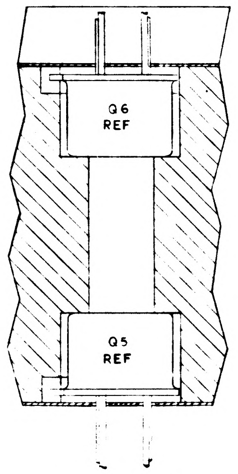
WARNING : CHECK MAINTENANCE MANUAL
BEFORE INSTALLING

MARKING VIEW
SCALE 2/1



SECTION D-D

SEE NOTE 2



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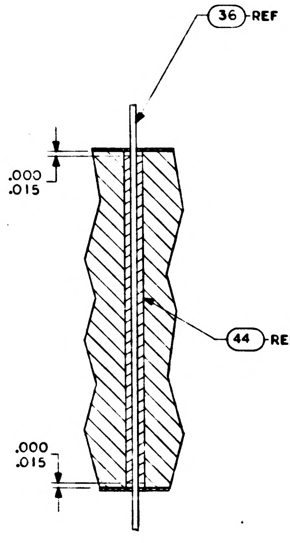
REF
Q5
REF

SECTION E-E



36 REF
.000
.015
44 REF
.000
.015

SECTION G-G

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1006777-1	CAPACITOR, 10 UUF, 100V, ±10%	50
	1010043	SCHEMATIC	REF
2	1006777-16	CAPACITOR	49
1	1006750-40	RESISTOR	48
1	1010372-6	DIODE	47
~~2~~	~~1006781-1~~	~~CONTACT, WRAPOST FEMALE MIN~~	46
2	1008256	POLARIZING PIN	45
AR	1006776 - 22	INSULATION SLEEVING	44
AR	1006776 - 21	INSULATION SLEEVING	43
6	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
16	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 -104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
AR	1006757—8	WIRE, ELEC, .020 DIA	36
AR	1006757—1	WIRE, ELEC, .010 X .020	35
2	1008025—1	INSULATOR BUSHING	34
1	1008021—1	INSULATOR, BUSHING	33
AR	1006776—20	INSULATION SLEEVING	32
3	1010376 — 4	TRANSISTOR	30
1	1010269 — 1	TRANSISTOR	29
2	1010357-1	TRANSISTOR	28
2	1010388 — 39	INDUCTOR. 0.01 HY 75 MA 5%	27
3	1010394	DIODE	26
1	1010830-20	DIODE, ZENER	25
2	1010833-1	DIODE	24
4	1010385	DIODE	23
2	1006777—24	CAP., FIXED CER, .001 UF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755 —73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777 —13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750 —15	RESISTOR, FIXED MF. 200Ω. 1/4W ±2%	17
2	1006750— 56	RESISTOR, FIXED MF. 10 K. 1/4W ±2%	16
~~2~~	~~1006750—53~~	~~RESISTOR, FIXED MF, 7.5K, 1/4W ±2%~~	15
2	1010369 — 87	RESISTOR	14
1	1006750-78	RESISTOR, FIXED MF. 82K, 1/4W ± 2%	13
4	1006750—53	RESISTOR, FIXED MF, 7.5K, 1/4W ±2%	12
1	1006750—1	RESISTOR, FIXED MF. 51 Ω 1/4W ±2%	11
4	1006750—67	RESISTOR, FIXED MF. 30K, 1/4W ± 2%	10
4	1006750—81	RESISTOR, FIXED MF, 110 K, 1/4W ±2%	9
2	1010389 —80	RESISTOR, FIXED WW. 10K, 3 W ±1%	8
1	1010364 —557	RESISTOR, FIXED MF 39.2K 1/8W ±1%	7
1	1010373 —10	RESISTOR, VAR. 10K, 1W ± 5%	6
1	1010364—635	RESISTOR, FIXED MF. 100 K. 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF. 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055-2	INSULATOR, BOTTOM	2
1	1007035	HEATSINK	1

LIST OF MATERIALS

1007154	
1007153	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ±.02 XXX ±.005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
NAS-9-497

DRAWN R. Bell DATE 27 Mar 63
CHECKED R.P. Kingsbury 2 Apr 63
APPROVAL D. A. Tait 3 Apr 63
APPROVAL
NASA APPROVAL
MIT APPROVAL W Kupfer 3 Apr 63

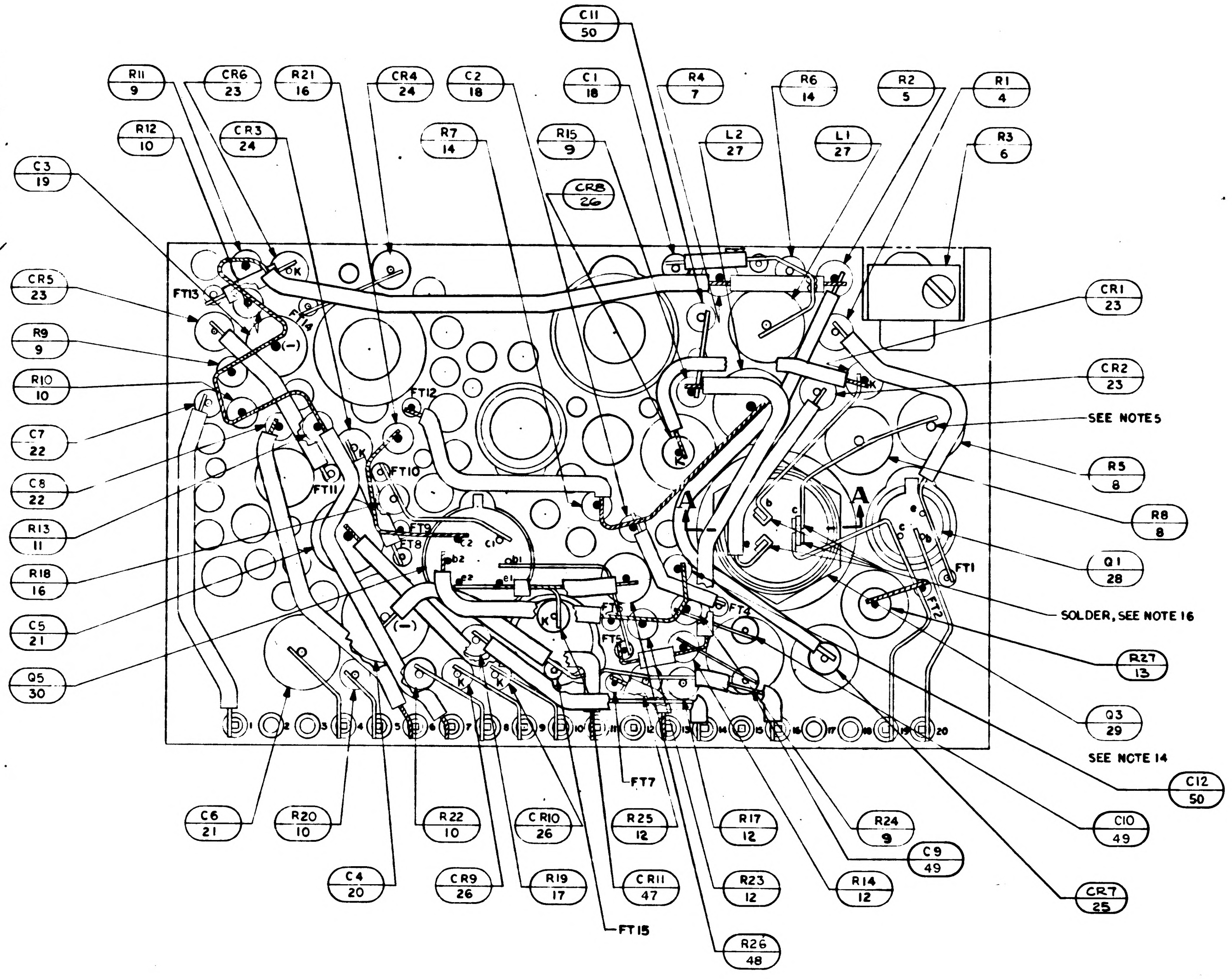
MANNED SPACECRAFT CENTER
HOUSTON TEXAS

BINARY CURRENT SWITCH COMPUTER OUTPUT ASSEMBLY

CODE IDENT NO 80230 SIZE J NASA DRAWING NO 1007027
SCALE 5/1 WT SHEET 1 OF 1

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEATSINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03±.03 OF EXTERNAL EDGE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R11 9
CR6 23
R21 16
CR4 24
C2 18
C1 18
R4 7
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R1 4
R12 10
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R7 14
R15 9
L2 27
L1 27
R3 6
CR8 26
C3 19
CR5 23
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R13 11
R18 16
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FT9
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FT4
FT5
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CR1 23
CR2 23
SEE NOTE 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
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Q3 29
SEE NOTE 14
C12 50
C10 49
C9 49
CR7 25
R24 9
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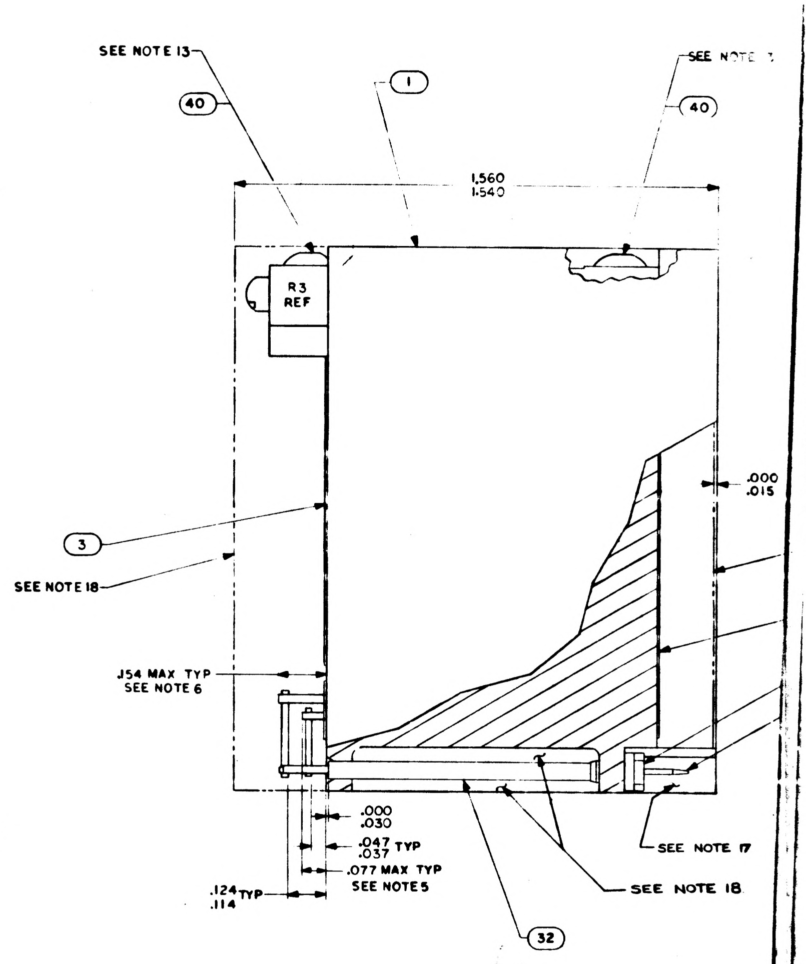
C6 21


SEE NOTE 13
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SEE NOTE
40
1.560
1.540
R3 REF
.000
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SEE NOTE 18
.154 MAX TYP
SEE NOTE 6
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTES
.124
.114 TYP
SEE NOTE 17
SEE NOTE 18
32

NOTES:

25. EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND1007279, USING 1010992 PRIMER AND 1008809-4 PAINT. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE OF PAINT.

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLES SHOWN ON SECTIONS A-A & D-D PER ND1002117 BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. ~~WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003~~
5. ○ WHITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK PIN NUMBERS .08 HIGH (WHITE) AND MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002019. SERIALIZE PER ND 1002023. CENTRALIZE AS SHOWN. ABBREVIATIONS PERMISSIBLE.
10. STAKE FIND NO.4 THRU FIND NO.31, FIND NO.33 AND FIND NO.34 PER ND 1002009 METHOD J.
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (AS6) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO.29 10/15 INCH POUND
15. ~~MARK .060/.100 RED PER ND 1002019~~
16. SOLDER PER ND 1002071
17. INDICATED AREA TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH AND LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAXIMUM DIMENSION BETWEEN ANY HEATSINK AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

1 MUST MEET REQUIREMENTS OF ND1002136

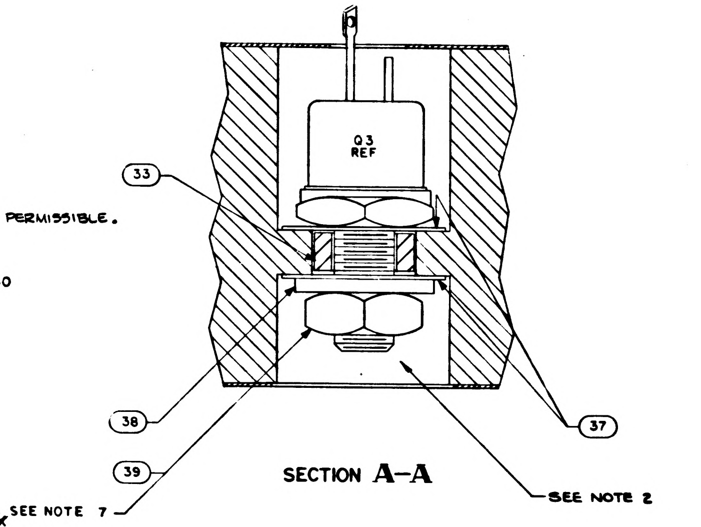
2 **PROCURE PER PS 1007027.**

2 BOND FIND NO. 45 IN PLACE WITH ND1002004, TYPE I

2 BOND A .25 MIN. WIDE PERIMETER OF THE TOP AND BOTTOM INSULATORS TO THE HEATSINK ND COAT A .25 MIN. WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS ER ND 1002187 TYPE I.

~~2 LEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION F COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. DHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND OATING AS INDICATED IN TABLE I.~~

24. LEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL COHOL PRIOR TO ENCAPSULATION.


33
Q3 REF
38
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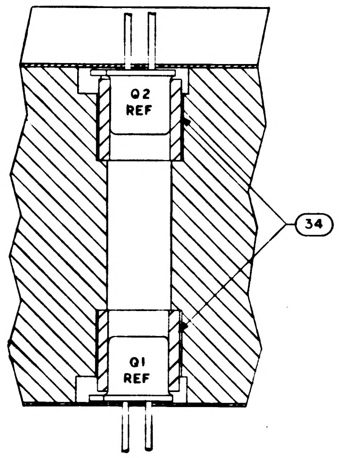
SEE NOTE 7
37
SEE NOTE 2

SECTION A-A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Q1 REF
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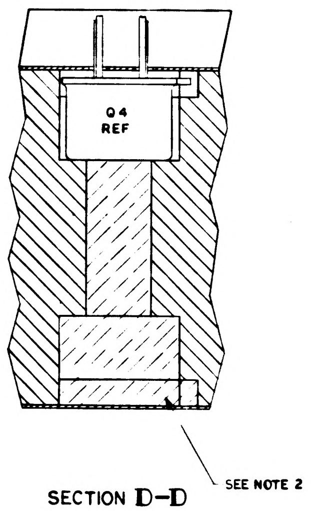
SECTION C-C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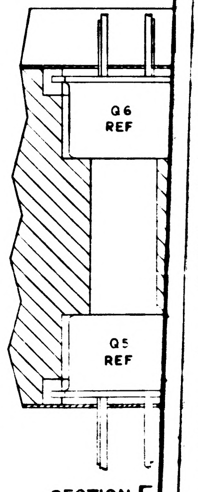
SEE NOTE 2

SECTION D-D


Q6 REF
Q5 REF

SECTION E

1007027	REV LTR	SH NO
	Z	1

17-1007027

1007027

SYM	REVISIONS DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONL
CLASS B RELEASE TDR No. 00715 DAT 4-3-63

☒	1010043	SCHEMATIC	REF

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
20	1006782 — 4	CONTACT, WRAPOST MALE MIN	42
20	1006775	INSULATOR, WRAPOST MALE MIN	41
2	1000093 — 3	SCREW, BOTTON HEAD	40
1	MS 35650 — 104	NUT, PLAIN, HEX	39
1	1008020—1	WASHER, FLAT	38
2	1008024—1	WASHER, INSULATOR	37
A R	1006787—2	WIRE, ELEC, .020 DIA	36
A R	1006757—1	WIRE, ELEC, .010 X .020	35
4	1008025—1	INSULATOR BUSHING	34
1	1008021—1	INSULATOR, BUSHING	33
AR	1006766—21	INSULATION SLEEVING	32
1	1010292—002	TERMINAL, FEED THRU	31
3	1010376—1	TRANSISTOR	30
1	1010269	TRANSISTOR	29
2	1010357	TRANSISTOR	28
2	1010388 — 39	INDUCTOR, 0.01 HY 75 MA 5%	27
2	1010394	DIODE	26
2	1010390	DIODE	25
2	1010255	DIODE	24
4	1010385	DIODE	23
2	1006777—14	CAP., FIXED CER, 130 UUF, 100V ±10%	22
2	1006777—33	CAP., FIXED CER, .022UF, 100V ±10%	21
1	1010393 —039	CAP., FIXED TANT, 6.8 UF, 50V ±10%	20
1	1006755—73	CAP., FIXED TANT, 2.2 UF, 35V ±10%	19
2	1006777—13	CAP., FIXED CER, 100UUF, 100V ±10%	18
1	1006750—15	RESISTOR, FIXED MF, 200Ω, 1/4W ±5%	17
2	1006750—44	RESISTOR, FIXED MF, 3.3K, 1/4W ±5%	16
2	1006750—1	RESISTOR, FIXED MF, 51Ω, 1/4W ±5%	15
1	1006750—80	RESISTOR, FIXED MF, 100K, 1/4W ±5%	14
2	1010369—92	RESISTOR, FIXED COMP, 300K, 1/4W ±5%	13
2	1006750—53	RESISTOR, FIXED MF, 7.5K, 1/4W ±5%	12
1	1006750—18	RESISTOR, FIXED MF, 270Ω, 1/4W ±5%	11
4	1006750—67	RESISTOR, FIXED MF, 30K, 1/4W ±5%	10
4	1006750—81	RESISTOR, FIXED MF, 110K, 1/4W ±5%	9
2	1010389—80	RESISTOR, FIXED WW, 10K, 3 W ±1%	8
1	1010364—557	RESISTOR, FIXED MF, 39.2K 1/8W ±1%	7
1	1010378—10	RESISTOR, VAR, 10K, 1W ±5%	6
1	1010364—635	RESISTOR, FIXED MF, 100K, 1/8W ±1%	5
1	1010364—683	RESISTOR, FIXED MF, 178K 1/8W ±1%	4
1	1008055—1	INSULATOR, TOP	3
1	1008055—2	INSULATOR, BOTTOM	2
1	1007008	HEATSINK	1

LIST OF MATERIALS

1007027 J

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN R. Bell DATE
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Apr 63

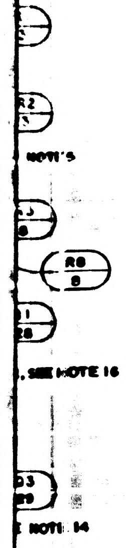
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

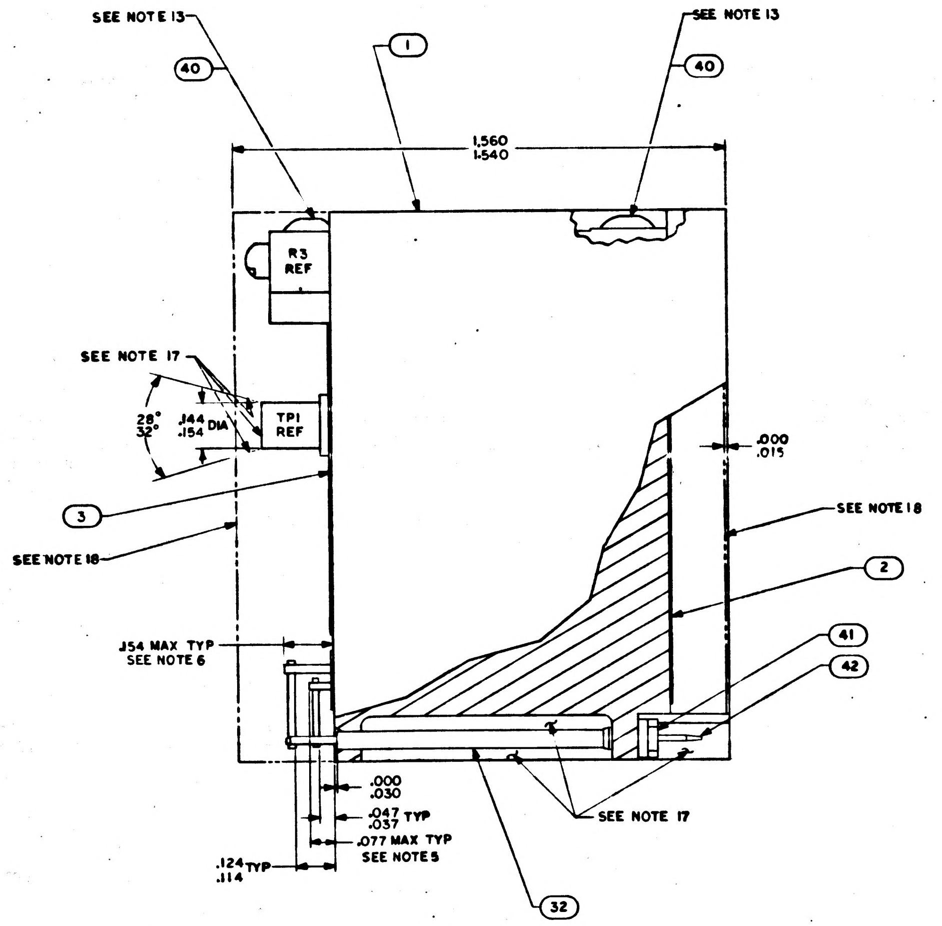
BINARY CURRENT SWITCH
COMPUTER OUTPUT
ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007027
SCALE 5/1 | WT | SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

1007027


R2
NOTE 5
R8
8
11
28
SEE NOTE 16
Q3
29
NOTE 14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SEE NOTE 13
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R3
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SEE NOTE 17
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32°
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TP1
REF
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.015
SEE NOTE 18
3
SEE NOTE 18
2
41
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SEE NOTE 5
.124
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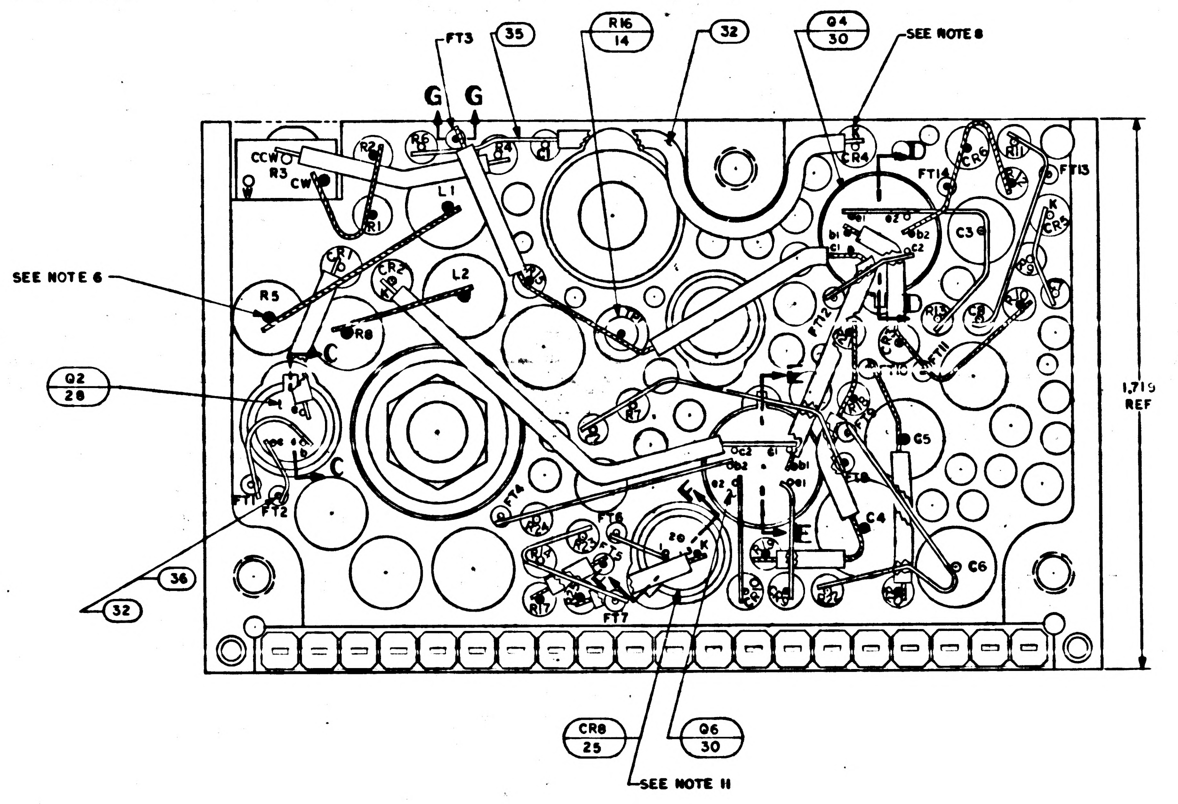
SEE NOTE 17
32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R16
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Q4
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G
CCW
R3
CW
L1
L2
CR1
CR2
CR4
R5
R8
C3
C4
C5
C6
FT1
FT2
FT7
FT13
FT14
SEE NOTE 6
Q2
28
C
C
D
D
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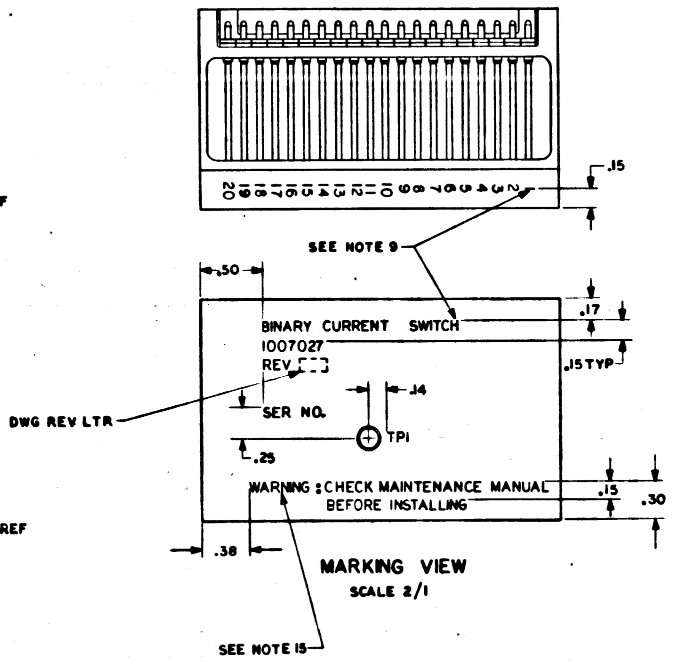
SEE NOTE 11

FOR INFORMATION

CLASS B RELEASE TDR No. 00718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SEE NOTE 9
.50
BINARY CURRENT SWITCH
1007027
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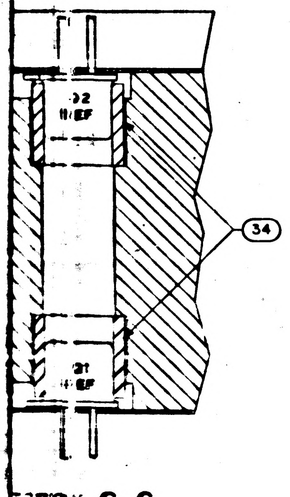
SER NO.
TP1
.14
.17
.15 TYP
DWG REV LTR
.25
WARNING : CHECK MAINTENANCE MANUAL
BEFORE INSTALLING
.15
.30
.38
SEE NOTE 15

MARKING VIEW
SCALE 2/1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REF
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REF
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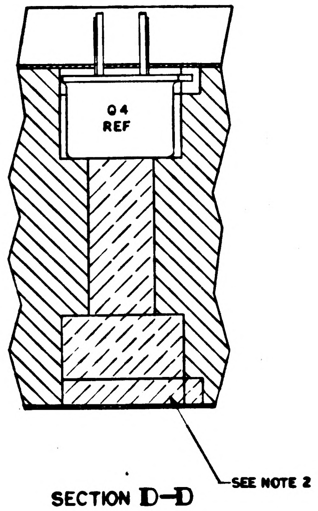
SECTION C-C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REF
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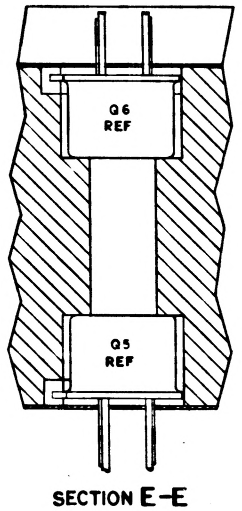
REF
SEE NOTE 2

SECTION D-D



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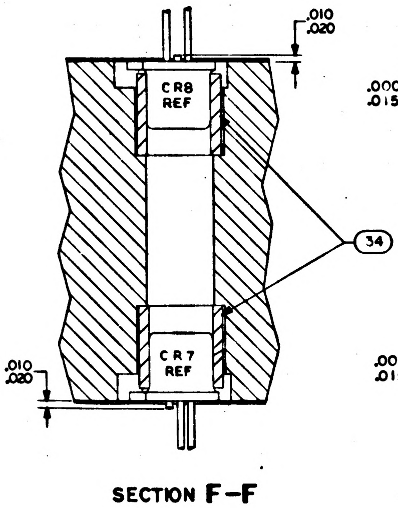
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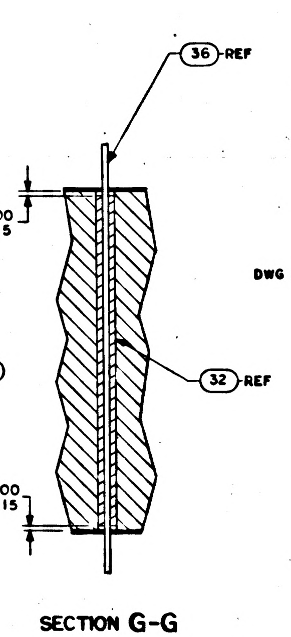
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.015
32 REF
.000
.015

SECTION G-G

☒	1010043	SCHEMATIC
20	1006782 — 4	CONTACT, WRAP
20	1006775	INSULATOR, WRA
2	1000093 — 3	SCREW, BOTTO
1	MS 35650 — 104	NUT, PLAIN, HE
1	1008020—1	WASHER, FLAT
2	1008024—1	WASHER, INSULA
AR	1006787—2	WIRE, ELEC, .02
AR	1006757—1	WIRE. ELEC, .010
4	1008025—1	INSULATOR BUS
1	1008021—1	INSULATOR, BUS
AR	1006766—21	INSULATION SLE
1	1010292—002	TERMINAL, FEED
3	1010376—1	TRANSISTOR
1	1010269	TRANSISTOR
2	1010357	TRANSISTOR
2	1010388 — 39	INDUCTOR, 0.01
2	1010394	DIODE
2	1010390	DIODE
2	1010255	DIODE
4	1010385	DIODE
2	1006777—14	CAP., FIXED CER
2	1006777—33	CAP. FIXED CER
1	1010393 —039	CAP., FIXED TAN
1	1006755 —73	CAP., FIXED TAN
2	1006777 —13	CAP.. FIXED CER
1	1006750 —15	RESISTOR, FIXED
2	1006750—44	RESISTOR, FIXED
2	1006750 —1	RESISTOR, FIXED
1	1006750—80	RESISTOR, FIXED
2	1010369—92	RESISTOR, FIXED
2	1006750—53	RESISTOR, FIXED
1	1006750 —18	RESISTOR, FIXED
4	1006750—67	RESISTOR, FIXED
4	1006750—81	RESISTOR, FIXED
2	010339 —80	RESISTOR, FIXED
1	1010364 —557	RESISTOR, F
1	1010373 —0	RESISTOR, VAR.
1	010364 — 835	RESISTOR, FIXED
1	010364 — 683	RESISTOR, FIXED
1	008055—1	NSULATOR,
1	008055- 2	NSULATOR,
1	007008	HEATSINK
QTY REQD	PART OR IDENTIFYING NO.	

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.03 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL —//—
HEAT TREATMENT —//—
FINAL FINISH —//—

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN R. Bell DATE 27
CHECKED E. P. Kingsbury
APPROVAL A. A. Test 24 Apr 62
APPROVAL
NASA APPROVAL
MIT APPROVAL 3 Jan 63

MANNED SP

BINARY CU
COMPUTE
ASS

SIZE J
SCALE 5/1
WT

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

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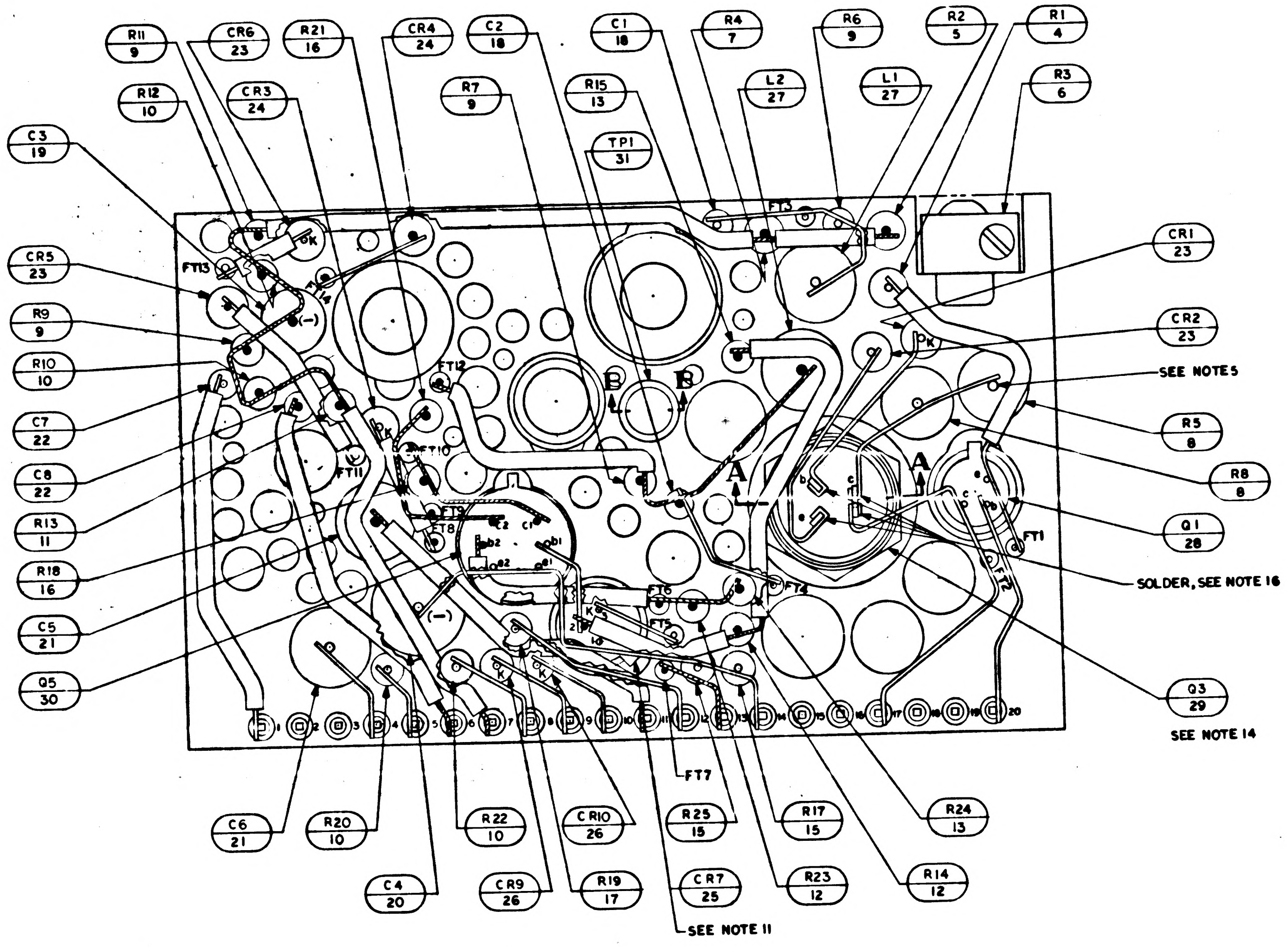
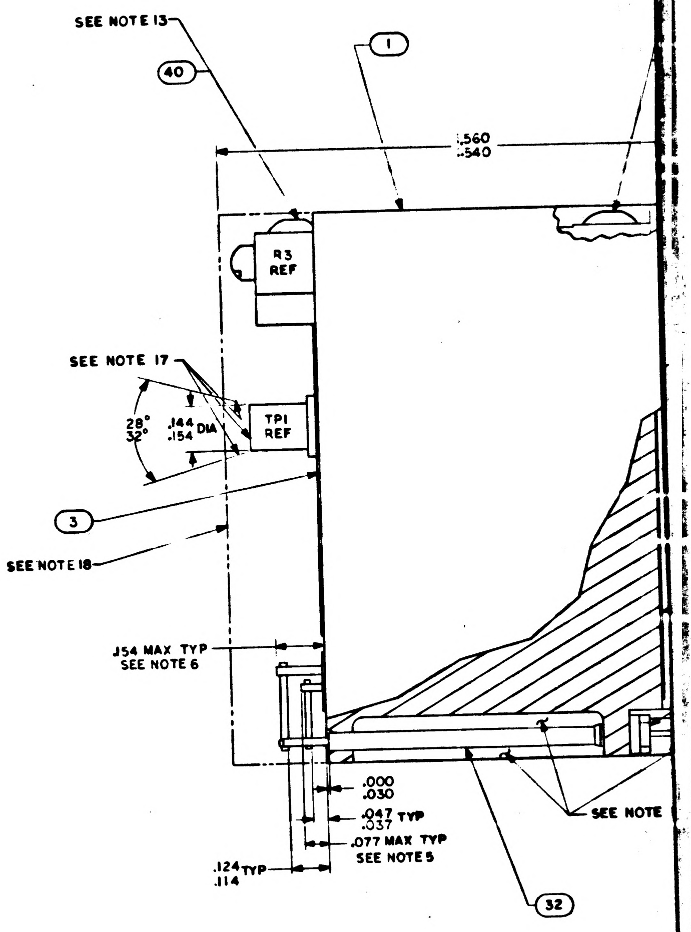
J 1002057


R11 9
CR6 23
R21 16
CR4 24
C2 18
C1 18
R4 7
R6 9
R2 5
R1 4
R3 6
R12 10
CR3 24
R7 9
R15 13
L2 27
L1 27
TP1 31
C3 19
CR5 23
R9 9
R10 10
C7 22
C8 22
R13 11
R18 16
C5 21
Q5 30
CR1 23
CR2 23
SEE NOTE 5
R5 8
R8 8
Q1 28
SOLDER, SEE NOTE 16
Q3 29
SEE NOTE 14
FT1
FT4
FT6
FT7
FT8
FT9
FT10
FT11
FT12
FT13
K
(-)
A
B
C6 21
R20 10
R22 10
CR10 26
R25 15
R17 15
R24 13
C4 20
CR9 26
R19 17
CR7 25
R23 12
R14 12
SEE NOTE 11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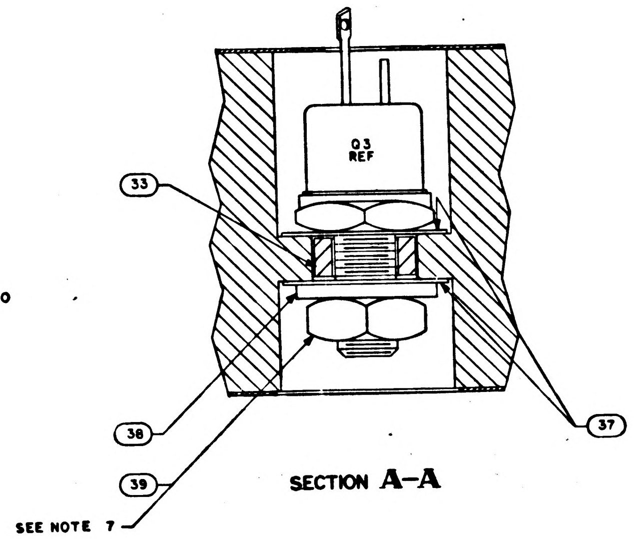
40
1
.560
.540
R3 REF
SEE NOTE 17
28°
32°
.144
.154 DIA
TP1 REF
3
SEE NOTE 18
.154 MAX TYP
SEE NOTE 6
.000
.030
.047
.037 TYP
.077 MAX TYP
SEE NOTE 5
.124
.114 TYP
SEE NOTE
32

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FILL HOLE SHOWN ON SECTION D-D PER ND 1002009. BEFORE LOADING MODULE
3. ALL CONNECTIONS TO BE MADE BY WELDING PER ND 1002005
4. WIRING STANDARDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003
5. ○ WITE DOT INDICATES LEAD TO BE CUT FOR FIRST LEVEL WIRING
6. ● BLACK DOT INDICATES LEAD TO BE CUT FOR SECOND LEVEL WIRING
7. APPLY SEALING COMPOUND MIL-S-40083 CLASS 31 TO FIND NO. 39
8. K INDICATES CATHODE SIDE OF DIODE
9. MARK .100/.060 HIGH WHITE PER ND 1002019
10. STAKE FIND NO.4 THRU FIND NO. 31, FIND NO. 33 AND FIND NO. 34 PER ND 1002009
11. ON CR7 CUT PIN NO.1, ON CR8 CUT PIN NO.2, .010/.020 ABOVE CASE
12. AR DENOTES AS REQUIRED
13. APPLY ZINC CHROMATE PRIMER MIL-P-8585 PER MIL-P-6808 (ASG) TO THREADS OF FIND NO.40
14. MOUNTING TORQUE FOR FIND NO. 29 10/15 INCH POUND
15. MARK .060/.100 RED PER ND 1002019
16. SOLDER PER ND 1002071
17. INDICATED AREAS TO BE FREE OF ENCAPSULATING COMPOUND
18. ENCAPSULATE MODULE PER ND 1002003 (BLACK POLYURETHANE FOAM)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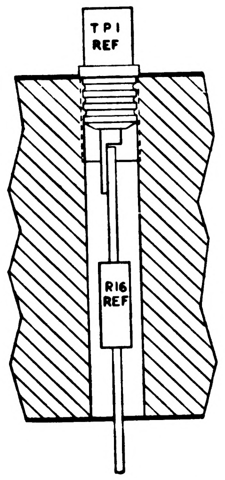
39
37
SEE NOTE 7

SECTION A-A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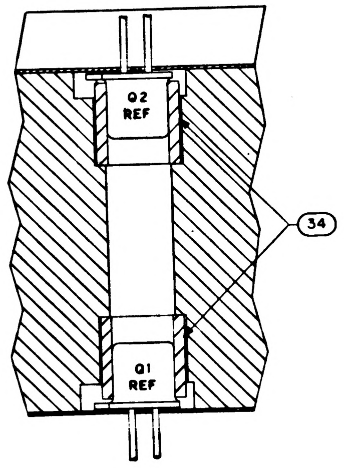
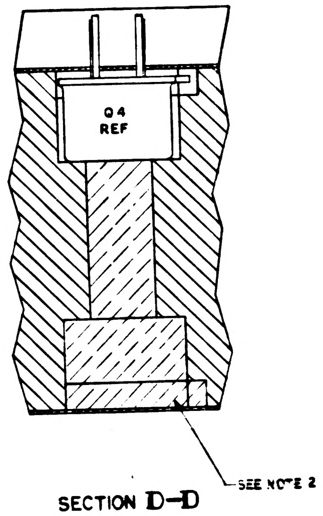
R16 REF

SECTION B-B


Q2 REF
Q1 REF
34

SECTION C-C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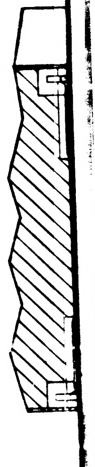
SEE NOTE 2

SECTION D-D



3H

INCHES
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007027
4 February 1964

Class A Release
TDRR 06084

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 4 inclusive.

APOLLO G&N Specification
PS-1007027
4 February 1964

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, for use in the APOLLO Guidance and Navigation Equipment.

4 Feb 64
MIT/IL DATE

2/4/64
NASA/MSC APPROVAL DATE

APOLLO G&N Specification
PS-1007027
4 February 1964

PROCUREMENT SPECIFICATION

FOR

BINARY CURRENT SWITCH,

COMPUTER OUTPUT ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Binary Current Switch, Computer Output Assembly, Drawing 1007027, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007027	Final Test Method for Binary Current Switch, Computer Output Assembly

DRAWINGS

APOLLO G&N

1007027	Binary Current Switch, Computer Output Assembly
1010043	Schematic, Binary Current Switch (For Reference Only)

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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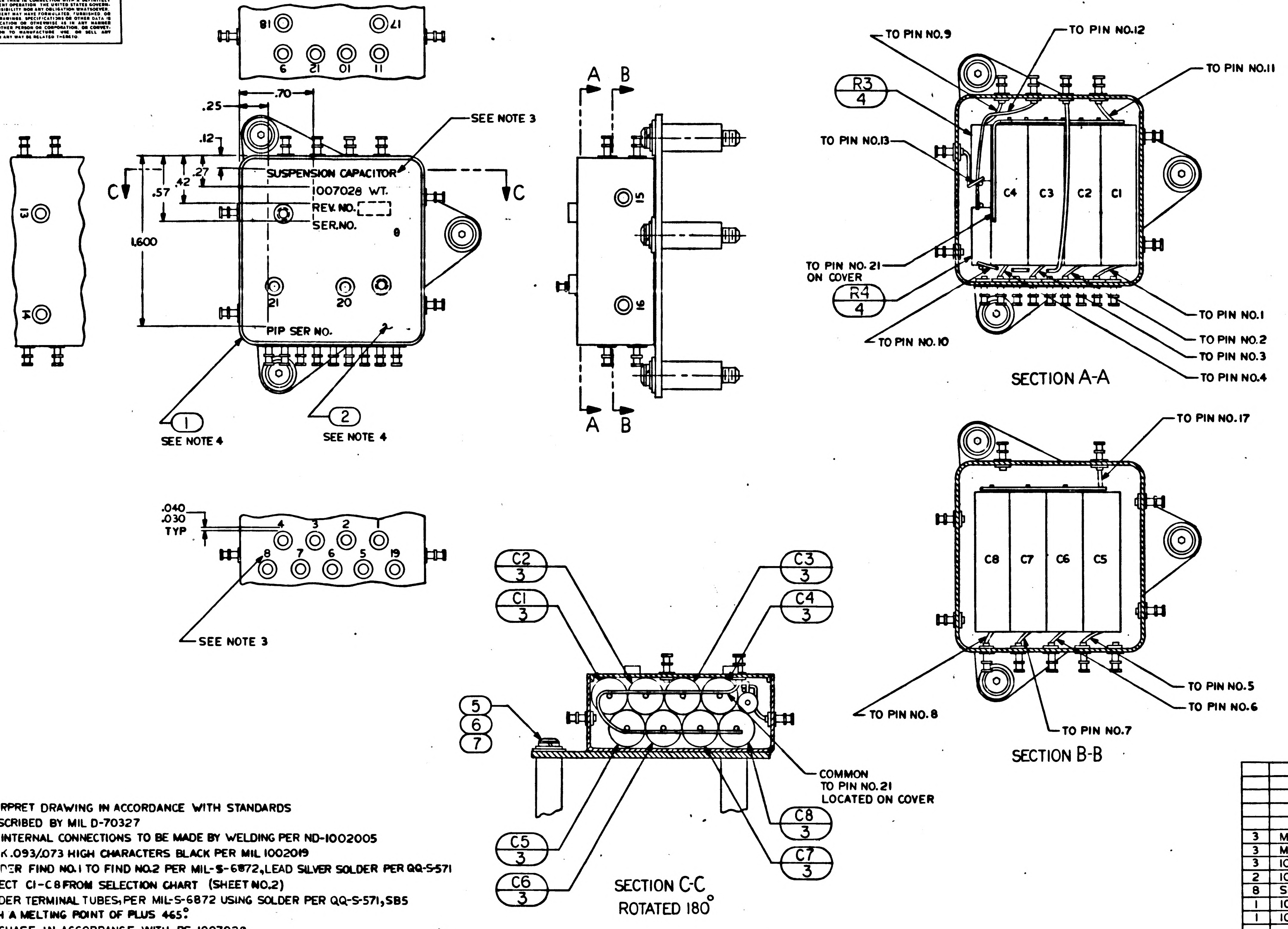
REVISIONS TORR 01262			
SYM	DESCRIPTION	DATE	APPROVAL
—	REDRAWN FROM 1007006	4-15-63	
A	REVISED PER TDRR01581	6-4-63	



SUSPENSION CAPACITOR
1007028 WT.
REV. NO.
SER. NO.
PIP SER NO.
SEE NOTE 3
SEE NOTE 4
SEE NOTE 4
SEE NOTE 3
.25
.70
.12
.27
.42
.57
1.600
.040
.030
TYP
C
C
A
B
A
B
TO PIN NO.9
TO PIN NO.12
TO PIN NO.11
TO PIN NO.13
TO PIN NO. 21 ON COVER
TO PIN NO.10
TO PIN NO.1
TO PIN NO.2
TO PIN NO.3
TO PIN NO.4
R3 4
R4 4
C4
C3
C2
C1
SECTION A-A
TO PIN NO.17
C8
C7
C6
C5
TO PIN NO.8
TO PIN NO.7
TO PIN NO.5
TO PIN NO.6
SECTION B-B
C2 3
C1 3
C3 3
C4 3
5
6
7
C5 3
C6 3
C8 3
C7 3
COMMON TO PIN NO.21 LOCATED ON COVER
SECTION C-C ROTATED 180°

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D-70327
2. ALL INTERNAL CONNECTIONS TO BE MADE BY WELDING PER ND-1002005
3. MARK .093/.073 HIGH CHARACTERS BLACK PER MIL 1002019
4. SOLDER FIND NO.1 TO FIND NO.2 PER MIL-S-6872, LEAD SILVER SOLDER PER QQ-S-571
5. SELECT C1-C8 FROM SELECTION CHART (SHEET NO.2)
6. SOLDER TERMINAL TUBES, PER MIL-S-6872 USING SOLDER PER QQ-S-571, SB5 WITH A MELTING POINT OF PLUS 465°
7. PURCHASE IN ACCORDANCE WITH PS 1007028

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS35338-78	WASHER, LOCK	7
3	MS15795-303	WASHER, FLAT	6
3	1008002-2	SCREW, EXT REL BODY	5
2	1010377-112	RESISTOR, FIXED, W W, 1Ω, ±0.1%	4
8	SEE NOTE 5	CAPACITOR	3
1	1007001	SUSPENSION COVER ASSY	2
1	1007002	SUSPENSION BOX ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000013	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT
DRAWN L. J. Berkeley DATE 3-26-63
CHECKED
APPROVAL 6-9-63
APPROVAL C. Smith 5-9-63
NASA APPROVAL 5/15/63
MIT APPROVAL 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NETWORK SUB ASSY
(SUSPENSION)

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007028
SCALE 2/1
WT
SHEET 1 OF 2

1007028

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

Apollo G&N Specification
PS-1007028
8 May 1963
Class A Release
TDRR 01218

PROCUREMENT SPECIFICATION
SUSPENSION CAPACITOR ASSEMBLY

Record of Revisions

Revision Letter	TDRR No.	Pages Revised	Approval		Date
			MIT	NASA	
A	02063	3,6,9			7/17/63

This specification consists of pages i through iv and 1 to 10 inclusive.

SUSPENSION CAPACITOR ASSEMBLY

The purpose of this document is to establish the manufacturing and test requirements for procurement of the Suspension Capacitor Assembly for use in the APOLLO Guidance and Navigation Equipment program.

MIT INSTRUMENTATION LABORATORY

NASA/MSC APPROVAL

PROCUREMENT SPECIFICATION

SUSPENSION CAPACITOR ASSEMBLY

TABLE OF CONTENTS

Section	Title	Page
1	SCOPE	1
2	APPLICABLE DOCUMENTS	1
3	REQUIREMENTS	3
4	QUALITY ASSURANCE PROVISIONS	6
5	PREPARATION FOR DELIVERY	9
6	NOTES	10

PROCUREMENT SPECIFICATION
SUSPENSION CAPACITOR ASSEMBLY

1. SCOPE

1.1 This specification establishes the requirements for the procurement of a suspension capacitor assembly, hereinafter called suspension capacitor.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on the date of invitation for bids form a part of this specification to the extent specified herein.

SPECIFICATIONS

Military

MIL-P-116	Preservation, Methods of
MIL-E-17555	Electronic and Electrical Equipment and Associated Repair Parts, Preparation for Delivery of
MIL-C-19978	Capacitors, Fixed, Plastic (or Paper-Plastic) Dielectric (Hermetically Sealed in Metallic, Ceramic or Glass Cases), General Specification for

NASA Apollo G&N

G&ND-1002045	Qualification Specification, Capacitors, Nonelectrolytic
G&ND-1015404	General Specification Configuration, Process and Quality Control Requirements for Suppliers of High Reliability Articles for Use in Spacecraft and Supporting Equipment.

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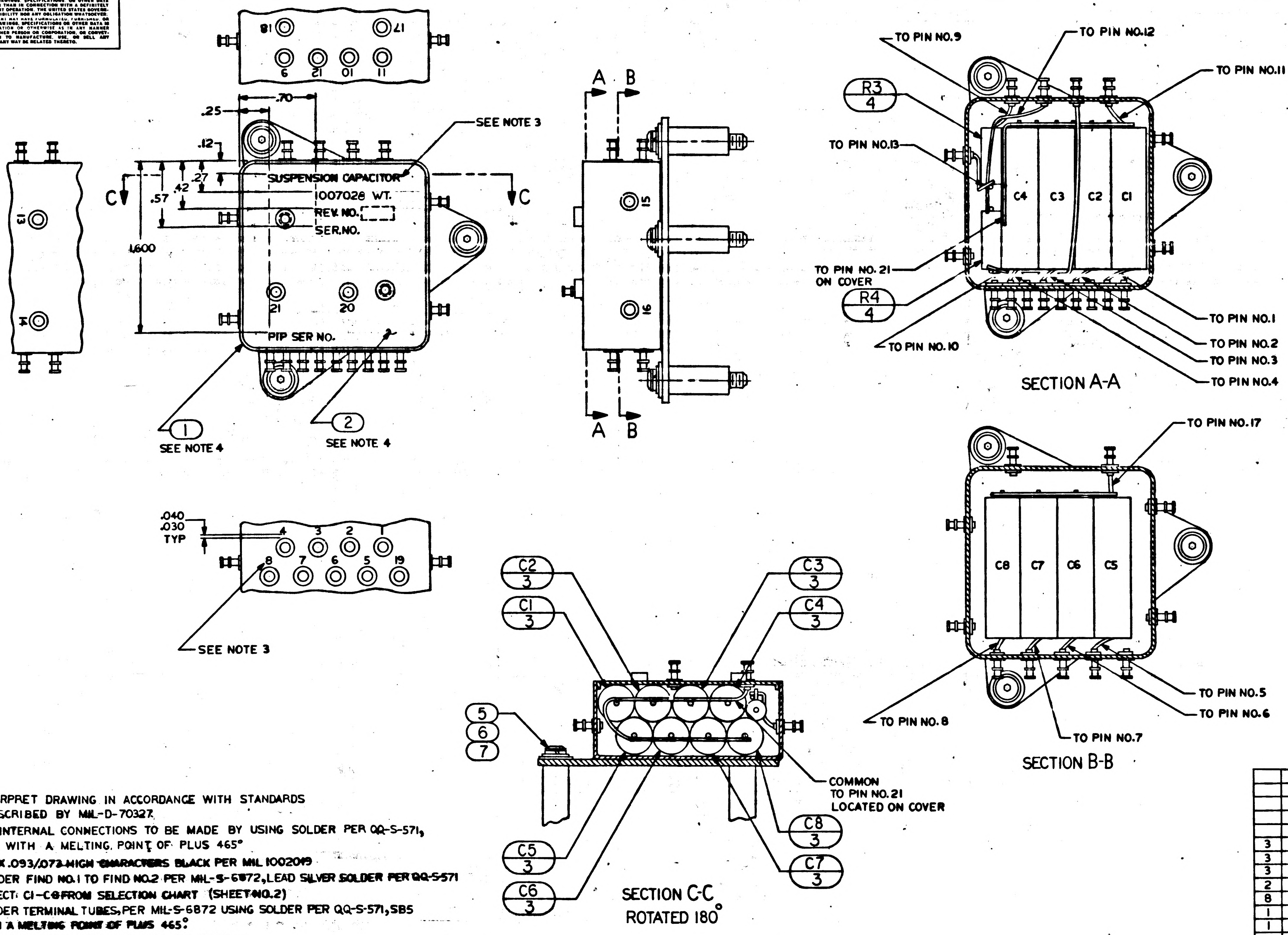
REVISIONS TDRR 01262

SYM	DESCRIPTION	DATE	APPROVAL
—	REDRAWN FROM 1007006	4-15-63	
A	REVISED PER TDRR01581	6-14-63	
B	REVISED PER TDRR 01922	6-26-63	J.J.A. WK



18
17
9
21
01
11
.25
.70
.12
.27
.42
.57
1.600
C
C
SEE NOTE 3
SUSPENSION CAPACITOR
1007028 WT.
REV. NO.
SER.NO.
13
14
21
20
PIP SER NO.
1
SEE NOTE 4
2
SEE NOTE 4
A
B
A
B
15
16
.040
.030
TYP
4
3
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19
SEE NOTE 3
TO PIN NO.9
TO PIN NO.12
TO PIN NO.11
R3
4
TO PIN NO.13
C4
C3
C2
C1
TO PIN NO. 21
ON COVER
R4
4
TO PIN NO.10
TO PIN NO.1
TO PIN NO.2
TO PIN NO.3
TO PIN NO.4
SECTION A-A
TO PIN NO.17
C8
C7
C6
C5
TO PIN NO.8
TO PIN NO.7
TO PIN NO.5
TO PIN NO.6
SECTION B-B
C2
3
C1
3
C3
3
C4
3
5
6
7
C5
3
C6
3
C8
3
C7
3
COMMON
TO PIN NO.21
LOCATED ON COVER
SECTION C-C
ROTATED 180°

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL INTERNAL CONNECTIONS TO BE MADE BY USING SOLDER PER QQ-S-571, SB5 WITH A MELTING POINT OF PLUS 465°
3. MARK .093/.072 HIGH CHARACTERS BLACK PER MIL 1002019
4. SOLDER FIND NO.1 TO FIND NO.2 PER MIL-S-6872, LEAD SILVER SOLDER PER QQ-S-571
5. SELECT C1-C8 FROM SELECTION CHART (SHEET NO.2)
6. SOLDER TERMINAL TUBES, PER MIL-S-6872 USING SOLDER PER QQ-S-571, SB5 WITH A MELTING POINT OF PLUS 465°.
7. PURCHASE IN ACCORDANCE WITH PS 1007028

MASTER

LIST OF MATERIALS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS35338-78	WASHER, LOCK	7
3	MS15795-303	WASHER, FLAT	6
3	1008002-2	SCREW, EXT REL BODY	5
2	1010377-112	RESISTOR, FIXED, W W, 1Ω, ± 10%	4
8	SEE NOTE 5	CAPACITOR	3
1	1007001	SUSPENSION COVER ASSY	2
1	1007002	SUSPENSION BOX ASSY	1

NEXT ASSY	USED ON
1000013	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN L. T. Berkeley DATE 3-26-63
CHECKED
APPROVAL 5-9-63
APPROVAL L. C. Smith 5-9-63
NASA APPROVAL 5/15/63
MIT APPROVAL W Kupfer 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NETWORK SUB ASSY
(SUSPENSION)

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007028
SCALE 2/1
WT
SHEET 1 OF 2

1007028 B

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

Apollo G&N Specification
PS-1007028
8 May 1963
Class A Release
TDRR 01218

PROCUREMENT SPECIFICATION
SUSPENSION CAPACITOR ASSEMBLY

Record of Revisions

Revision Letter	TDRR No.	Pages Revised	Approval		Date
			MIT	NASA	
A	02063	3,6,9	[illegible]	[illegible]	7/17/63
B	02113	4,8	WK	[illegible]	22 JULY 63

This specification consists of pages i through iv and 1 to 10 inclusive.

SUSPENSION CAPACITOR ASSEMBLY

The purpose of this document is to establish the manufacturing and test requirements for procurement of the Suspension Capacitor Assembly for use in the APOLLO Guidance and Navigation Equipment program.

MIT INSTRUMENTATION LABORATORY

NASA/MSC APPROVAL

PROCUREMENT SPECIFICATION

SUSPENSION CAPACITOR ASSEMBLY

TABLE OF CONTENTS

Section	Title	Page
1	SCOPE	1
2	APPLICABLE DOCUMENTS	1
3	REQUIREMENTS	2
4	QUALITY ASSURANCE PROVISIONS	6
5	PREPARATION FOR DELIVERY	9
6	NOTES	10

PROCUREMENT SPECIFICATION
SUSPENSION CAPACITOR ASSEMBLY

1. SCOPE

1.1 This specification establishes the requirements for the procurement of a suspension capacitor assembly, hereinafter called suspension capacitor.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on the date of invitation for bids form a part of this specification to the extent specified herein.

SPECIFICATIONS

Military

MIL-P-116	Preservation, Methods of
MIL-E-17555	Electronic and Electrical Equipment and Associated Repair Parts, Preparation for Delivery of
MIL-C-19978	Capacitors, Fixed, Plastic (or Paper-Plastic) Dielectric (Hermetically Sealed in Metallic, Ceramic or Glass Cases), General Specification for

NASA Apollo G&N

G&ND-1002045	Qualification Specification, Capacitors, Nonelectrolytic
G&ND-1015404	General Specification Configuration, Process and Quality Control Requirements for Suppliers of High Reliability Articles for Use in Spacecraft and Supporting Equipment.

Apollo G&N Specification
PS-1007028
8 May 1963
Class A Release
TDRR 01218

PROCUREMENT SPECIFICATION
SUSPENSION CAPACITOR ASSEMBLY

Record of Revisions

Revision Letter	TDRR No.	Pages Revised	Approval		Date
			MIT	NASA	
A	02063	3,6,9			7/17/63
B	02113	4,8	WK		22 JULY 63

This specification consists of pages i through iv and 1 to 10 inclusive.

3. REQUIREMENTS

3.1 GENERAL

3.1.1 Qualification Sample. When specified by the procuring activity, representative samples of the suspension capacitors shall be manufactured using the methods and procedures proposed for the production lot. These shall be submitted to the NASA inspector for qualification tests at an activity designated in the contract or by the procuring activity.

These qualification tests are conducted to determine whether or not the suspension capacitors are produced in compliance with the requirements of the contract, specification, and drawings.

Further production of the item by the contractor prior to approval of the procuring activity or the completion of the qualification tests shall be at the contractor's risk.

The qualification tests shall be conducted in accordance with the procedure specified in Section 4.

3.1.2 Requalification Samples. When specified by the procuring activity, the contractor shall submit one or more suspension capacitors to a designated testing activity to determine compliance of the sample (s) with the requirements of the contract, specifications, and drawings. The suspension capacitors constituting the sample shall be selected from production lots by the procuring activity.

3.1.3 Electrical, Mechanical. The suspension capacitors shall meet the electrical or mechanical performance requirements specified in Specification MIL-C-19978, Characteristic P, unless otherwise specified herein or on the applicable drawings.

3.1.3.1 Continuity Circuit continuity shall be continuous per the applicable schematic drawing. Test per 4.2.1.2.2.

3.1.3.2 Dielectric Breakdown The suspension capacitors shall withstand a 200 vdc test voltage and shall thereafter exhibit no evidence of damage Test per 4.2.1.2.3.

3.1.3.3 Insulation Resistance. The insulation resistance of the suspension capacitors shall be 200K megohms minimum. Test per 4.2.1.2.4.

3.1.3.4 Dissipation Factor The dissipation factor shall be less than 0.1 percent. Test per 4.2.1.2.5.

3.1.3.5 Capacitance. The capacitance of the suspension capacitors shall fall within a tolerance of ±0.5 percent about the nominal value with a 0.5 percent maximum spread of capacitance in matched sets of 8. Test per 4.2.1.2.6.

3.1.3.6 Hermetic Seal Units shall be capable of passing Method 112, Test Condition A, of MIL STD 202 except that either mineral or silicon fluid exhibiting a viscosity of from 4 to 11 centistokes is acceptable and that a maximum bath temperature of 65°C rather than 125°C shall be used.

Before Potting:

a) Fifty hours as individual units at 149° ±5°F at rated voltage.

b) One minute at 77° ±5°F at twice rated voltage.

After Potting:

a) One hundred fifty hours as matched sets of 8 at 149° ±5°F at rated voltage.

b) One minute at 77° ±5°F at twice rated voltage.

4.2.1.2.2 Continuity. Continuity and resistance shall be checked to insure accordance with drawing 1007028.

4.2.1.2.3 Dielectric Breakdown. The suspension capacitors shall be subjected to test as specified in the paragraph titled Dielectric Withstanding Voltage of Specification MIL-C-19978, utilizing a 200 vdc test voltage. They shall not exhibit momentary or intermittent arcing or other indications of breakdown, nor shall there be any visible evidence of damage.

4.2.1.2.4 Insulation Resistance. The insulation resistance of the suspension capacitors shall be tested as specified in the paragraph titled Insulation Resistance of Specification MIL-C-19978, characteristic P. Insulation resistance shall be 200K megohms minimum at 77° ±5°F.

4.2.1.2.5 Dissipation Factor. The dissipation factor of the suspension capacitors shall be tested at 77° ±5°F as specified in the paragraph titled Dissipation Factor of Specification MIL-C-19978, characteristic P, and shall be less than 0.1 percent.

4.2.1.2.6 Capacitance. Polystyrene capacitors in matched sets of 8: A tolerance of ±0.5 percent about the nominal value as specified on drawing 1007028 with a 0.5 percent maximum spread of capacitance in the matched set of capacitors, capacitance to be measured at 112° ±2°F. The temperature coefficient shall be -67 ±11 ppm/°F when tested at 102°F, 112°F, and 122°F.

4.2.2 Qualification Tests. Qualification tests shall be accomplished by the supplier or other activity pursuant to the recommendations of NASA or the purchaser. Initial qualification tests will be conducted after the award of the contract to determine that the production will meet the requirements of this specification. Failure of the suspension capacitors to meet these requirements may result in disqualification of the supplier as determined by NASA or the purchaser. Requalification will be required at the discretion of NASA or the purchaser in the event that, (a) the supplier has modified the item; (b) the supplier has instituted a change in the materials used or in his processing, and (c) the specification requirements for the item have been amended or revised sufficiently to affect the character of the item. Qualification and requalification tests shall be performed in accordance with Specification G&ND-1002045 with the following exceptions or additions:

4.2.2.1 Sample Size. Sample size shall be amended to 5 samples minimum, tested at rated dielectric stress. Specimens submitted for these tests shall have been produced using suppliers normal production tooling, materials and processes, and shall have met the acceptance test requirements for 4.2.1 and the applicable drawing.

4.2.2.2 Temperature Cycling. The temperature cycling test shall be amended as follows: Samples shall be tested in accordance with Standard MIL-STD-202, method 102A, test condition C, except temperature shall be as follows:

Step 1. $+40^{\circ}F\,^{+0^{\circ}F}_{-3^{\circ}F}$

Step 2. $+75^{\circ}F \pm 10^{\circ}F$

Step 3. $+150^{\circ}F\,^{+3^{\circ}F}_{-0^{\circ}F}$

Step 4. $+75^{\circ}F \pm 10^{\circ}F$

During this test, temperature coefficient shall be monitored and shall be -67 +11 ppm/°F. Thermal stability shall be reached in determining the temperature coefficient. After test, samples shall meet the acceptance test requirements of 4.2.1.

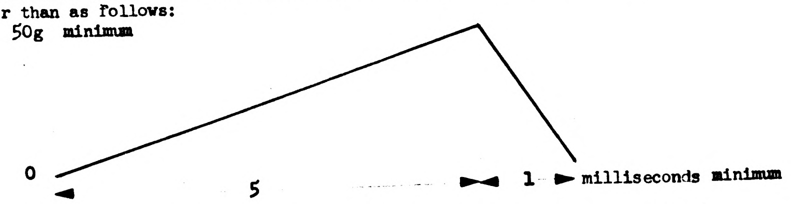
4.2.2.3 Pressure. The pressure test shall be conducted after the Temperature Cycling test but before Vibration test.

4.2.2.3.1 Low Pressure. Samples shall be subjected to a low pressure of 3.0 ±1/4 psia for 100 hours at 40° ±5°F.

4.2.2.3.2 High Pressure. Samples shall be subjected to a high pressure of 60 ±3 psia for 24 hours at 75° ±5°F.

4.2.2.3.3 Checks After each pressure test, samples must meet the acceptance test requirements of 4.2.1.

4.2.2.4 Shock. The shock test shall be conducted after Vibration test but before Life test. Subject deenergized samples to one shock in each direction along each of three orthogonal axes (6 shocks) equal to or greater than as follows:



After Shock test, samples shall meet the acceptance test requirements of 4.2.1.

4.2.2.5 Disposition of Samples. Samples used in test shall not be shipped to the purchaser in compliance with a procurement order. Samples shall be retained for comparison with future production parts.

4.2.3 Reliability. The reliability requirements contained in Section 3 of this specification are design objectives. Unless specifically called for in the procurement contract, it shall not be necessary for the supplier to demonstrate his compliance with requirement. The supplier will furnish the purchaser or NASA such data as he may have available for establishing the current reliability of these units. Additional data shall be accumulated to as great a degree as possible from the tests specified herein or any other tests the supplier may conduct which will tend to support or verify attainment of the reliability objectives specified.

5. PREPARATION FOR DELIVERY

5.1 PRESERVATION AND PACKAGING. The suspension capacitors shall be preserved and packaged in accordance with Specification MIL-E-17555, level B, as specified in the contract or purchase order.

5.1.1 Unit Protection. The suspension capacitors shall be individually afforded unit protection in accordance with method III of Specification MIL-P-116. In addition, equipment packaged for level B protection shall be sealed against water and dust by means of suitable wrapping.

5.1.2 Vibration and Shock, Shipping Condition. Equipment packaging for shipment shall provide adequate protection from all anticipated shipping environment.

5.1.3 Shipping Temperature Stabilization. The temperature of the environment in which the suspension capacitors are shipped shall be stabilized between 40° and 150°F at all times during shipment.

5.2 MARKING. In addition to any special marking required by the contractor or order, the marking of unit, interior packages, and exterior shipping containers shall be in accordance with level B of Specification MIL-E-17555.

6. NOTES

6.1 TERMINOLOGY

6.1.1 Environmental Terms. Terms and descriptions applicable to the environmental requirements of this specification are set forth in Standard MIL-STD-202.

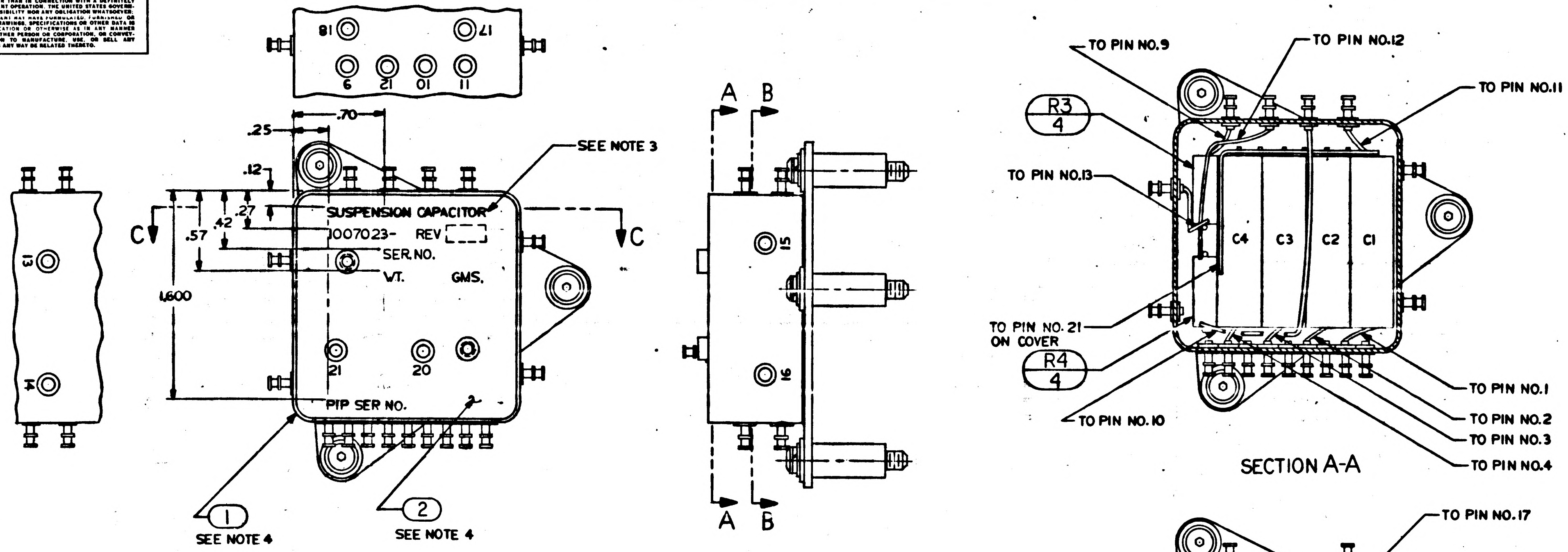
6.1.2 Service Life. Service life denotes the entire useful life of the equipment subsequent to the date of acceptance, including periods of storage in depot or elsewhere.

NOTICE: When NASA drawings, specifications, or other data are used for any purpose other than in connection with a definitely related NASA procurement operation, NASA thereby incurs no responsibility nor any obligation whatsoever, and the fact that NASA may have formulated, furnished, or in any way supplied the said drawings, specifications or any other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related therein.

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 01262

SYM	DESCRIPTION	DATE	APPROVAL
—	REDRAWN FROM 1007006	4-15-63	
A	REVISED PER TDRR01581	6-14-63	
B	REVISED PER TDRR 01922	6-26-63	J.J.A. WK
C	REVISED PER TDRR 02114	7-22-63	J.C.A. WK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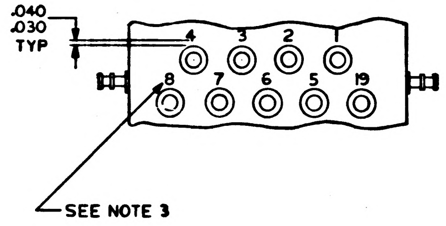
1.600
SEE NOTE 3
C
C
SUSPENSION CAPACITOR
1007023- REV
SER. NO.
WT.
GMS.
13
14
21
20
PIP SER NO.
1
SEE NOTE 4
2
SEE NOTE 4
A
B
A
B
15
16
TO PIN NO.9
TO PIN NO.12
TO PIN NO.11
R3
4
TO PIN NO.13
C4
C3
C2
C1
TO PIN NO. 21 ON COVER
R4
4
TO PIN NO.10
TO PIN NO.1
TO PIN NO.2
TO PIN NO.3
TO PIN NO.4

SECTION A-A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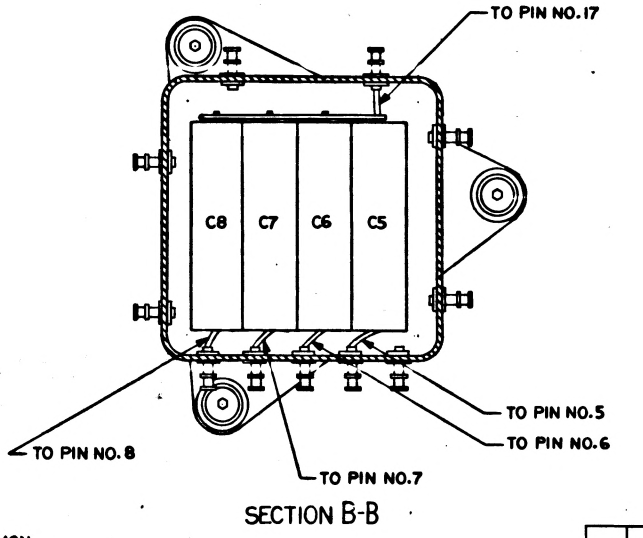
19
SEE NOTE 3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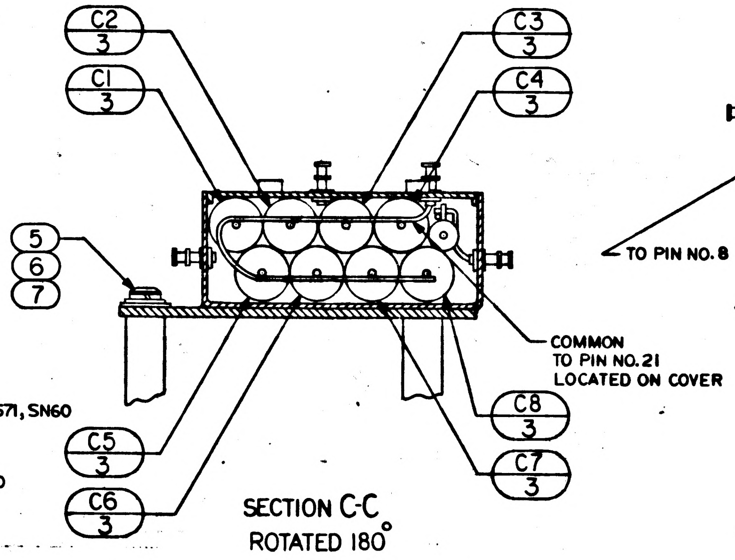
C8
C7
C6
C5
TO PIN NO.5
TO PIN NO.6
TO PIN NO.8
TO PIN NO.7

SECTION B-B


C2
3
C1
3
C3
3
C4
3
5
6
7
COMMON TO PIN NO.21 LOCATED ON COVER
C8
3
C7
3
C5
3
C6
3

SECTION C-C ROTATED 180°

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL INTERNAL CONNECTIONS TO BE MADE PER-MIL-S 6872, USING SOLDER PER QQ-S-571, SN60 SB5 WITH A MELTING POINT OF PLUS 465°
3. ~~MARK .093/.073 HIGH CHARACTERS BLACK PER MIL 1002019~~
4. SOLDER FIND NO.1 TO FIND NO.2 PER MIL-S-6872, USING SOLDER PER QQ-S-571, SN60
5. ~~SELECT C1-C8 FROM SELECTION CHART (SHEET NO.2)~~
6. SOLDER COMPONENT LEADS TO TERMINAL TUBES, PER MIL-S-6872 USING SOLDER PER QQ-S-571, SB5
7. PURCHASE IN ACCORDANCE WITH PS 1007028

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS35338-78	WASHER, LOCK	7
3	MS15795-303	WASHER, FLAT	6
3	1008002-2	SCREW, EXT REL BODY	5
2	1010377-112	RESISTOR, FIXED, W W, 1Ω, ± 10%	4
8	SEE NOTE 5	CAPACITOR	3
1	1007001	SUSPENSION COVER ASSY	2
1	1007002	SUSPENSION BOX ASSY	1

LIST OF MATERIALS

1000013	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± ___ DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
HEAT TREATMENT ___
FINAL FINISH ___

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT

DRAWN L. J. Eckelaz DATE 3-26-63
CHECKED ___
APPROVAL 5-9-63
APPROVAL 5-9-63
NASA APPROVAL 5/15/63
MIT APPROVAL 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NETWORK SUB ASSY
(SUSPENSION)

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007028
SCALE 2/1
WT
SHEET 1 OF 2

1007028 C

MASTER

INCHES
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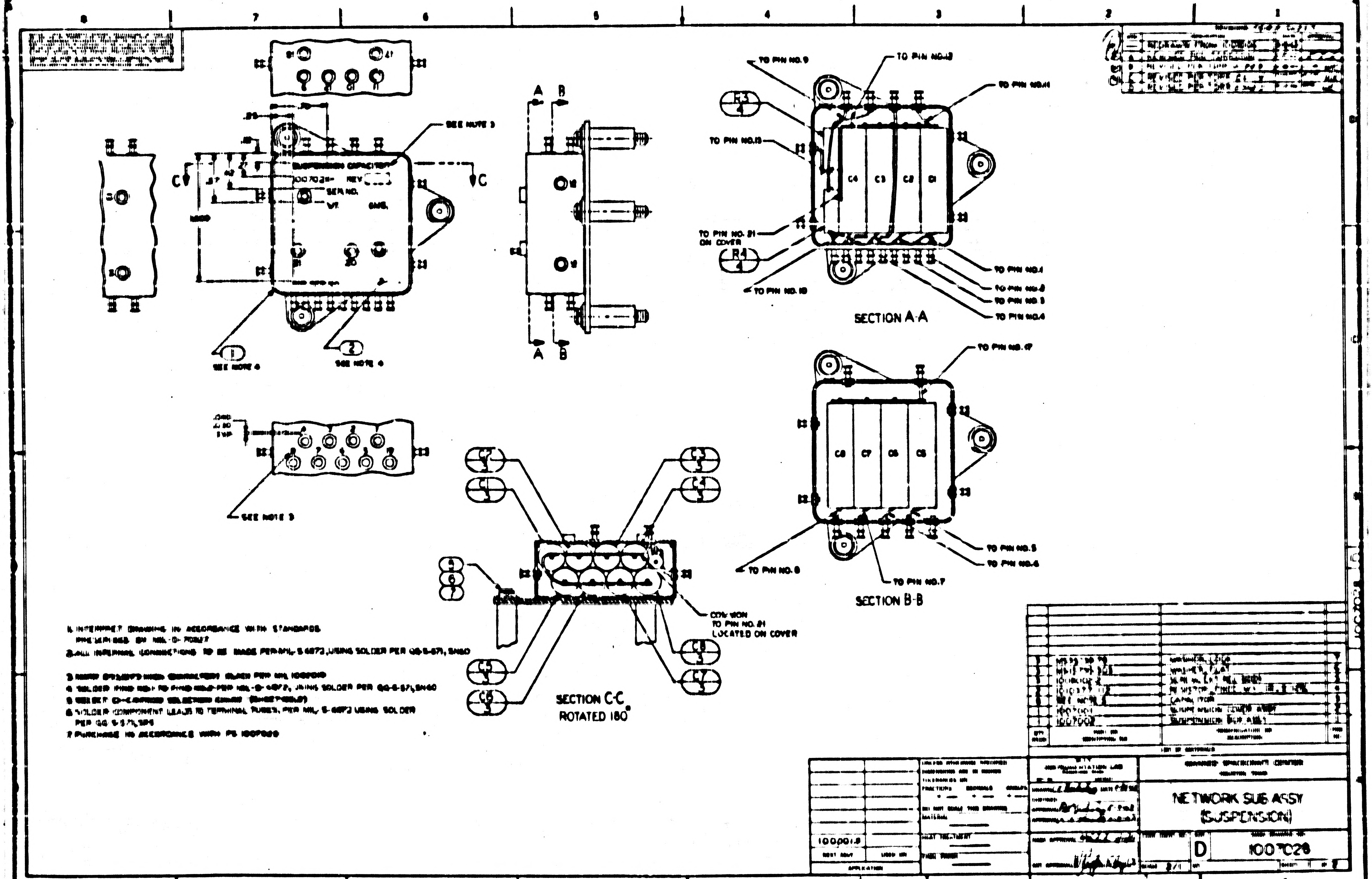
PHOTOGRAPHIC SCALE ONLY


SEE NOTE 3
SUSPENSION CAPACITOR
1007028 REV
SER NO.
WT
C
C
A
B
A
B
SEE NOTE 4
SEE NOTE 4
SEE NOTE 3
TO PIN NO. 9
TO PIN NO. 12
TO PIN NO. 11
TO PIN NO. 13
TO PIN NO. 21 ON COVER
R3
R4
C4
C3
C2
C1
TO PIN NO. 10
TO PIN NO. 1
TO PIN NO. 2
TO PIN NO. 3
TO PIN NO. 4
SECTION A-A
TO PIN NO. 17
C8
C7
C6
C5
TO PIN NO. 5
TO PIN NO. 6
TO PIN NO. 8
TO PIN NO. 7
SECTION B-B
COMMON TO PIN NO. 21 LOCATED ON COVER
SECTION C-C ROTATED 180°
INCHES
PHOTOGRAPHIC SCALE ONLY

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL INTERNAL CONNECTIONS TO BE MADE PER MIL-S-6872, USING SOLDER PER QQ-S-571, SN60
3. [illegible]
4. SOLDER PINS [illegible] PER MIL-S-6872, USING SOLDER PER QQ-S-571, SN60
5. SELECT [illegible]
6. SOLDER COMPONENT LEADS TO TERMINAL TUBES, PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60
7. PURCHASE IN ACCORDANCE WITH PS [illegible]

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	ITEM NO.
[illegible]	MS35338	WASHER, LOCK	7
[illegible]	MS15795	WASHER, FLAT	[illegible]
[illegible]	1010100	NUT [illegible]	[illegible]
[illegible]	1010377	RESISTOR, FIXED [illegible]	4
[illegible]	[illegible]	CAPACITOR	3
[illegible]	1007001	SUSPENSION COVER ASSY	2
[illegible]	1007002	SUSPENSION SUB ASSY	1

LIST OF MATERIALS

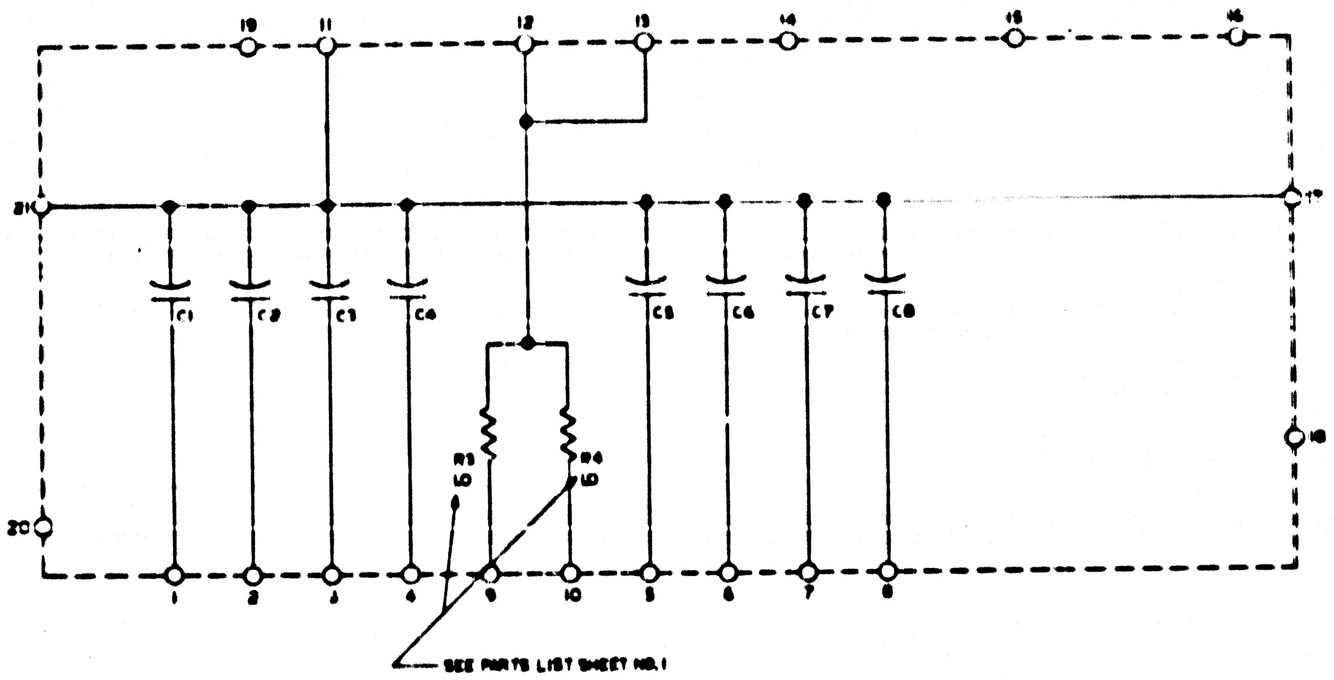
NEXT ASSY	USED ON
1000018	

APPLICATION

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NETWORK SUB ASSY
(SUSPENSION)

SIZE D
DRAWING NO. 1007028
SCALE 2/1
SHEET 1 OF 2



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. RESISTOR VALUES ARE EXPRESSED IN OHMS.
3. SYMBOL DESIGNATIONS SHOWN FOR REF ONLY
4. DC WORKING VOLTAGE 100 VOLTS
5. A SUITABLE SOLDER STOP SHALL BE USED INSIDE THE CAN TO INSURE THAT THE SOLDER WILL CAUSE NO ELECTRICAL SHORTS OF THE INTERNAL COMPONENTS AND A SERVICE LOOP SHALL BE UTILIZED INSIDE THE CAN SO AS NOT TO INTRODUCE ANY STRAIN ON THE INTERNAL LEADS. LEADS SHALL BE SUFFICIENTLY STRIPPED AND CLEANED TO ASSURE A GOOD SOLDER JOINT IN THE TUBES OF THE TERMINALS.
6. EXTERNAL FOIL OF CAPACITORS SHALL BE USED FOR COMMON LEAD.

C1 - C8 SELECTION CHART

1007028	-1	0.0631 uf	
	-2	0.0638 uf	
	-3	0.0645 uf	
	-4	0.0652 uf	
	-5	0.0659 uf	
	-6	0.0666 uf	
	-7	0.0673 uf	
	-8	0.0680 uf	
	-9	0.0687 uf	
	-10	0.0694 uf	
	-11	0.0701 uf	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	ITEM NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1000013	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

NASA APPROVAL

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NETWORK SUB ASSY
(SUSPENSION)

SIZE D
1007028
SHEET 2 OF 2

PHOTOGRAPHIC SCALE ONLY

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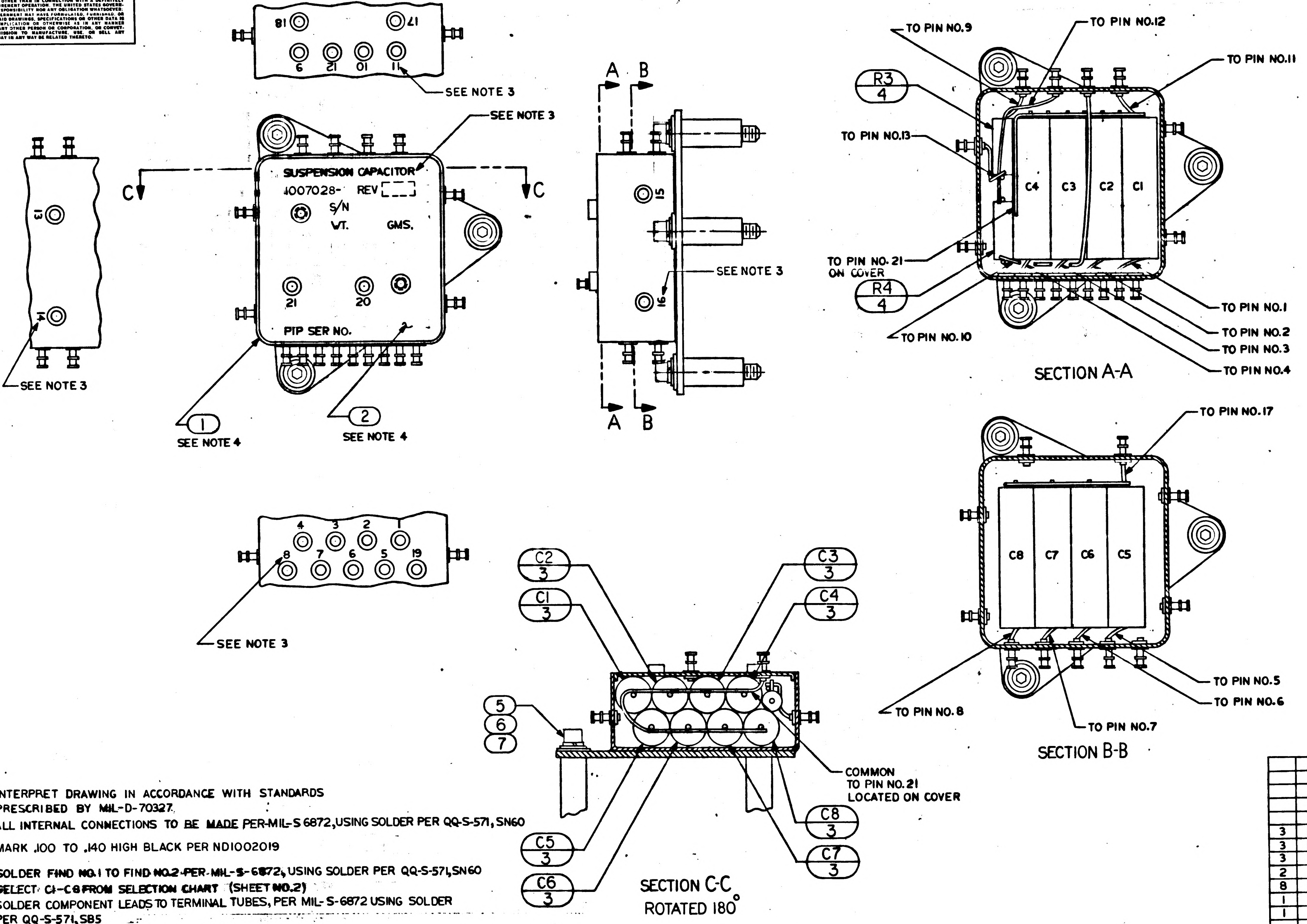
REVISIONS TDRR 01262

SYM	DESCRIPTION	DATE	APPROVAL
—	REDRAWN FROM 1007006	4-15-63	
A	REVISED PER TDRR01581	6-14-63	
B	REVISED PER TDRR 01922	6-26-63	J.J.M. WK
C	REVISED PER TDRR 02114	7-22-63	WK
D	REVISED PER TDRR 03087	9-12-63	RPK WK
E	REVISED PER TDRR 05090	10 DEC 63	WK



8
7
6
5
4
3
2
1
D
C
B
A
18
17
9
12
10
11
SEE NOTE 3
SEE NOTE 3
SUSPENSION CAPACITOR
1007028-
REV
S/N
WT.
GMS.
21
20
PIP SER NO.
C
C
13
14
SEE NOTE 3
①
SEE NOTE 4
②
SEE NOTE 4
A
B
15
16
SEE NOTE 3
A
B
TO PIN NO.9
TO PIN NO.12
TO PIN NO.11
R3
4
TO PIN NO.13
C4
C3
C2
C1
TO PIN NO. 21
ON COVER
R4
4
TO PIN NO. 10
TO PIN NO.1
TO PIN NO.2
TO PIN NO.3
TO PIN NO.4
SECTION A-A
TO PIN NO.17
C8
C7
C6
C5
TO PIN NO.5
TO PIN NO.6
TO PIN NO.8
TO PIN NO.7
SECTION B-B
4
3
2
1
8
7
6
5
19
SEE NOTE 3
C2
3
C1
3
C3
3
C4
3
5
6
7
COMMON
TO PIN NO. 21
LOCATED ON COVER
C8
3
C7
3
C5
3
C6
3
SECTION C-C
ROTATED 180°

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL INTERNAL CONNECTIONS TO BE MADE PER-MIL-S 6872, USING SOLDER PER QQ-S-571, SN60
3. MARK .100 TO .140 HIGH BLACK PER ND1002019
4. SOLDER FIND NO.1 TO FIND NO.2 PER MIL-S-6872, USING SOLDER PER QQ-S-571, SN60
5. SELECT C1–C8 FROM SELECTION CHART (SHEET NO.2)
6. SOLDER COMPONENT LEADS TO TERMINAL TUBES, PER MIL-S-6872 USING SOLDER PER QQ-S-571, SB5
7. PURCHASE IN ACCORDANCE WITH PS 1007028
8. SERIALIZE PER ND1002023

LIST OF MATERIALS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS35338-78	WASHER, LOCK	7
3	MS15795-303	WASHER, FLAT	6
3	1008002-2	SCREW, EXT REL BODY	5
2	1010377-112	RESISTOR, FIXED, W W, 1Ω, ± 1.0%	4
8	SEE NOTE 5	CAPACITOR	3
1	1007001	SUSPENSION COVER ASSY	2
1	1007002	SUSPENSION BOX ASSY	1

NEXT ASSY	USED ON
1000013	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT
DRAWN L. J. Berkeley DATE 3-26-63
CHECKED
APPROVAL P. Nicholas 5-9-63
APPROVAL C. Smith 5-9-63
NASA APPROVAL 5/15/63
MIT APPROVAL 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NETWORK SUB ASSY
(SUSPENSION)

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007028
SCALE 2/1
WT
SHEET 1 OF 2

1007028 E

MASTER

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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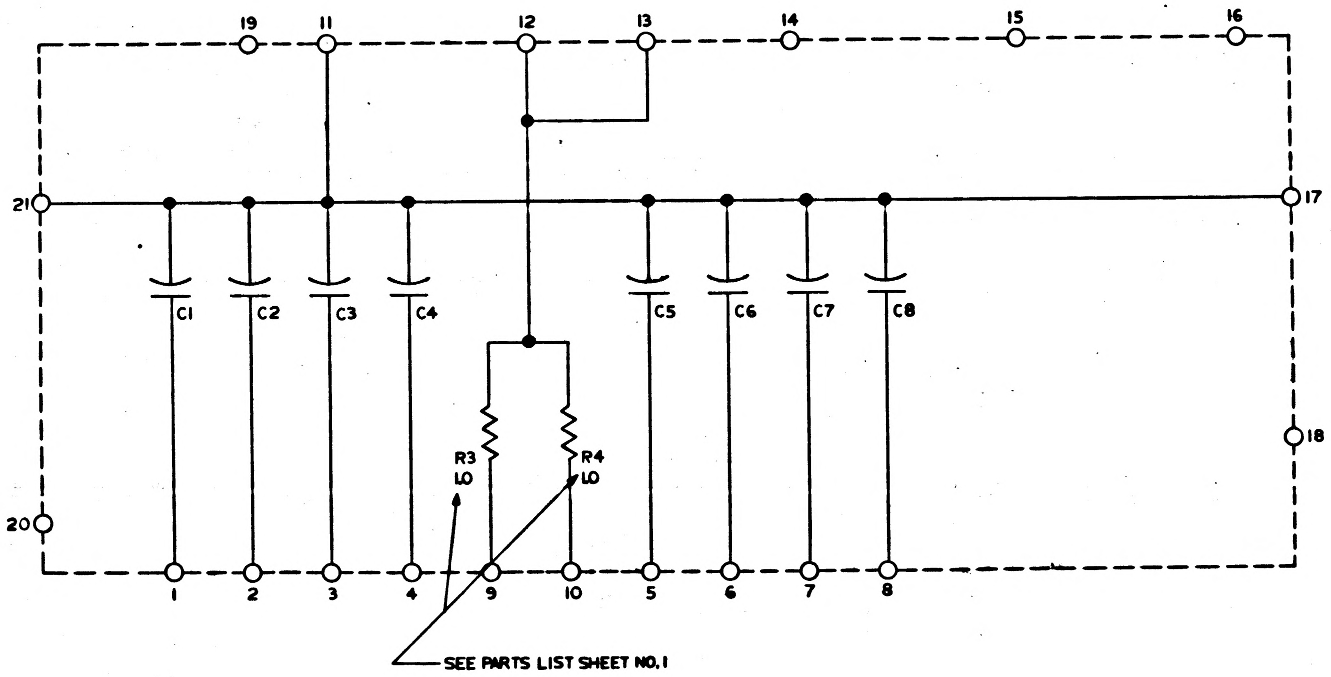
REVISIONS TDRR 01262

SYM	DESCRIPTION	DATE	APPROVAL
—	REDRAWN FROM 1007006	4-15-63	
C	REVISED PER TDRR 02114	4-25-63	WK
D	REVISED PER TDRR 03087	9-12-63	WK
E	REVISED PER TDRR 05090	10 Dec 63	WK



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. RESISTOR VALUES ARE EXPRESSED IN OHMS.
3. SYMBOL DESIGNATIONS SHOWN FOR REF ONLY
4. D.C. WORKING VOLTAGE: 100 VOLTS
5. A SUITABLE SOLDER STOP SHALL BE USED INSIDE THE CAN TO INSURE THAT THE SOLDER WILL CAUSE NO ELECTRICAL SHORTS OF THE INTERNAL COMPONENTS AND A SERVICE LOOP SHALL BE UTILIZED INSIDE THE CAN SO AS NOT TO INTRODUCE ANY STRAIN ON THE INTERNAL LEADS, LEADS SHALL BE SUFFICIENTLY STRIPPED AND CLEANED TO ASSURE A GOOD SOLDER JOINT IN THE TUBES OF THE TERMINALS.
6. EXTERNAL FOIL OF CAPACITORS SHALL BE USED FOR COMMON LEAD.

C1 - C8 SELECTION CHART

1007028-1		0.0631 uf
	-2	0.0638 uf
	-3	0.0645 uf
	-4	0.0652 uf
	-5	0.0659 uf
	-6	0.0666 uf
	-7	0.0673 uf
	-8	0.0680 uf
	-9	0.0687 uf
	-10	0.0694 uf
	-11	0.0701 uf

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1000013	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT
DRAWN W.F. Bakely DATE 4-6-63
CHECKED
APPROVAL R.Z. Michela 5-9-63
APPROVAL J.C. Smith 5-9-63
NASA APPROVAL 5/15/63
MIT APPROVAL W Kupfer 15 May 63

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HOUSTON, TEXAS

NETWORK SUB ASSY
(SUSPENSION)

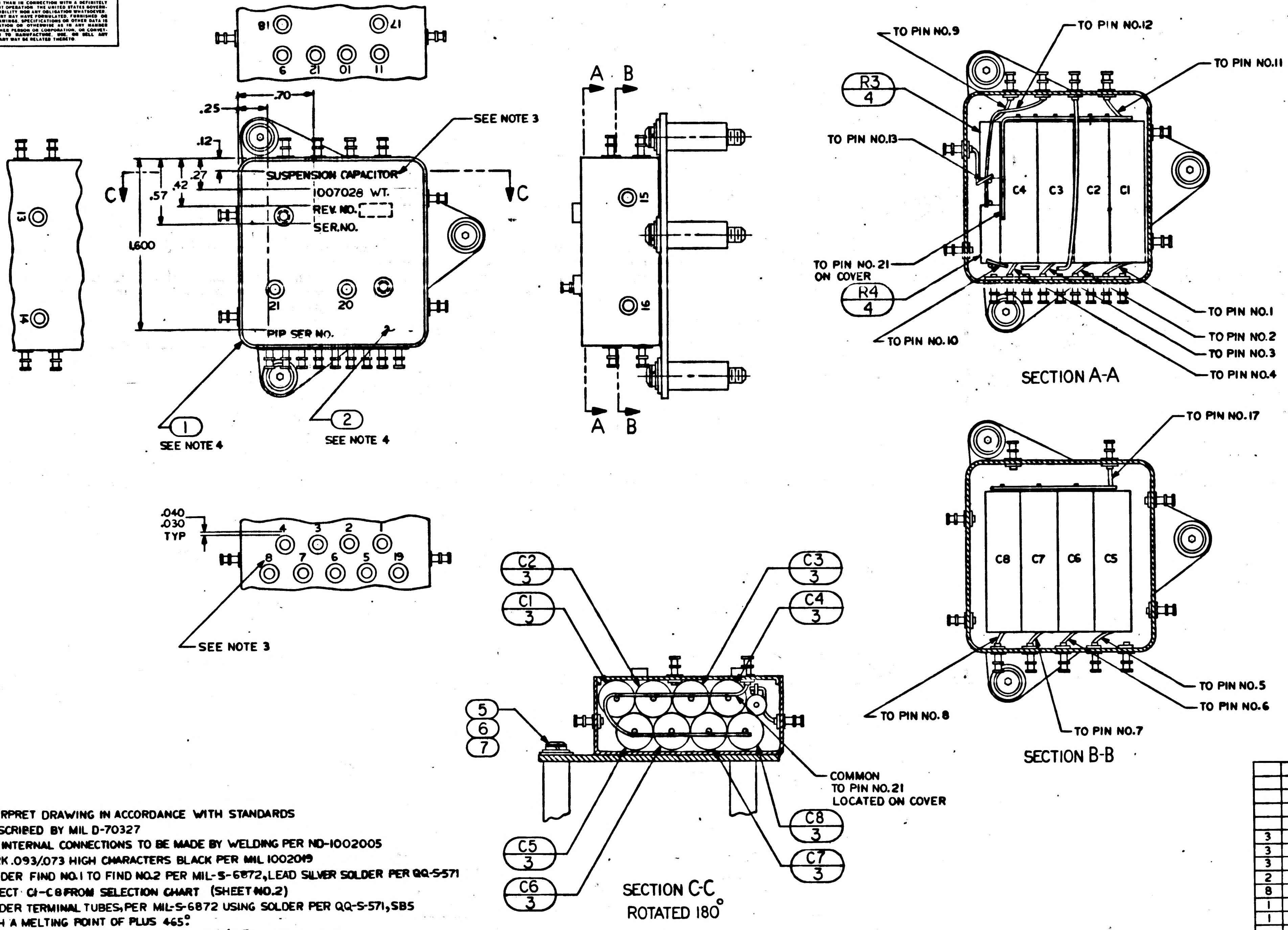
CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007028
SCALE —
WT —
SHEET 2 OF 2

MASTER

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TORR 01262			
SYM	DESCRIPTION	DATE	APPROVAL
—	REDRAWN FROM 1007006	4-15-63	


18
17
9
21
10
11
.25
.70
.12
.27
.42
.57
1.600
C
C
SUSPENSION CAPACITOR
1007028 WT.
REV. NO.
SER. NO.
21
20
PIP SER NO.
SEE NOTE 3
1
SEE NOTE 4
2
SEE NOTE 4
13
14
A
B
A
B
15
16
.040
.030
TYP
4
3
2
1
8
7
6
5
19
SEE NOTE 3
TO PIN NO.9
TO PIN NO.12
TO PIN NO.11
R3
4
TO PIN NO.13
C4
C3
C2
C1
TO PIN NO.21
ON COVER
R4
4
TO PIN NO.10
TO PIN NO.1
TO PIN NO.2
TO PIN NO.3
TO PIN NO.4
SECTION A-A
TO PIN NO.17
C8
C7
C6
C5
TO PIN NO.5
TO PIN NO.6
TO PIN NO.8
TO PIN NO.7
SECTION B-B
C2
3
C1
3
C3
3
C4
3
5
6
7
COMMON
TO PIN NO.21
LOCATED ON COVER
C8
3
C5
3
C7
3
C6
3
SECTION C-C
ROTATED 180°

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL D-70327
2. ALL INTERNAL CONNECTIONS TO BE MADE BY WELDING PER ND-1002005
3. MARK .093/.073 HIGH CHARACTERS BLACK PER MIL 1002019
4. SOLDER FIND NO.1 TO FIND NO.2 PER MIL-S-6872, LEAD SILVER SOLDER PER QQ-S-571
5. SELECT C1–C8 FROM SELECTION CHART (SHEET NO.2)
6. SOLDER TERMINAL TUBES, PER MIL-S-6872 USING SOLDER PER QQ-S-571, SB5 WITH A MELTING POINT OF PLUS 465°.
7. PURCHASE IN ACCORDANCE WITH PS 1007028

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS35338-78	WASHER, LOCK	7
3	MS15795-303	WASHER, FLAT	6
3	1008002-2	SCREW, EXT REL BODY	5
2	1010377-	RESISTOR, FIXED, W W, 1Ω, ±0.1%	4
8	SEE NOTE 5	CAPACITOR	3
1	1007001	SUSPENSION COVER ASSY	2
1	1007002	SUSPENSION BOX ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1000013	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± ___ DECIMALS ± ___ ANGLES ± ___
DO NOT SCALE THIS DRAWING
MATERIAL ___
HEAT TREATMENT ___
FINAL FINISH ___

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INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT
DRAWN L. J. Berkeley DATE 3-26-63
CHECKED ___
APPROVAL 6-9-63
APPROVAL C. Smith 5-9-63
NASA APPROVAL 5/15/63
MIT APPROVAL 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NETWORK SUB ASSY
(SUSPENSION)

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007028
SCALE 2/1
WT
SHEET 1 OF 2

1007028

INCHES
1 2
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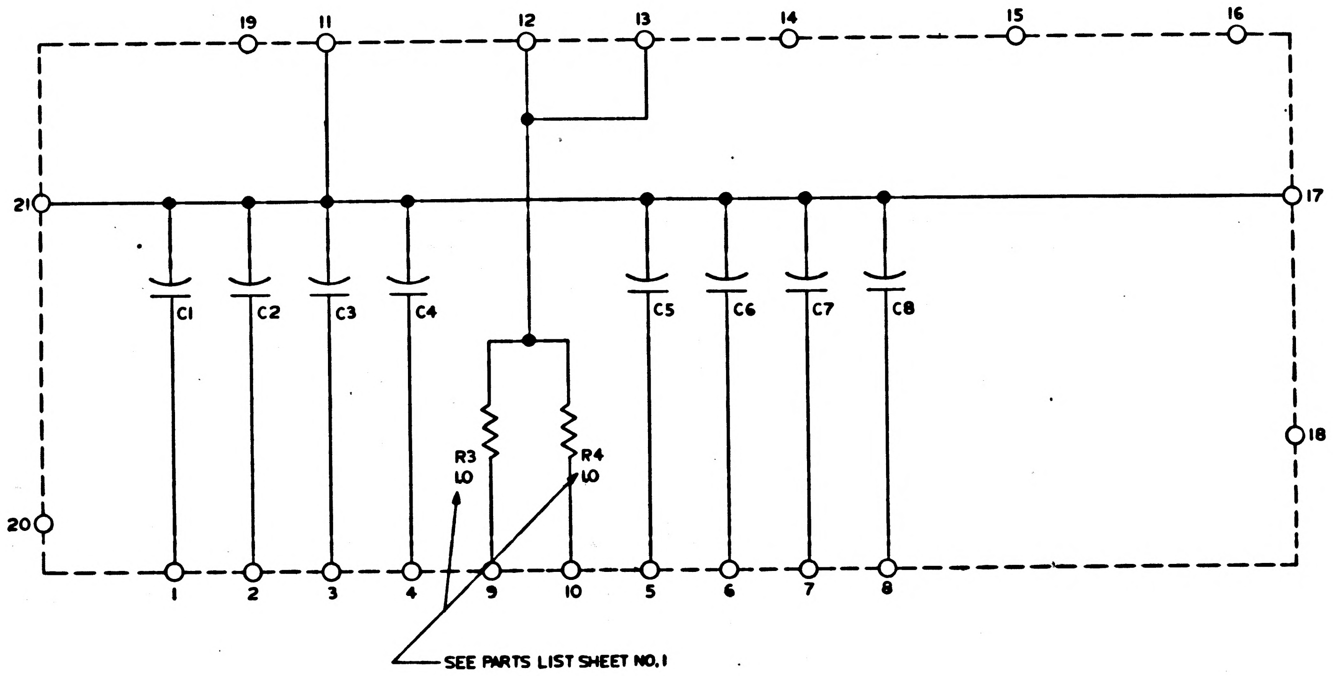
REVISIONS TORR 01262

SYM	DESCRIPTION	DATE	APPROVAL
—	REDRAWN FROM 1007006	4-15-63	



NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. RESISTOR VALUES ARE EXPRESSED IN OHMS.
3. SYMBOL DESIGNATIONS SHOWN FOR REF ONLY
4. D.C. WORKING VOLTAGE: 100 VOLTS
5. A SUITABLE SOLDER STOP SHALL BE USED INSIDE THE CAN TO INSURE THAT THE SOLDER WILL CAUSE NO ELECTRICAL SHORTS OF THE INTERNAL COMPONENTS AND A SERVICE LOOP SHALL BE UTILIZED INSIDE THE CAN SO AS NOT TO INTRODUCE ANY STRAIN ON THE INTERNAL LEADS, LEADS SHALL BE SUFFICIENTLY STRIPPED AND CLEANED TO ASSURE A GOOD SOLDER JOINT IN THE TUBES OF THE TERMINALS.
6. EXTERNAL FOIL OF CAPACITORS SHALL BE USED FOR COMMON LEAD.

C1 - C8 SELECTION CHART

1007028-1	0.0631 uf
-2	0.0638 uf
-3	0.0645 uf
-4	0.0652 uf
-5	0.0659 uf
-6	0.0666 uf
-7	0.0673 uf
-8	0.0680 uf
-9	0.0687 uf
-10	0.0694 uf
-11	0.0701 uf

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1000013	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ± — ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

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INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN L.T. Bakeley DATE 4-6-63
CHECKED
APPROVAL R.L. Wakeley 5-9-63
APPROVAL L.C. Smith 5-9-63
NASA APPROVAL 5/15/63
MIT APPROVAL W Kupfer 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NETWORK SUB ASSY
(SUSPENSION)

CODE IDENT NO.
SIZE D
NASA DRAWING NO. 1007028
SCALE —
WT —
SHEET 2 OF 2

MASTER

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007028

Apollo G&N Specification
PS-1007028
8 May 1963
Class A Release
TDRR 01218

PROCUREMENT SPECIFICATION
SUSPENSION CAPACITOR ASSEMBLY

Record of Revisions

Revision Letter	TDRR No.	Pages Revised	Approval		Date
			MIT	NASA	

This specification consists of pages i through iv and 1 to 10 inclusive.

SUSPENSION CAPACITOR ASSEMBLY

The purpose of this document is to establish the manufacturing and test requirements for procurement of the Suspension Capacitor Assembly for use in the APOLLO Guidance and Navigation Equipment program.

MIT INSTRUMENTATION LABORATORY

NASA/MSC APPROVAL

PROCUREMENT SPECIFICATION

SUSPENSION CAPACITOR ASSEMBLY

TABLE OF CONTENTS

Section	Title	Page
1	SCOPE	1
2	APPLICABLE DOCUMENTS	1
3	REQUIREMENTS	3
4	QUALITY ASSURANCE PROVISIONS	6
5	PREPARATION FOR DELIVERY	9
6	NOTES	10

PROCUREMENT SPECIFICATION
SUSPENSION CAPACITOR ASSEMBLY

1. SCOPE

1.1 This specification establishes the requirements for the procurement of a suspension capacitor assembly, hereinafter called suspension capacitor.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on the date of invitation for bids form a part of this specification to the extent specified herein.

SPECIFICATIONS

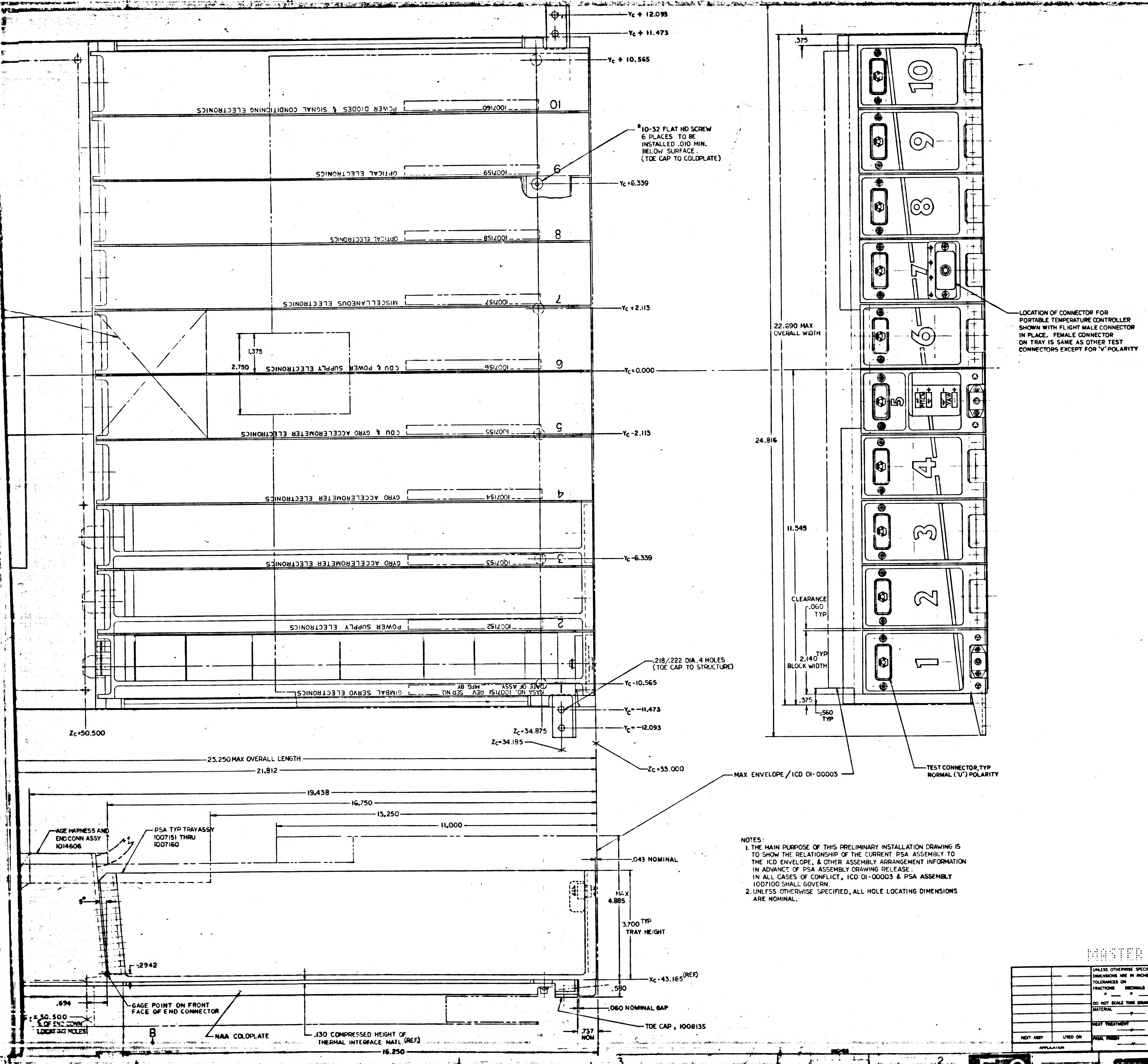
Military

MIL-P-116	Preservation, Methods of
MIL-E-17555	Electronic and Electrical Equipment and Associated Repair Parts, Preparation for Delivery of
MIL-C-19978	Capacitors, Fixed, Plastic (or Paper-Plastic) Dielectric (Hermetically Sealed in Metallic, Ceramic or Glass Cases), General Specification for

NASA Apollo G&N

G&ND-1002045	Qualification Specification, Capacitors, Nonelectrolytic
G&ND-1015404	General Specification Configuration, Process and Quality Control Requirements for Suppliers of High Reliability Articles for Use in Spacecraft and Supporting Equipment.

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03771		WR


Yc + 12.093
Yc + 11.473
Yc + 10.565
10 1007160 POWER DIODES & SIGNAL CONDITIONING ELECTRONICS
*10-32 FLAT HD SCREW 6 PLACES TO BE INSTALLED .010 MIN. BELOW SURFACE. (TOE CAP TO COLDPLATE)
9 1007159 OPTICAL ELECTRONICS
Yc +6.339
8 1007158 OPTICAL ELECTRONICS
7 1007157 MISCELLANEOUS ELECTRONICS
Yc +2.113
1.375
2.750
6 1007156 CDU & POWER SUPPLY ELECTRONICS
Yc = 0.000
5 1007155 CDU & GYRO ACCELEROMETER ELECTRONICS
Yc -2.113
4 1007154 GYRO ACCELEROMETER ELECTRONICS
3 1007153 GYRO ACCELEROMETER ELECTRONICS
Yc -6.339
2 1007152 POWER SUPPLY ELECTRONICS
GIMBAL SERVO ELECTRONICS NASA NO. 1007151 REV SER NO. MFG BY DATE OF ASSY
.218/.222 DIA. 4 HOLES (TOE CAP TO STRUCTURE)
Yc -10.565
Yc = -11.473
Yc = -12.093
Zc = 50.500
Zc = 34.875
Zc = 34.185
Zc = 33.000
23.250 MAX OVERALL LENGTH
21.812
19.438
16.750
13.250
11.000
AGE HARNESS AND END CONN ASSY 1014606
PSA TYP TRAYASSY 1007151 THRU 1007160
.043 NOMINAL
MAX 4.885
3.700 TYP TRAY HEIGHT
5°
.2942
Xc -43.165 (REF)
.580
.060 NOMINAL GAP
.694
Zc = 50.500 ℄ OF END CONN LOCATING HOLES
GAGE POINT ON FRONT FACE OF END CONNECTOR
B
NAA COLDPLATE
.130 COMPRESSED HEIGHT OF THERMAL INTERFACE MATL (REF)
.737 NOM
TOE CAP, 1008135
16.250
MAX ENVELOPE / ICD 01-00003
.375
22.690 MAX OVERALL WIDTH
24.816
11.349
CLEARANCE .060 TYP
2.140 TYP BLOCK WIDTH
.375
.560 TYP
10
9
8
7
6
5
PITCH
YAW
4
3
2
1
LOCATION OF CONNECTOR FOR PORTABLE TEMPERATURE CONTROLLER SHOWN WITH FLIGHT MALE CONNECTOR IN PLACE. FEMALE CONNECTOR ON TRAY IS SAME AS OTHER TEST CONNECTORS EXCEPT FOR 'V' POLARITY
TEST CONNECTOR, TYP NORMAL ('U') POLARITY
D
C
B
A
3
2

NOTES:

1. THE MAIN PURPOSE OF THIS PRELIMINARY INSTALLATION DRAWING IS TO SHOW THE RELATIONSHIP OF THE CURRENT PSA ASSEMBLY TO THE ICD ENVELOPE, & OTHER ASSEMBLY ARRANGEMENT INFORMATION IN ADVANCE OF PSA ASSEMBLY DRAWING RELEASE.
   IN ALL CASES OF CONFLICT, ICD 01-00003 & PSA ASSEMBLY 1007100 SHALL GOVERN.
2. UNLESS OTHERWISE SPECIFIED, ALL HOLE LOCATING DIMENSIONS ARE NOMINAL.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 0094 DATE 6-24-63

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —
NEXT ASSY | USED ON
APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO. CONTRACT
DRAWN R. Young DATE 9-11-63
CHECKED
APPROVAL A. R. Test 9-20-63
APPROVAL
NASA APPROVAL
MIT APPROVAL WK

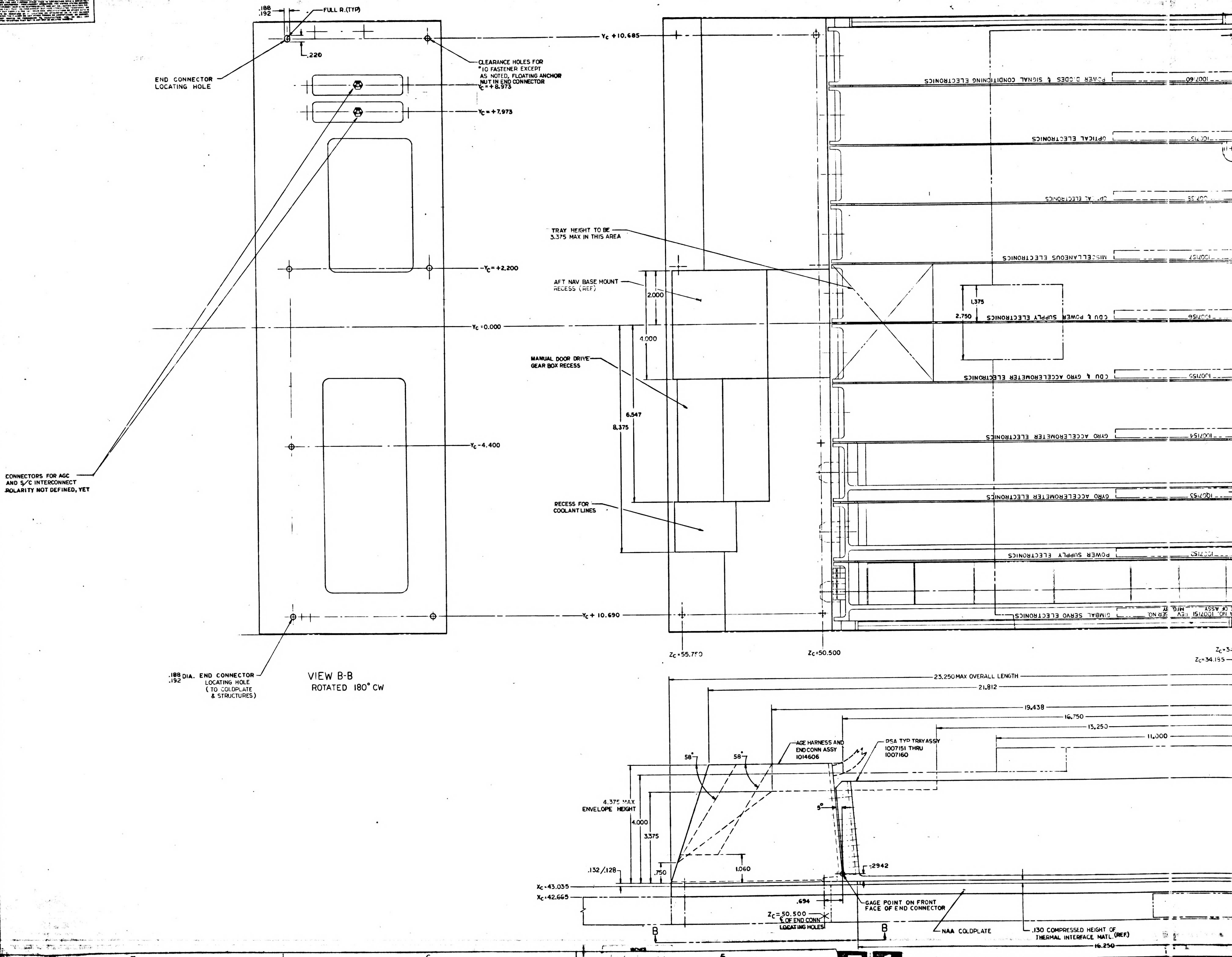
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

INSTALLATION
PSA UNIT TO LOWER
EQUIPMENT BAY

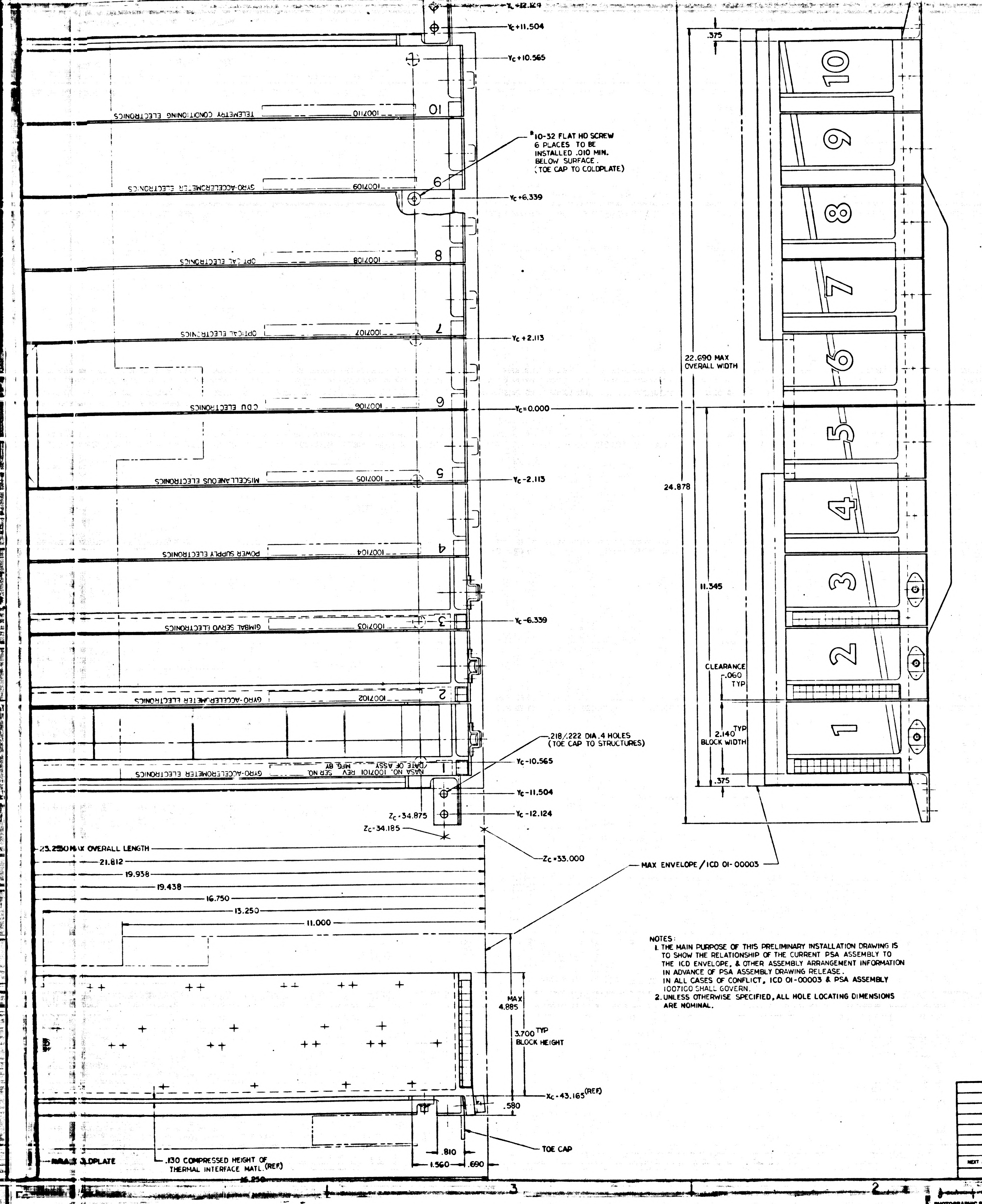
CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007030
SCALE 1:1 | WT | SHEET 1 OF 1

1007030 A

E2 1007030


.188
.192
FULL R.(TYP)
.220
END CONNECTOR LOCATING HOLE
CLEARANCE HOLES FOR #10 FASTENER EXCEPT AS NOTED, FLOATING ANCHOR NUT IN END CONNECTOR
Yc + 10.685
Yc = + 8.973
Yc = + 7.973
Yc = + 2.200
Yc = 0.000
Yc - 4.400
Yc + 10.690
CONNECTORS FOR AGC AND S/C INTERCONNECT POLARITY NOT DEFINED, YET
.188 DIA. END CONNECTOR LOCATING HOLE (TO COLDPLATE & STRUCTURES)
.192
TRAY HEIGHT TO BE 3.375 MAX IN THIS AREA
AFT NAV BASE MOUNT RECESS (REF)
2.000
4.000
MANUAL DOOR DRIVE GEAR BOX RECESS
6.547
8.375
RECESS FOR COOLANT LINES
Zc = 55.750
Zc = 50.500
1.375
2.750
POWER DIODES & SIGNAL CONDITIONING ELECTRONICS
1007160
OPTICAL ELECTRONICS
1007159
OPTICAL ELECTRONICS
1007158
MISCELLANEOUS ELECTRONICS
1007157
CDU & POWER SUPPLY ELECTRONICS
1007156
CDU & GYRO ACCELEROMETER ELECTRONICS
1007155
GYRO ACCELEROMETER ELECTRONICS
1007154
GYRO ACCELEROMETER ELECTRONICS
1007153
POWER SUPPLY ELECTRONICS
1007152
GIMBAL SERVO ELECTRONICS
NO. 1007151 REV SER NO.
OF ASSY MFG. BY
Zc = 34.195
23.250 MAX OVERALL LENGTH
21.812
19.438
16.750
13.250
11.000
58°
58°
AGE HARNESS AND END CONN ASSY 1014606
PSA TYP TRAY ASSY 1007151 THRU 1007160
4.375 MAX ENVELOPE HEIGHT
4.000
3.375
5°
.132/.128
.750
1.060
.2942
Xc - 43.035
Xc - 42.665
.694
Zc = 50.500 ℄ OF END CONN LOCATING HOLES
GAGE POINT ON FRONT FACE OF END CONNECTOR
NAA COLDPLATE
.130 COMPRESSED HEIGHT OF THERMAL INTERFACE MATL. (REF.)
16.250
B
B

VIEW B-B
ROTATED 180° CW


Yc+12.124
Yc+11.504
Yc+10.565
10 1007110 TELEMETRY CONDITIONING ELECTRONICS
9 1007109 GYRO-ACCELEROMETER ELECTRONICS
10-32 FLAT HD SCREW 6 PLACES TO BE INSTALLED .010 MIN. BELOW SURFACE. (TOE CAP TO COLDPLATE)
Yc+6.339
8 1007108 OPTICAL ELECTRONICS
7 1007107 OPTICAL ELECTRONICS
Yc+2.113
6 1007106 CDU ELECTRONICS
Yc=0.000
5 1007105 MISCELLANEOUS ELECTRONICS
Yc-2.113
4 1007104 POWER SUPPLY ELECTRONICS
3 1007103 GIMBAL SERVO ELECTRONICS
Yc-6.339
2 1007102 GYRO-ACCELEROMETER ELECTRONICS
1 GYRO-ACCELEROMETER ELECTRONICS NASA NO. 1007101 REV SER NO. MFG BY (DATE OF ASSY
.218/.222 DIA. 4 HOLES (TOE CAP TO STRUCTURES)
Yc-10.565
Yc-11.504
Yc-12.124
Zc-34.875
Zc-34.185
Zc=33.000
25.250 MAX OVERALL LENGTH
21.812
19.938
19.438
16.750
13.250
11.000
MAX ENVELOPE / ICD 01-00003
.375
22.690 MAX OVERALL WIDTH
24.878
11.345
CLEARANCE .060 TYP
2.140 TYP BLOCK WIDTH
.375
10
9
8
7
6
5
4
3
2
1
MAX 4.885
3.700 TYP BLOCK HEIGHT
Xc-43.165 (REF)
.580
TOE CAP
.810
1.560
.690
COLDPLATE
.130 COMPRESSED HEIGHT OF THERMAL INTERFACE MATL. (REF)
16.250
D
C
B
A
3
2

NOTES:

1. THE MAIN PURPOSE OF THIS PRELIMINARY INSTALLATION DRAWING IS TO SHOW THE RELATIONSHIP OF THE CURRENT PSA ASSEMBLY TO THE ICD ENVELOPE, & OTHER ASSEMBLY ARRANGEMENT INFORMATION IN ADVANCE OF PSA ASSEMBLY DRAWING RELEASE.
   IN ALL CASES OF CONFLICT, ICD 01-00003 & PSA ASSEMBLY 1007100 SHALL GOVERN.
2. UNLESS OTHERWISE SPECIFIED, ALL HOLE LOCATING DIMENSIONS ARE NOMINAL.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 00981 DATE 4-20-63

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL —
HEAT TREATMENT —
FINAL FINISH —

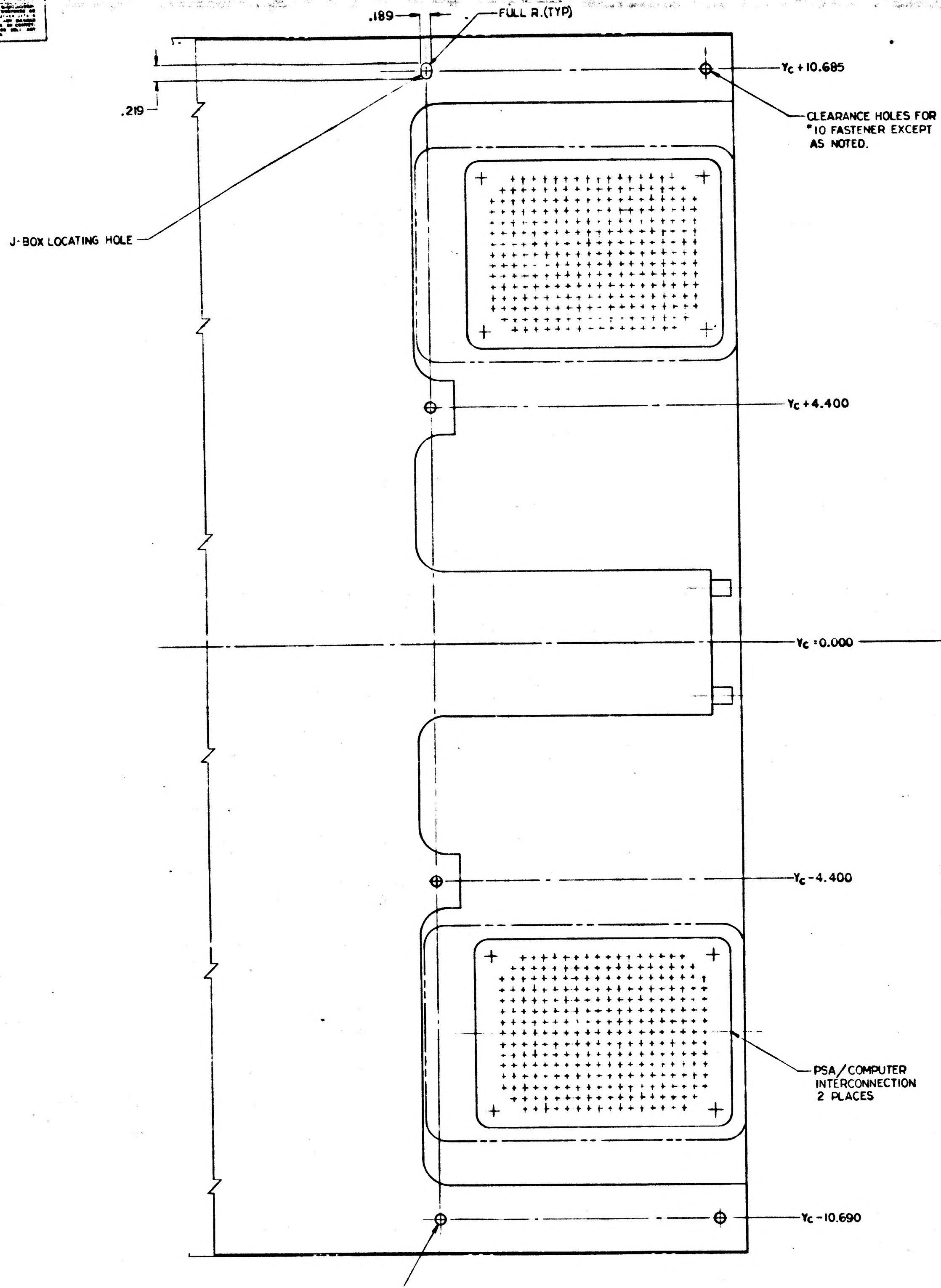
MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN R. Hoag DATE 2-1-63
CHECKED
APPROVAL 4-20-63
APPROVAL
NASA APPROVAL
MIT APPROVAL WK 24 April 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

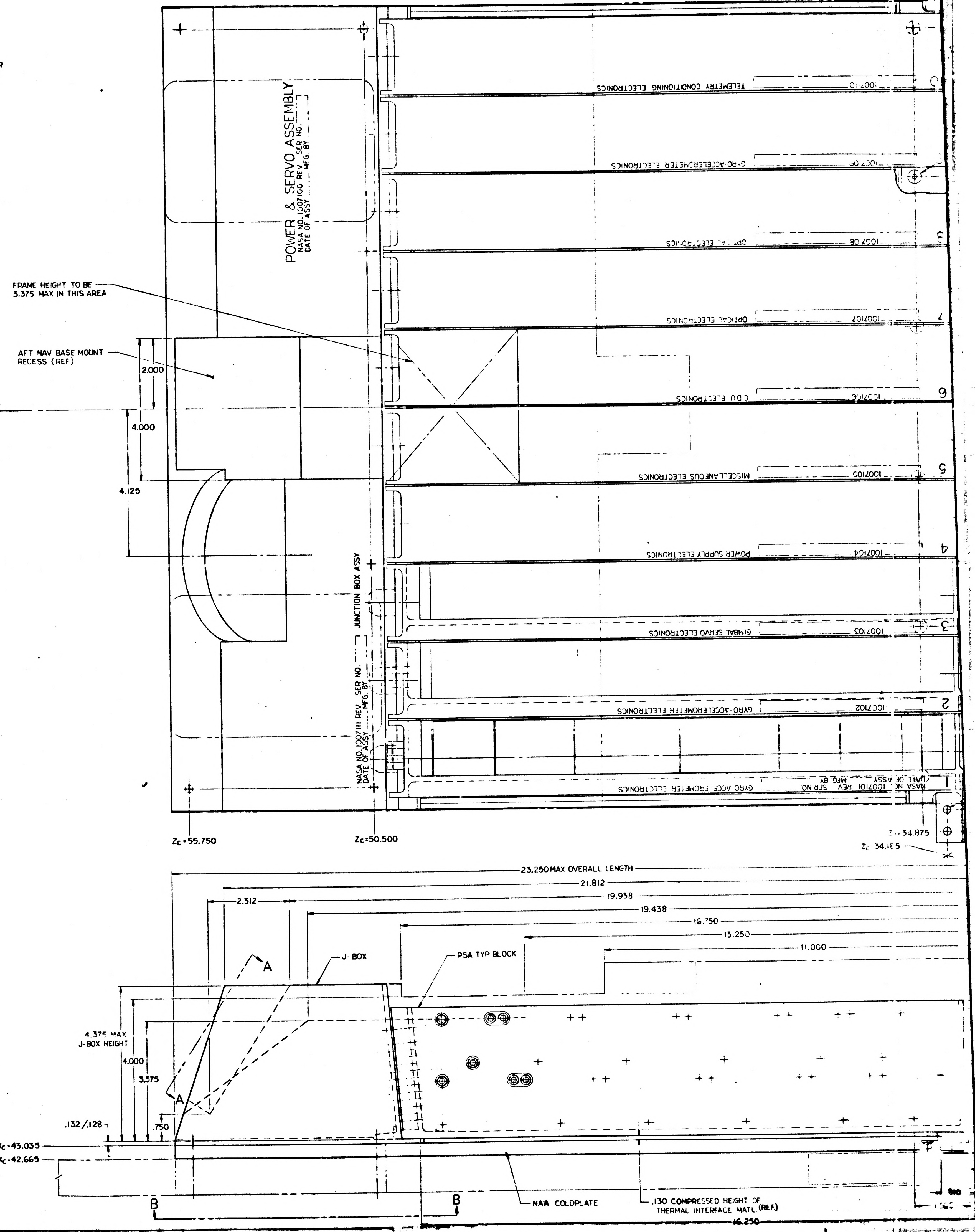
INSTALLATION
PSA UNIT TO LOWER
EQUIPMENT BAY

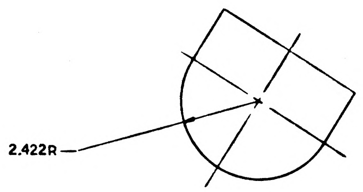
CODE IDENT NO. SIZE J NASA DRAWING NO 1007030
SCALE 1:1 WT SHEET 1 OF 1

PHOTOGRAPHIC SCALE ONLY


.189
FULL R.(TYP)
.219
Yc+10.685
CLEARANCE HOLES FOR #10 FASTENER EXCEPT AS NOTED.
J-BOX LOCATING HOLE
Yc+4.400
Yc=0.000
Yc-4.400
PSA/COMPUTER INTERCONNECTION 2 PLACES
Yc-10.690
.189 DIA J-BOX LOCATING HOLE (TO COLDPLATE & STRUCTURES)

VIEW B-B
ROTATED 180° CW


POWER & SERVO ASSEMBLY
NASA NO. 1007100 REV SER NO.
DATE OF ASSY MFG. BY
FRAME HEIGHT TO BE 3.375 MAX IN THIS AREA
AFT NAV BASE MOUNT RECESS (REF)
2.000
4.000
4.125
TELEMETRY CONDITIONING ELECTRONICS 1007110
GYRO-ACCELEROMETER ELECTRONICS 1007109
OPTICAL ELECTRONICS 1007108
OPTICAL ELECTRONICS 1007107
CDU ELECTRONICS 1007106
MISCELLANEOUS ELECTRONICS 1007105
POWER SUPPLY ELECTRONICS 1007104
GIMBAL SERVO ELECTRONICS 1007103
GYRO-ACCELEROMETER ELECTRONICS 1007102
GYRO-ACCELEROMETER ELECTRONICS 1007101
NASA NO. REV SER NO.
DATE OF ASSY MFG BY
JUNCTION BOX ASSY
NASA NO. 1007111 REV SER NO.
DATE OF ASSY MFG. BY
Zc=55.750
Zc=50.500
Zc=34.875
Zc=34.185
23.250 MAX OVERALL LENGTH
21.812
19.938
19.438
2.312
16.750
13.250
11.000
A
J-BOX
PSA TYP BLOCK
4.375 MAX J-BOX HEIGHT
4.000
3.375
.750
.132/.128
Xc=43.035
Xc=42.665
B
B
NAA COLDPLATE
.130 COMPRESSED HEIGHT OF THERMAL INTERFACE MATL. (REF.)
16.250

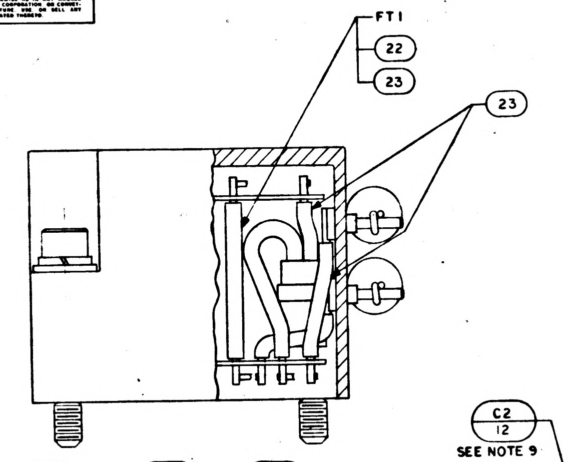


VIEW A-A
SCALE 1/2
(GEAR BOX RECESS)

PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TDRR 08322			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 05065	10 Dec 63	



WIRING DATA

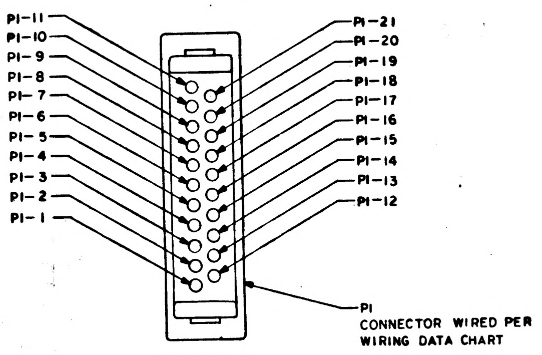
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E14	GYRO INPUT
P1-2	E15	GYRO ERROR SIG
P1-3	SPARE	SPARE
P1-4	SPARE	SPARE
P1-5	SPARE	SPARE
P1-6	SPARE	SPARE
P1-7	SPARE	SPARE
P1-8	SPARE	SPARE
P1-9	SPARE	SPARE
P1-10	E20	0V DC, COMMON
P1-11	E3	GYRO ERROR SIG
P1-12	E13	GYRO INPUT
P1-13	E16	GYRO ERROR SIG
P1-14	E9	GYRO ERROR SIG
P1-15	E10	GYRO ERROR SIG
P1-16	E7	GYRO INPUT
P1-17	E8	GYRO INPUT
P1-18	E4	GYRO ERROR SIG
P1-19	E19	27.5V DC, COMMON
P1-20	E2	GYRO INPUT
P1-21	E1	GYRO INPUT

WIRING DATA

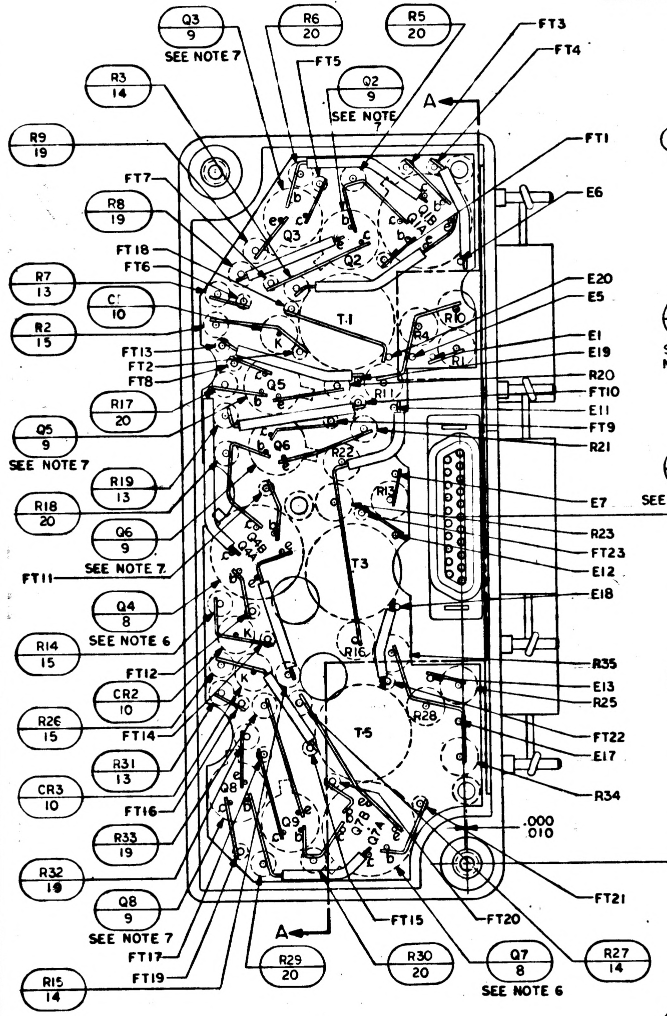
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
1	E6	EXTERNAL SELECT
2	E5	EXTERNAL SELECT
3	E18	EXTERNAL SELECT
4	E17	EXTERNAL SELECT
5	E11	EXTERNAL SELECT
6	E12	EXTERNAL SELECT

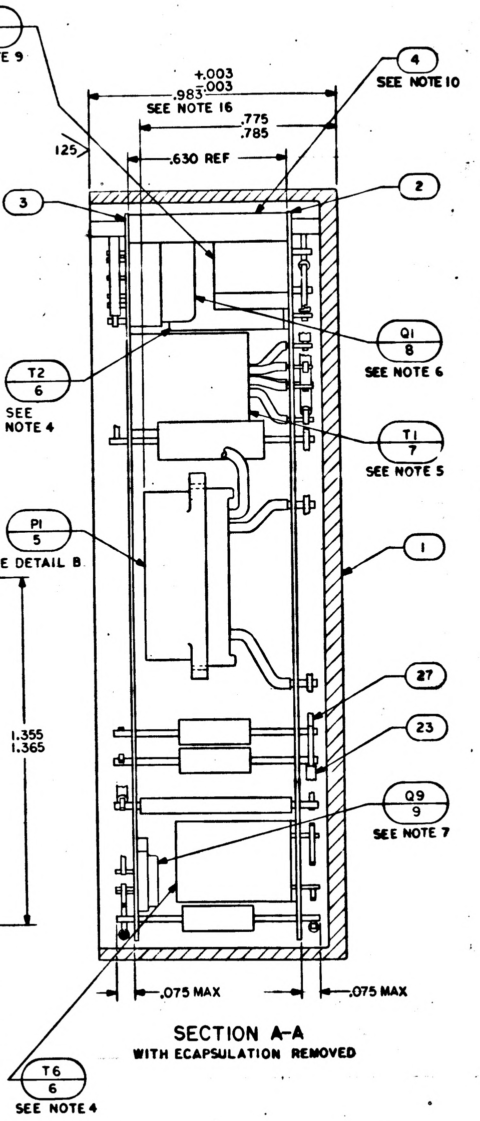
TABLE A SELECTION CHART FOR R12, R24 AND R36

PART NUMBER	VALUE	PART NUMBER	VALUE
1010363-444	10K	1010363-658	130K
-502	20K	-662	137K
-536	30.1K	-666	143K
-560	40.2K	-670	150K
-578	49.9K	-674	158K
-592	59K	-678	165K
-604	68.1K	-682	174K
-614	76.8K	-686	182K
-622	84.4K	-690	191K
-628	90.9K	-694	200K
-634	97.6K	-698	210K
-640	105K	-700	215K
-646	113K	-702	221K
-650	118K	-704	226K
1010363-654	124K	1010363-706	232K

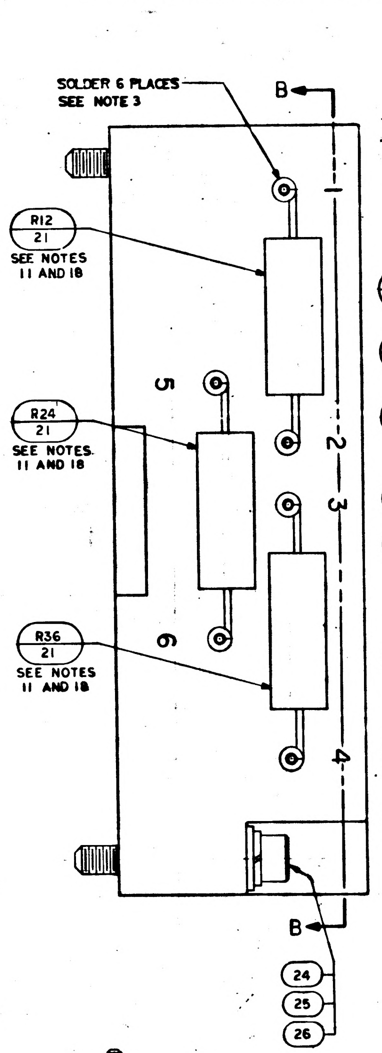

P1-11
P1-10
P1-9
P1-8
P1-7
P1-6
P1-5
P1-4
P1-3
P1-2
P1-1
P1-21
P1-20
P1-19
P1-18
P1-17
P1-16
P1-15
P1-14
P1-13
P1-12
P1
CONNECTOR WIRED PER
WIRING DATA CHART

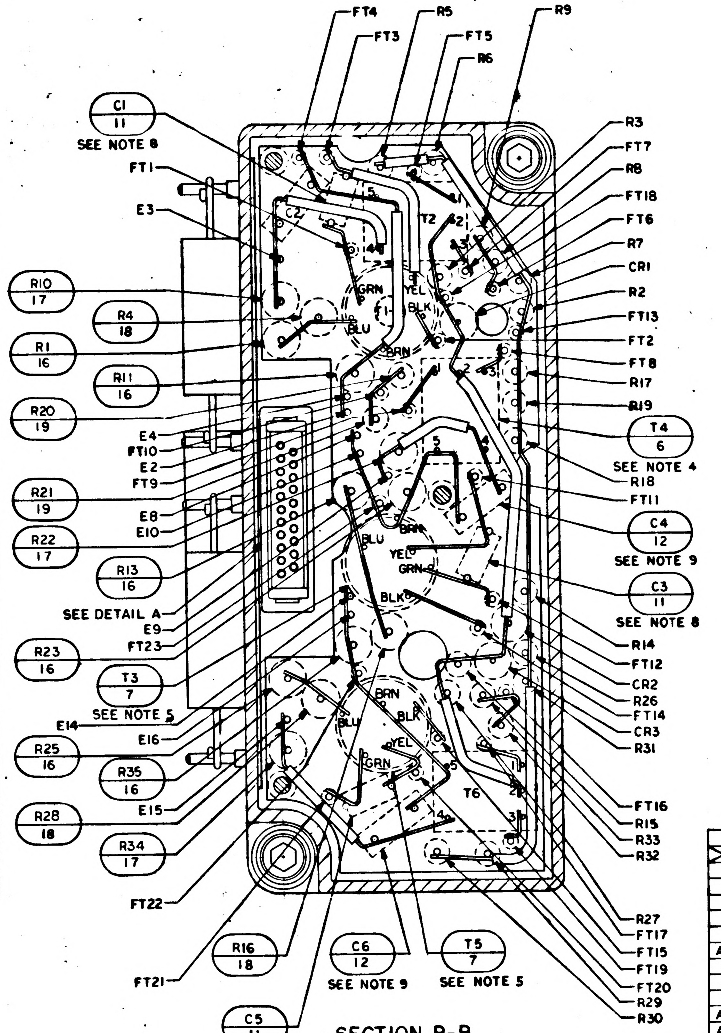
DETAIL A
CONNECTOR TERMINAL
IDENTIFICATION VIEW
SCALE: NONE


Q3
9
SEE NOTE 7
R6
20
R5
20
FT3
FT4
FT5
Q2
9
SEE NOTE
A
R3
14
R9
19
FT1
FT7
E6
R8
19
FT18
FT6
R7
13
C1
10
R2
15
FT13
FT2
FT8
E20
E5
E1
E19
R20
FT10
E11
FT9
R21
R17
20
Q5
9
SEE NOTE 7
R19
13
R18
20
Q6
9
SEE NOTE 7
E7
R23
FT23
E12
E18
FT11
Q4
8
SEE NOTE 6
R14
15
FT12
CR2
10
R35
E13
R25
R26
15
FT14
FT22
E17
R31
13
CR3
10
R34
FT16
R33
19
R32
19
Q8
9
SEE NOTE 7
FT17
FT19
R15
14
A
R29
20
R30
20
Q7
8
SEE NOTE 6
FT15
FT20
R27
14
FT21
.000
.010
T1
T3
T5
R16
R28
R10
R11
R22
R13


C2
12
SEE NOTE 9
4
SEE NOTE 10
+.003
.983
-.003
SEE NOTE 16
.775
.785
.630 REF
.125
3
2
Q1
8
SEE NOTE 6
T2
6
SEE NOTE 4
T1
7
SEE NOTE 5
P1
5
SEE DETAIL B
1
27
23
Q9
9
SEE NOTE 7
1.355
1.365
.075 MAX
.075 MAX
T6
6
SEE NOTE 4

SECTION A-A
WITH ECAPSULATION REMOVED

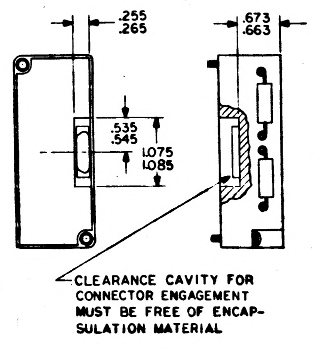

SOLDER 6 PLACES
SEE NOTE 3
B
R12
21
SEE NOTES
11 AND 18
R24
21
SEE NOTES
11 AND 18
R36
21
SEE NOTES
11 AND 18
1
2
3
4
5
6
B
24
25
26


FT4
R5
FT3
FT5
R6
R9
C1
11
SEE NOTE 8
R3
FT7
FT1
R8
E3
FT18
FT6
R7
CR1
R2
R10
17
R4
18
FT13
FT2
R1
16
R11
16
FT8
R17
R19
T4
6
SEE NOTE 4
R20
19
E4
FT10
E2
FT9
R21
19
R18
FT11
E8
E10
R22
17
C4
12
SEE NOTE 9
R13
16
SEE DETAIL A
E9
FT23
C3
11
SEE NOTE 8
R14
R23
16
FT12
T3
7
SEE NOTE 5
CR2
R26
FT14
E14
E16
CR3
R31
R25
16
R35
16
E15
FT16
R15
R33
R32
R28
18
R34
17
FT22
R27
FT17
FT15
FT19
FT20
R29
R30
FT21
R16
18
C6
12
SEE NOTE 9
T5
7
SEE NOTE 5
C5
11
SEE NOTE 8
T2
T6
GRN
YEL
BLK
BLU
BRN

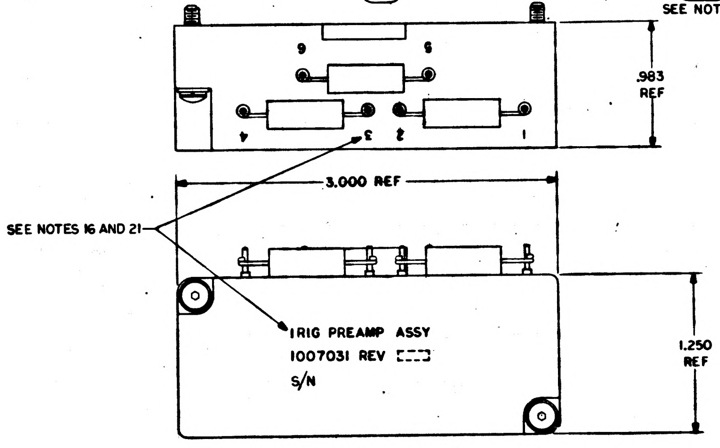
SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WELDS TO BE PER ND1002005
3. ALL SOLDERING CONNECTIONS TO BE MADE PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60
4. BOND FIND NO. 6 TO FIND NO. 2 PER ND1002004
5. BOND FIND NO. 7 TO FIND NO. 3 PER ND1002004
6. BOND FIND NO. 8 TO FIND NO. 3 PER ND1002004
7. BOND FIND NO. 9 TO FIND NO. 3 PER ND1002004
8. BOND FIND NO. 11 TO FIND NO. 2 PER ND1002004
9. BOND FIND NO. 12 TO FIND NO. 2 PER ND1002004
10. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND1002004
11. BOND FIND NO. 21 TO FIND NO. 1 PER ND1002004
12. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MINIMUM
13. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND1002023
17. AR DENOTES AS REQUIRED
18. R12, R24 AND R36 TO BE SELECTED BY ELECTRICAL TEST, PER ATP________
19. K DENOTES CATHODE SIDE OF DIODE
20. SPARE LEADS FROM FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH
21. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
22. INSPECT PER PS-1007031
23. TEST PER FTM-1007031


.255
.265
.673
.663
.535
.545
1.075
1.085
CLEARANCE CAVITY FOR
CONNECTOR ENGAGEMENT
MUST BE FREE OF ENCAP-
SULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION
DATA
SCALE: 1/1


6
5
4
3
2
1
.983
REF
3.000 REF
SEE NOTES 16 AND 21
IRIG PREAMP ASSY
1007031 REV
S/N
1.250
REF

MARKING VIEWS
SCALE: 2/1

MASTER

☒	1010053	SCHEMATIC	REF
AR	1006757-1	WIRE, ELECTRICAL	27
2	MS35338-78	WASHER, LOCK	26
2	MS15795-303	WASHER, FLAT	25
2	1008002-1	SCREW, EXT RELIEVED BODY	24
AR	1006776-22	INSULATION, SLEEVING, ELEC	23
AR	1006787-2	WIRE, ELECTRICAL	22
3	1010363	RESISTOR (SEE NOTE 18)	21
6	1006750-58	RESISTOR	20
6	1006750-15	RESISTOR	19
3	1010364-769	RESISTOR	18
3	1010364-635	RESISTOR	17
6	1010364-501	RESISTOR	16
3	1006750-63	RESISTOR	15
3	1006750-52	RESISTOR	14
3	1006750-32	RESISTOR	13
3	1010359-23	CAPACITOR	12
3	1010359-17	CAPACITOR	11
3	1010372-15	DIODE	10
3	1010633-2	TRANSISTOR MATCHED PAIR	9
3	1010252-1	TRANSISTOR	8
3	1007080	TRANSFORMER, SHIELDED ASSY	7
3	1010291-1	TRANSFORMER	6
1	1010472-2	CONNECTOR, RECP, ELECTRICAL	5
3	1008053	SPACER	4
1	1008061	WIRING BOARD, BOTTOM	3
1	1008060	WIRING BOARD, TOP	2
1	1007026	HOUSING, INSEPARABLE ASSY	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1000005		
NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN DATE 7-1-63
CHECKED 25 Sep 63
APPROVAL 9-16-63
APPROVAL 9-25-63
NASA APPROVAL
MIT APPROVAL 9/26/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

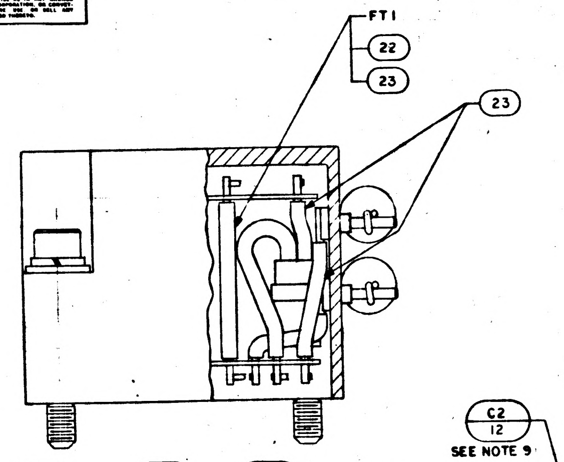
IRIG PREAMP ASSY

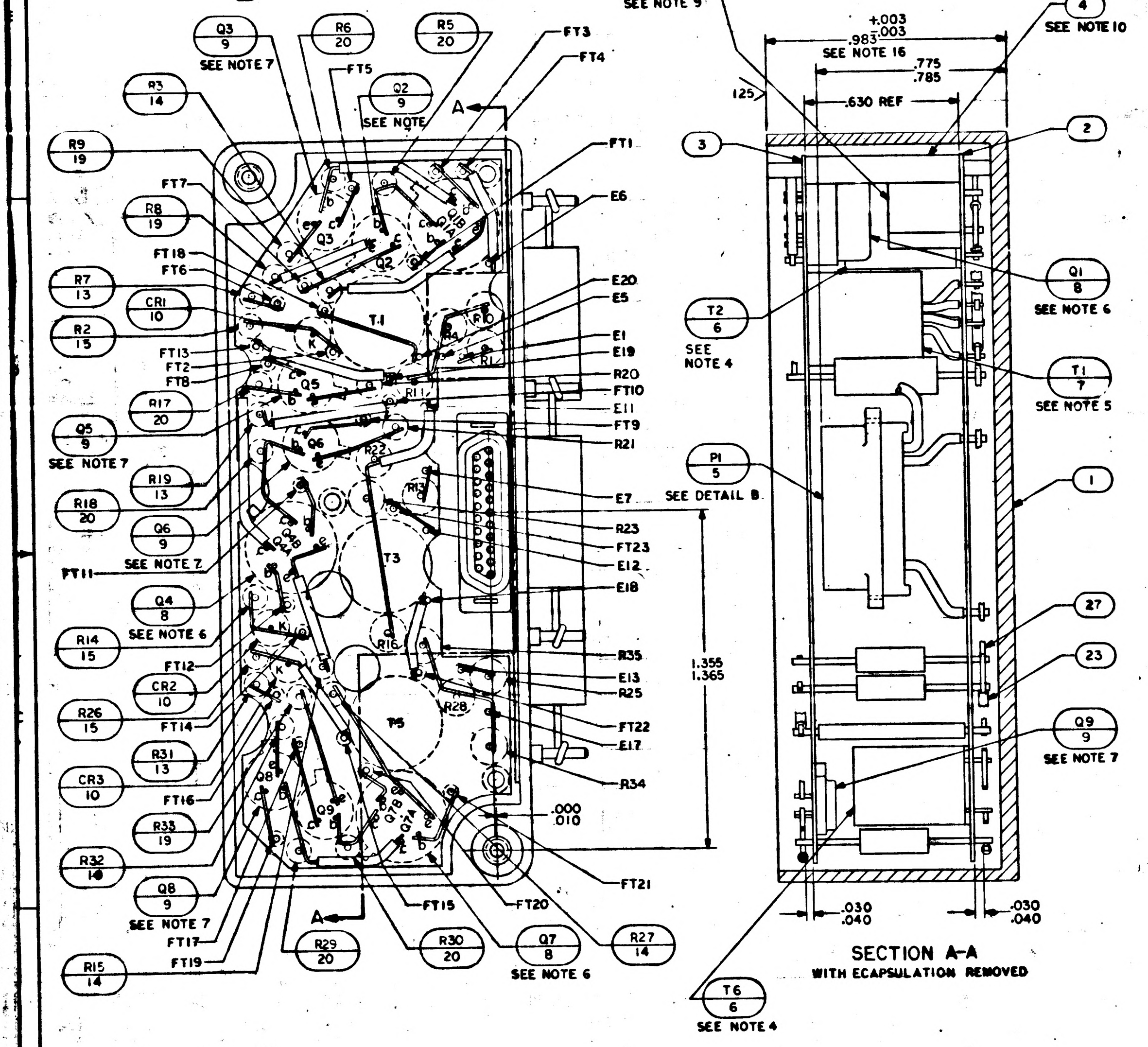
CODE IDENT NO.	SIZE	NASA DRAWING NO.	
	E	1007031	
SCALE 4/1	WT		SHEET 1 OF 1

1007031 A

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS TD*3 0332L			
SYM	DESCRIPTION	DATE	APPROVAL




Q3 9 SEE NOTE 7
R6 20
R5 20
FT3
FT4
R3 14
FT5
Q2 9 SEE NOTE
A
R9 19
FT1
E6
FT7
R8 19
FT18
FT6
R7 13
CR1 10
R2 15
FT13
FT2
FT8
R17 20
Q5 9 SEE NOTE 7
R19 13
R18 20
Q6 9 SEE NOTE 7
FT11
Q4 8 SEE NOTE 6
R14 15
FT12
CR2 10
R26 15
FT14
R31 13
CR3 10
FT16
R33 19
R32 14
Q8 9 SEE NOTE 7
FT17
FT19
R15 14
R29 20
R30 20
Q7 8 SEE NOTE 6
R27 14
FT15
FT20
FT21
E20
E5
E1
E19
R20
FT10
E11
FT9
R21
E7
R23
FT23
E12
E18
R35
E13
R25
FT22
E17
R34
T1
T3
T5
Q1A
Q1B
Q4A
Q4B
Q7A
Q7B
Q9
R10
R4
R1
R11
R22
R13
R16
R28
.000
.010
1.355
1.365
C2 12 SEE NOTE 9
125
+.003
.983 -.003
SEE NOTE 16
.775
.785
.630 REF
4 SEE NOTE 10
3
2
Q1 8 SEE NOTE 6
T2 6 SEE NOTE 4
T1 7 SEE NOTE 5
P1 5 SEE DETAIL B
1
27
23
Q9 9 SEE NOTE 7
.030
.040
.030
.040
T6 6 SEE NOTE 4

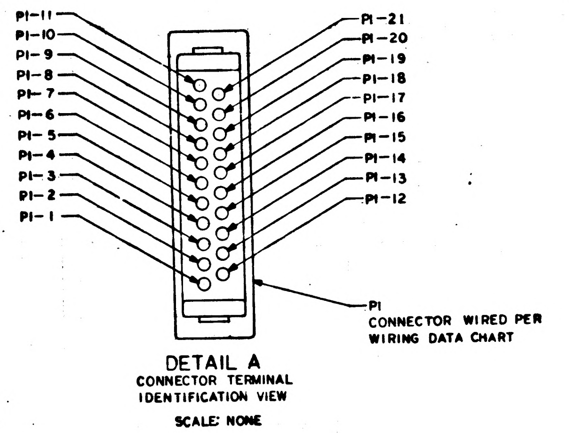
SECTION A-A
WITH ECAPSULATION REMOVED

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E14	GYRO INPUT
P1-2	E15	GYRO ERROR SIG
P1-3	SPARE	SPARF
P1-4	SPARE	SPARE
P1-5	SPARE	SPARE
P1-6	SPARE	SPARE
P1-7	SPARE	SPARE
P1-8	SPARE	SPARE
P1-9	SPARE	SPARE
P1-10	E20	OV DC, COMMON
P1-11	E3	GYRO ERROR SIG
P1-12	E13	GYRO INPUT
P1-13	E16	GYRO ERROR SIG
P1-14	E9	GYRO ERROR SIG
P1-15	E10	GYRO ERROR SIG
P1-16	E7	GYRO INPUT
P1-17	E8	GYRO INPUT
P1-18	E4	GYRO ERROR SIG
P1-19	E19	27.5V DC, COMMON
P1-20	E2	GYRO INPUT
P1-21	E1	GYRO INPUT

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
1	E6	EXTERNAL SELECT
2	E5	EXTERNAL SELECT
3	E18	EXTERNAL SELECT
4	E17	EXTERNAL SELECT
5	E11	EXTERNAL SELECT
6	E12	EXTERNAL SELECT

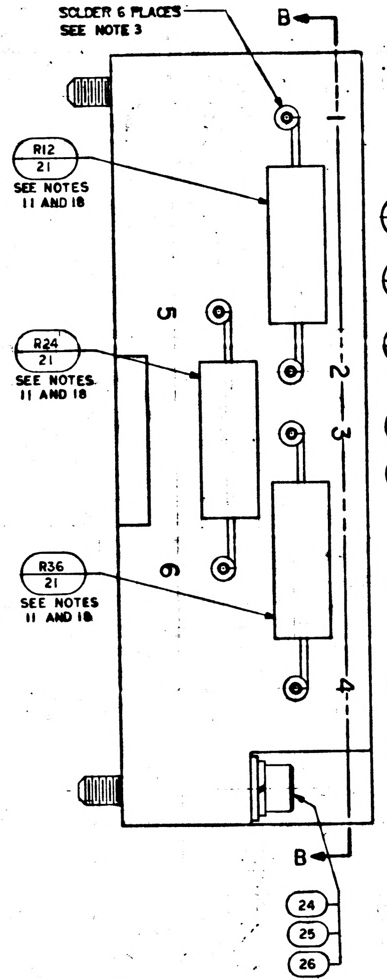
TABLE A SELECTION CHART FOR R12, R24 AND R36

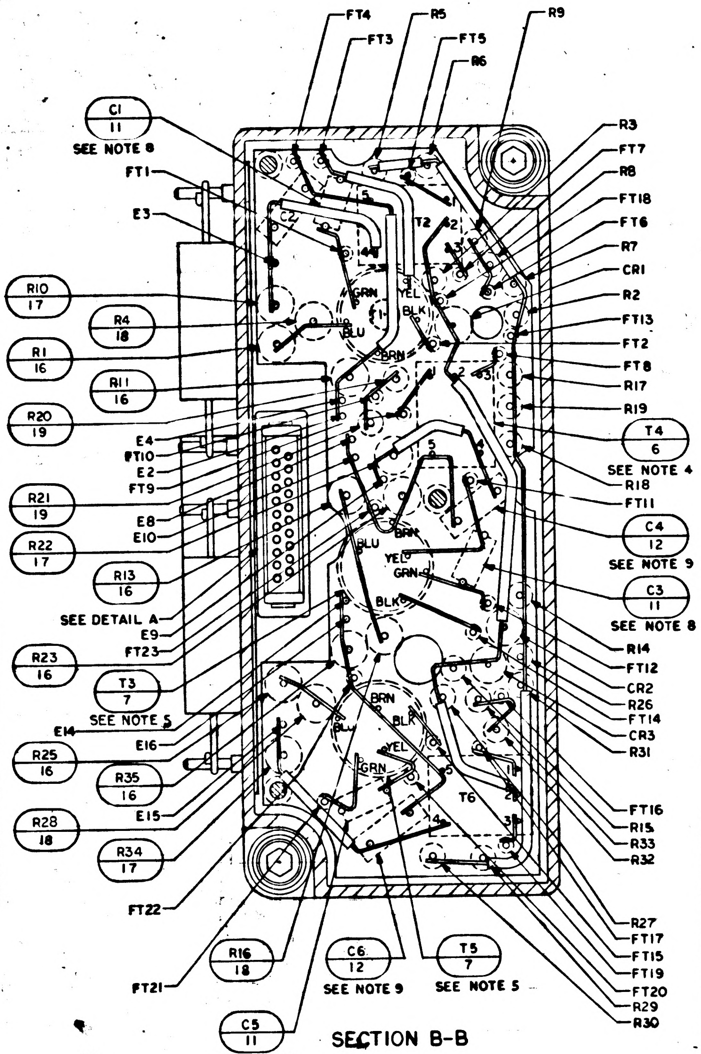
PART NUMBER	VALUE	PART NUMBER	VALUE
1010363-444	10K	1010363-658	130K
-502	20K	-662	137K
-536	30.1K	-666	143K
-560	40.2K	-670	150K
-578	49.9K	-674	158K
-592	59K	-678	165K
-604	68.1K	-682	174K
-614	76.8K	-686	182K
-622	84.4K	-690	191K
-628	90.9K	-694	200K
-634	97.6K	-698	210K
-640	105K	-700	215K
-646	113K	-702	221K
-650	118K	-704	226K
1010363-654	124K	1010363-706	232K


P1-11
P1-10
P1-9
P1-8
P1-7
P1-6
P1-5
P1-4
P1-3
P1-2
P1-1
P1-21
P1-20
P1-19
P1-18
P1-17
P1-16
P1-15
P1-14
P1-13
P1-12
P1
CONNECTOR WIRED PER
WIRING DATA CHART

DETAIL A
CONNECTOR TERMINAL
IDENTIFICATION VIEW

SCALE: NONE

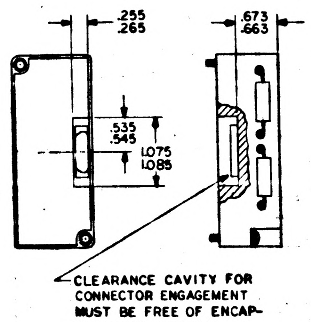

SOLDER 6 PLACES
SEE NOTE 3
B
R12 21 SEE NOTES 11 AND 18
R24 21 SEE NOTES 11 AND 18
R36 21 SEE NOTES 11 AND 18
1
2
3
4
5
6
B
24
25
26


FT4
FT3
R5
FT5
R6
R9
C1 11 SEE NOTE 8
FT1
E3
C2
T2
R10 17
R4 18
R1 16
R11 16
R20 19
E4
FT10
E2
FT9
R21 19
E8
E10
R22 17
R13 16
SEE DETAIL A
E9
FT23
R23 16
T3 7 SEE NOTE 5
E14
E16
R25 16
R35 16
E15
R28 18
R34 17
FT22
FT21
R16 18
C6 12 SEE NOTE 9
T5 7 SEE NOTE 5
C5 11 SEE NOTE 8
GRN
YEL
BLK
BLU
BRN
T6
R3
FT7
R8
FT18
FT6
R7
CR1
R2
FT13
FT2
FT8
R17
R19
T4 6 SEE NOTE 4
R18
FT11
C4 12 SEE NOTE 9
C3 11 SEE NOTE 8
R14
FT12
CR2
R26
FT14
CR3
R31
FT16
R15
R33
R32
R27
FT17
FT15
FT19
FT20
R29
R30

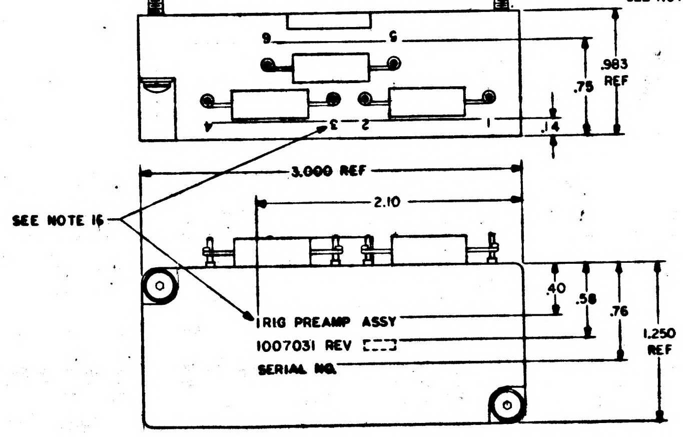
SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WELDS TO BE PER ND1002005
3. ALL SOLDERING CONNECTIONS TO BE MADE PER MIL-S-6872 USING SOLDER PER QQ-S-571, SN60
4. BOND FIND NO. 6 TO FIND NO. 2 PER ND1002004
5. BOND FIND NO. 7 TO FIND NO. 3 PER ND1002004
6. BOND FIND NO. 8 TO FIND NO. 3 PER ND1002004
7. BOND FIND NO. 9 TO FIND NO. 3 PER ND1002004
8. BOND FIND NO. 11 TO FIND NO. 2 PER ND1002004
9. BOND FIND NO. 12 TO FIND NO. 2 PER ND1002004
10. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND1002004
11. BOND FIND NO. 22 TO FIND NO. 1 PER ND1002004
12. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
13. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. SERIALIZE AND MARK .060 TO .100 HIGH BLACK PER ND1002023
17. AR DENOTES AS REQUIRED
18. R12, R24 AND R36 TO BE SELECTED BY ELECTRICAL TEST, PER ATP________
19. K DENOTES CATHODE SIDE OF DIODE
20. SPARE LEADS FROM FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH


.255
.265
.673
.663
.535
.545
1.075
1.085
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION
DATA
SCALE: 1/1


9
6
5
4
3
2
1
.983 REF
.75
.14
3.000 REF
2.10
SEE NOTE 16
IRIG PREAMP ASSY
1007031 REV
SERIAL NO.
.40
.58
.76
1.250 REF

MARKING VIEWS
SCALE: 2/1

MASTER

	1010053	SCHEMATIC	REF
AR	1006757-1	WIRE, ELECTRICAL	27
2	MS35338-78	WASHER, LOCK	26
2	MS15795-303	WASHER, FLAT	25
2	1008002-1	SCREW, EXT RELIEVED BODY	24
AR	1006776-22	INSULATION, SLEEVING, ELEC	23
AR	1006787-2	WIRE, ELECTRICAL	22
3	1010363	RESISTOR (SEE NOTE 18)	21
6	1006750-58	RESISTOR	20
6	1006750-15	RESISTOR	19
3	1010364-769	RESISTOR	18
3	1010364-635	RESISTOR	17
6	1010364-501	RESISTOR	16
3	1006750-63	RESISTOR	15
3	1006750-52	RESISTOR	14
3	1006750-32	RESISTOR	13
3	1010359-23	CAPACITOR	12
3	1010359-17	CAPACITOR	11
3	1010372-15	DIODE	10
3	1010633-2	TRANSISTOR MATCHED PAIR	9
3	1010252-1	TRANSISTOR	8
3	1007060	TRANSFORMER, SHIELDED ASSY	7
3	1010291-1	TRANSFORMER	6
1	1010472-2	CONNECTOR, RECP, ELECTRICAL	5
3	1008053	SPACER	4
1	1008061	WIRING BOARD, BOTTOM	3
1	1008060	WIRING BOARD, TOP	2
1	1007026	HOUSING, INSEPARABLE ASSY	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1000005	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.03 ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN [illegible] DATE 7-1-63
CHECKED [illegible] 9-12-63
APPROVAL [illegible] 9-16-63
APPROVAL [illegible] 9-25-63
NASA APPROVAL [illegible]
MIT APPROVAL [illegible]

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

IRIG PREAMP ASSY

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	E	1007031
SCALE 4/1	WT	SHEET 1 OF 1

1007031

INCHES
PHOTOGRAPHIC SCALE ONLY

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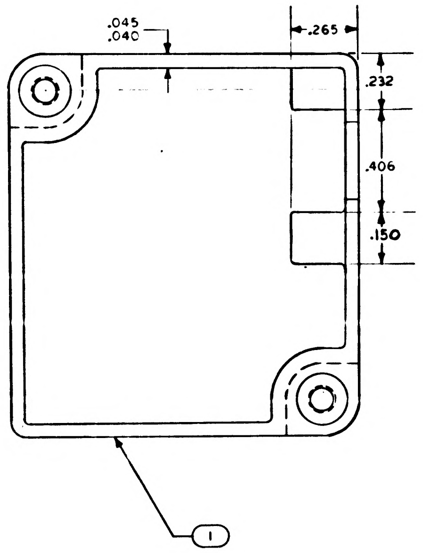
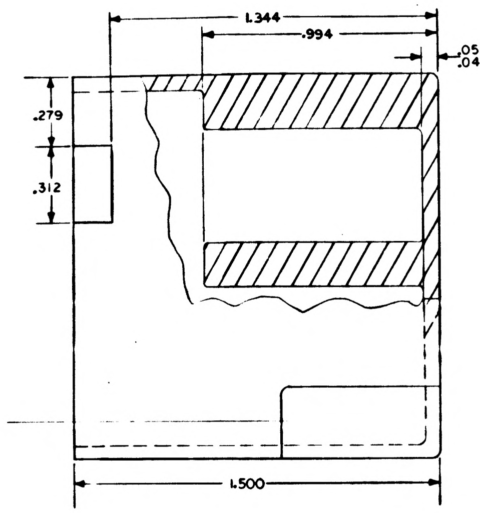
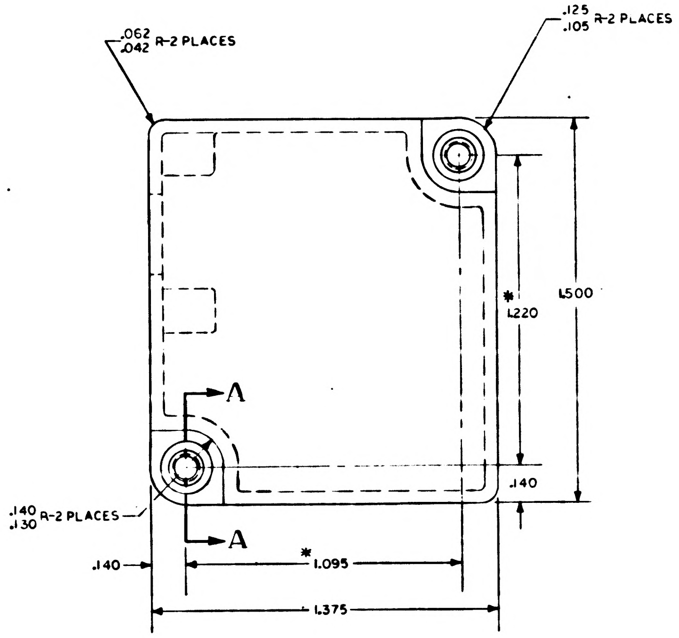
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

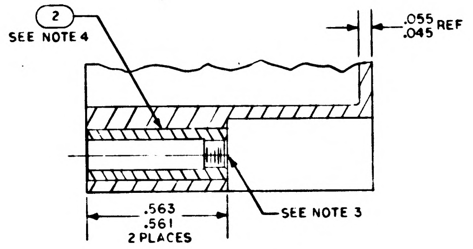






FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 01190 DATE 5-8-63



PARTIAL VIEW A-A

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL(G.E. LEXAN WATER CLEAR) PER GEND 1002134
3. MOLDING TO BE FLUSH WITH THREADED END FIND NO. 2
4. FIND NO.2 TO BE FREE OF FOREIGN MATTER
5. UNLESS OTHERWISE SPECIFIED ALL INSIDE RADII .010 MAX.
6. 125√ALL OVER
7. * TOLERANCE ±.003

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
2	1008001-1	RETAINER SCREW	2
1	1007032-1	HOUSING MODULE	

LIST OF MATERIALS

1007034	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± —
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH —

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO
CONTRACT
DRAWN J.F. Walsh DATE 4/25/63
CHECKED
APPROVAL J.C. Smith 5-7-63
APPROVAL
NASA APPROVAL Jack Diamond
MIT APPROVAL W. Kupfer 8 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HOUSING MODULE
DEMOD. ATTITUDE ERROR
MOLDED

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007032
SCALE 4/1
WT
SHEET 1 OF 1

1007032

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

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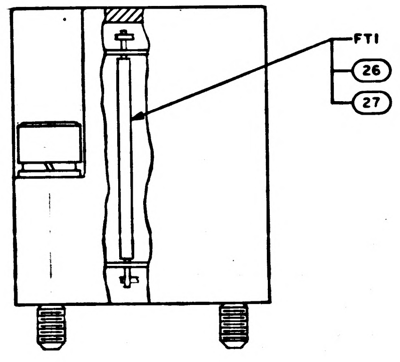
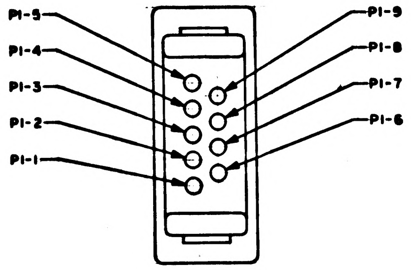
Ⓜ

REVISIONS CLASS B TDEP-0466			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED + UPGRADED TO CLASS "M" PER TDEP 0151	6-12-63	SG GT, PKB

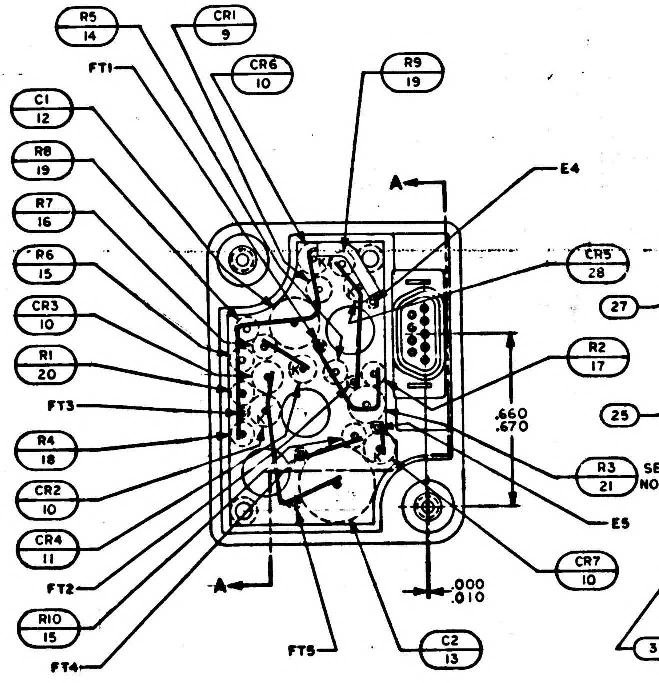
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E5	MODE REL COM
P1-2	E1	+28 VOLTS DC
P1-3	E3	TIME DELAY REL CONT
P1-4	SPARE	
P1-5	E4	0 VOLTS DC GROUND
P1-6	SPARE	
P1-7	SPARE	
P1-8	SPARE	
P1-9	SPARE	



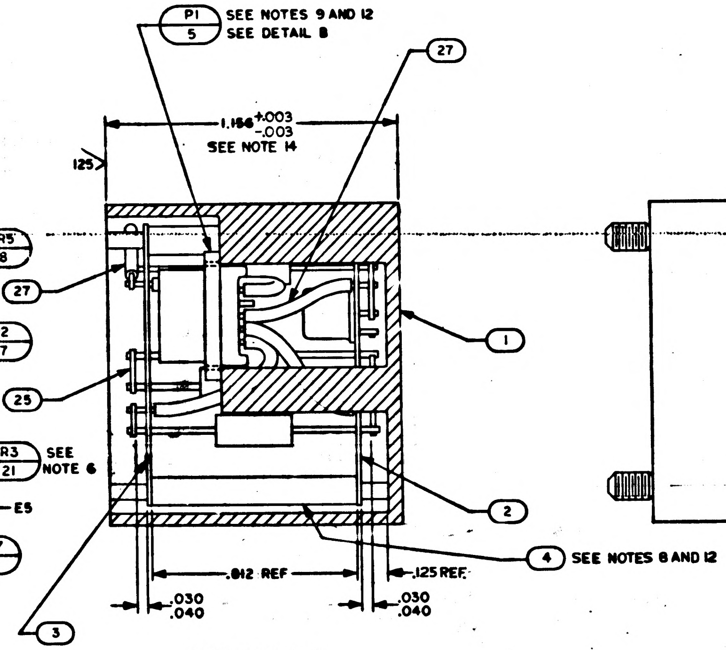


P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE

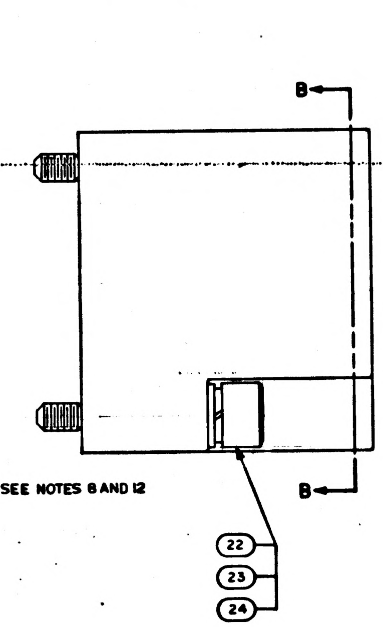


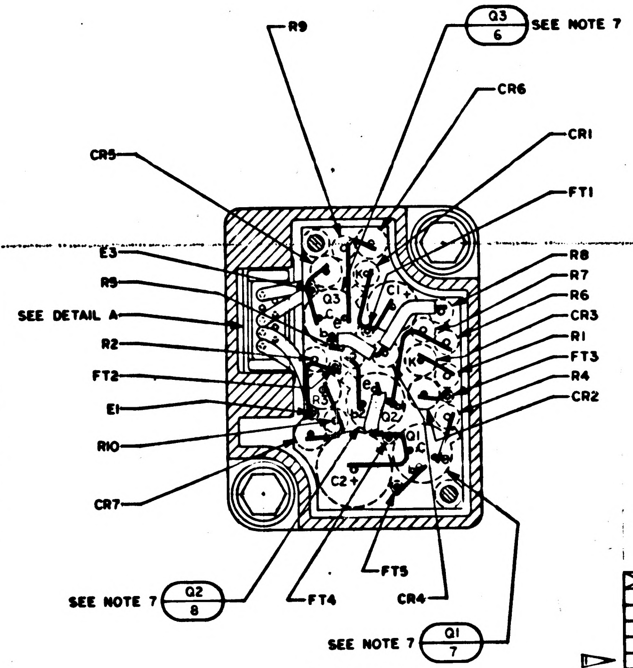
R5 14
CR1 9
FT1
CR6 10
R9 19
C1 12
R8 19
R7 16
R6 15
CR3 10
R1 20
FT3
R4 18
CR2 10
CR4 11
FT2
R10 15
FT4
FT5
C2 13
A
A
E4
CR5 28
R2 17
R3 21 SEE NOTE 6
E5
CR7 10
.660
.670
.000
.010



P1 5
SEE NOTES 9 AND 12
SEE DETAIL B
27
1.156 +.003 -.003
SEE NOTE 14
125
27
25
1
2
3
4 SEE NOTES 8 AND 12
.812 REF
.125 REF
.030
.040
.030
.040

SECTION A-A



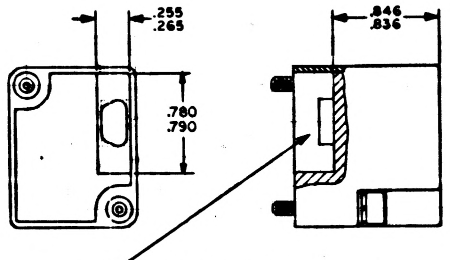


R9
Q3 6 SEE NOTE 7
CR6
CR1
FT1
CR5
E3
R5
SEE DETAIL A
R2
FT2
E1
R10
CR7
R8
R7
R6
CR3
R1
FT3
R4
CR2
SEE NOTE 7 Q2 8
FT4
FT5
CR4
SEE NOTE 7 Q1 7

SECTION B-B

NOTES:

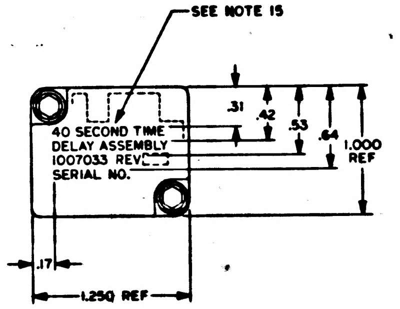
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003.
3. ALL WELDS TO BE PER ND1002005.
4. K DENOTES CATHODE END OF DIODE.
5. AR DENOTES AS REQUIRED.
6. R3 TO BE SELECTED.
7. BOND FIND NUMBERS 6, 7 AND 8 TO FIND NO. 2 PER ND1002004.
8. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND1002004.
9. SPARE LEADS ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH.
10. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON.
11. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION.
12. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004.
13. ENCAPSULATE MODULE PER ND1002106.
14. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
15. MARK .060 TO .100 HIGH BLACK PER ND1002019.
16. FT DONOTES FEED THRU.
17. ▷ VENDOR ITEM SEE SPEC CONTROL DWG.



.255
.265
.846
.836
.780
.790

CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 2:1



SEE NOTE 15
40 SECOND TIME DELAY ASSEMBLY
1007033 REV
SERIAL NO.
.31
.42
.53
.64
1.000 REF
.17
1.250 REF

MARKING VIEW
SCALE: 2:1

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
	☒	1010127	SCHEMATIC	REF
▷	1	1010385	DIODE	28
▷	AR	1006776-21	INSULATION, SLEEVING, ELEC	27
▷	AR	1006787-2	WIRE, ELECTRICAL	26
▷	AR	1006757-1	WIRE, ELECTRICAL	25
	2	MS35338-78	WASHER, LOCK	24
	2	MS15795-303	WASHER, FLAT	23
▷	2	1008069	SCREW, SOC HD, EXT RELIEVED BODY	22
	1	1010364	RESISTOR (SEE NOTE 6)	21
	1	1006750-77	RESISTOR	20
	2	1006750-56	RESISTOR	19
	1	1006750-49	RESISTOR	18
	1	1006750-39	RESISTOR	17
	1	1006750-36	RESISTOR	16
	2	1006750-32	RESISTOR	15
▷	1	1006750-8	RESISTOR	14
▷	1	1010393-043	CAPACITOR	13
▷	1	1006755-77	CAPACITOR	12
▷	1	1010372-8	DIODE	11
▷	4	1010362-2	DIODE	10
▷	1	1010286-11	DIODE	9
	1	1010408	TRANSISTOR	8
▷	1	1010397-001	TRANSISTOR	7
▷	1	1010357	TRANSISTOR	6
	1	1010318-2	CONNECTOR	5
	2	1008067	SPACER, INSULATOR	4
	1	1008063	WIRING BOARD, BOTTOM	3
	1	1008062	WIRING BOARD, TOP	2
	1	1008056	HOUSING, INSEPARABLE ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± #   DECIMALS ±.02   ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO   CONTRACT
DRAWN Van Healy DATE 5-3-63
CHECKED
APPROVAL
APPROVAL J C
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

40 SECOND TIME DELAY ASSEMBLY

CODE IDENT NO.   SIZE E   NASA DRAWING NO 1007033
SCALE 4:1   WT   SHEET 1 OF 1

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

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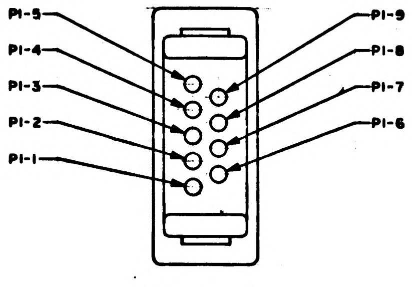
REVISIONS CLASS [illegible]

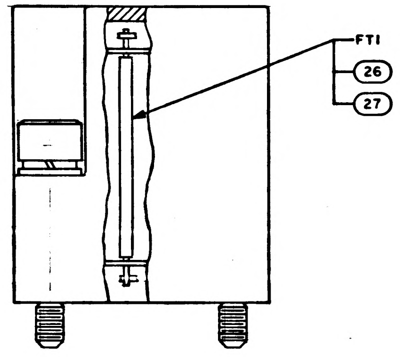
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED & [illegible] TO CLASS [illegible] PER TDRR 015[illegible]1	[illegible]-12-63	SS/ [illegible] PMB
B	REVISED PER TDRR 02157	7-[illegible]-6[illegible]	[illegible] UK

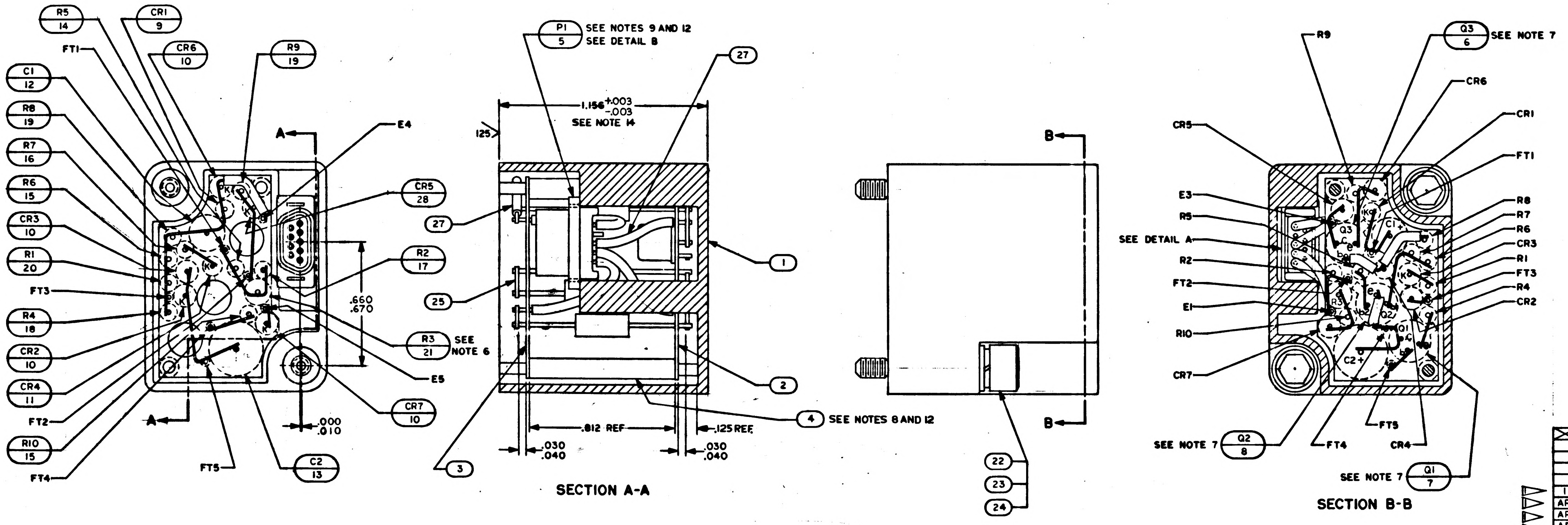
M

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E5	MODE REL COM
P1-2	E1	+28 VOLTS DC
P1-3	E3	TIME DELAY REL CONT
P1-4	SPARE	
P1-5	E4	0 VOLTS DC GROUND
P1-6	SPARE	
P1-7	SPARE	
P1-8	SPARE	
P1-9	SPARE	


P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL
IDENTIFICATION VIEW
NO SCALE

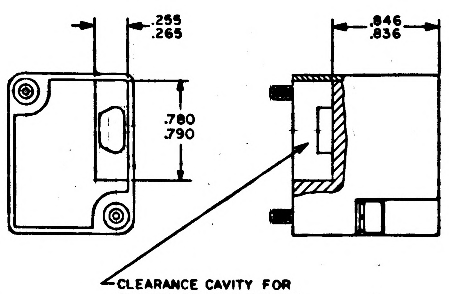



R5 14
CR1 9
FT1
CR6 10
R9 19
C1 12
R8 19
R7 16
R6 15
CR3 10
R1 20
FT3
R4 18
CR2 10
CR4 11
FT2
R10 15
FT4
FT5
C2 13
A
A
E4
CR5 28
R2 17
.660
.670
R3 21 SEE NOTE 6
E5
CR7 10
.000
.010
P1 5 SEE NOTES 9 AND 12
SEE DETAIL B
27
1.156 +.003 -.003
SEE NOTE 14
.125
27
1
25
2
3
4 SEE NOTES 8 AND 12
.030
.040
.812 REF
.125 REF
.030
.040
B
B
22
23
24
R9
Q3 6 SEE NOTE 7
CR6
CR1
FT1
CR5
E3
R5
SEE DETAIL A
R2
FT2
E1
R10
CR7
R8
R7
R6
CR3
R1
FT3
R4
CR2
SEE NOTE 7 Q2 8
FT4
FT5
CR4
SEE NOTE 7 Q1 7

SECTION A-A

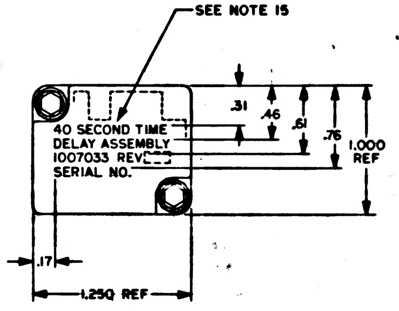
SECTION B-B

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003.
3. ALL WELDS TO BE PER ND1002005.
4. K DENOTES CATHODE END OF DIODE.
5. AR DENOTES AS REQUIRED.
6. R3 TO BE SELECTED.
7. BOND FIND NUMBERS 6, 7 AND 8 TO FIND NO. 2 PER ND1002004.
8. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND1002004.
9. SPARE LEADS ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH.
10. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON.
11. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION.
12. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004.
13. ENCAPSULATE MODULE PER ND1002106.
14. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
15. MARK .060 TO .100 HIGH BLACK PER ND1002019.
16. FT DENOTES FEED THRU.
17. ▷ VENDOR ITEM SEE SPEC CONTROL DWG.


.255
.265
.846
.836
.780
.790

CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 2:1


SEE NOTE 15
40 SECOND TIME DELAY ASSEMBLY 1007033 REV
SERIAL NO.
.31
.46
.61
.76
1.000 REF
.17
1.250 REF

MARKING VIEW
SCALE: 2:1

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	☒	1010127	SCHEMATIC	REF
▷	1	1010385	DIODE	28
▷	AR	1006776-21	INSULATION, SLEEVING, ELEC	27
▷	AR	1006787-2	WIRE, ELECTRICAL	26
▷	AR	1006757-1	WIRE, ELECTRICAL	25
	2	MS35338-78	WASHER, LOCK	24
	2	MS15795-303	WASHER, FLAT	23
▷	2	1008069-1	SCREW, SOC HD, EXT RELIEVED BODY	22
	1	1010364	RESISTOR (SEE NOTE 6)	21
	1	1006750-77	RESISTOR	20
	2	1006750-56	RESISTOR	19
	1	1006750-49	RESISTOR	18
	1	1006750-39	RESISTOR	17
	1	1006750-36	RESISTOR	16
	2	1006750-32	RESISTOR	15
▷	1	1006750-8	RESISTOR	14
▷	1	1010393-043	CAPACITOR	13
▷	1	1006755-77	CAPACITOR	12
▷	1	1010372-8	DIODE	11
▷	4	1010362-2	DIODE	10
▷	1	1010286-11	DIODE	9
	1	1010408	TRANSISTOR	8
▷	1	1010397-001	TRANSISTOR	7
▷	1	1010357	TRANSISTOR	6
	1	1010318-2	CONNECTOR	5
	2	1008067	SPACER, INSULATOR	4
	1	1008063	WIRING BOARD, BOTTOM	3
	1	1008062	WIRING BOARD, TOP	2
	1	1008056	HOUSING, INSEPARABLE ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± // DECIMALS ±.02 ANGLES ± //
DO NOT SCALE THIS DRAWING
MATERIAL //
HEAT TREATMENT //
FINAL FINISH //

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO.
CONTRACT

DRAWN Ken Healy DATE 5-3-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

40 SECOND TIME DELAY ASSEMBLY

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007033
SCALE 4:1
WT
SHEET 1 OF 1

MASTER

1007033 B

INCHES
PHOTOGRAPHIC SCALE ONLY

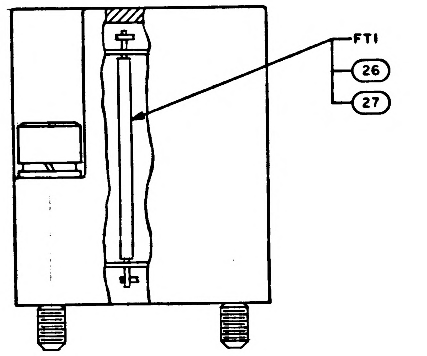
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

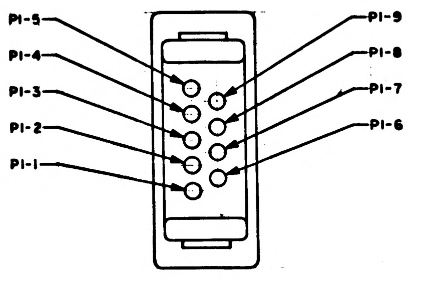
REVISIONS CLASS [illegible] TDRR-CLASS

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED + UPGRADED TO CLASS "A" PER TDRR 01561	5-13-63	PAB
B	REVISED PER TDRR 02157	7-24-63	WK
C	REVISED PER TDRR 02543	8-21-63	

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E5	MODE REL COM
P1-2	E1	+28 VOLTS DC
P1-3	E3	TIME DELAY REL CONT
P1-4	SPARE	
P1-5	E4	0 VOLTS DC GROUND
P1-6	SPARE	
P1-7	SPARE	
P1-8	SPARE	
P1-9	SPARE	



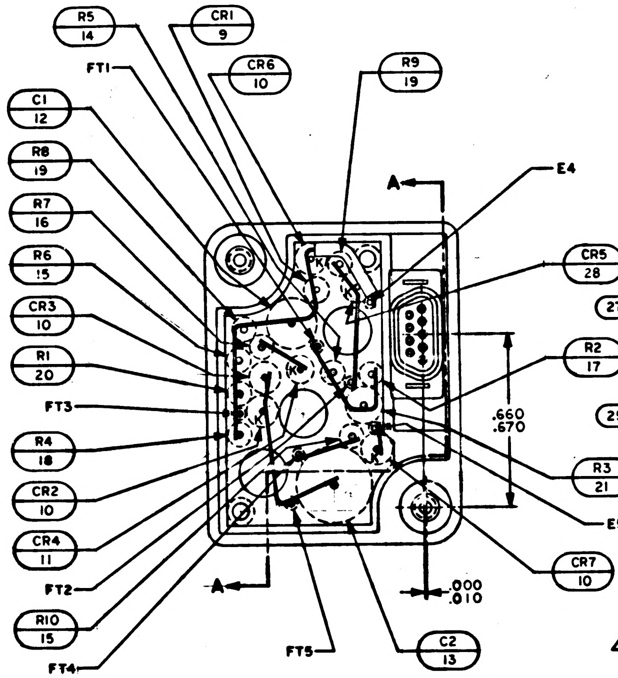


P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

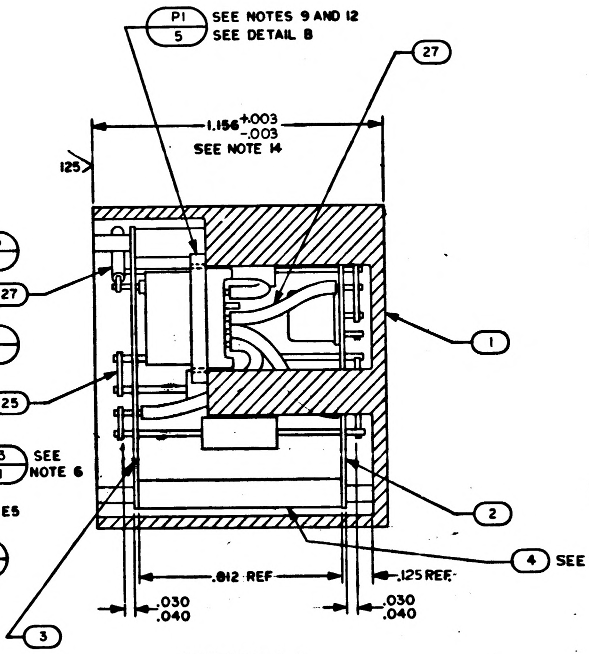
DETAIL A

CONNECTOR TERMINAL IDENTIFICATION VIEW

NO SCALE

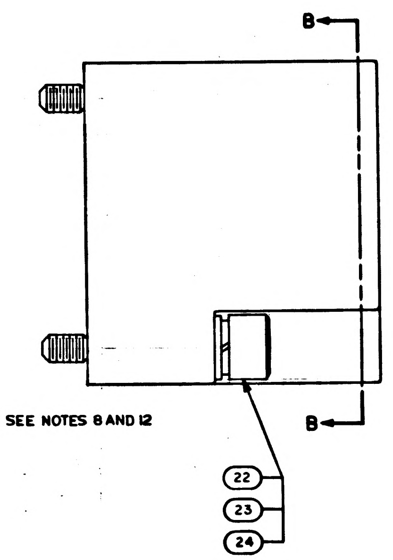


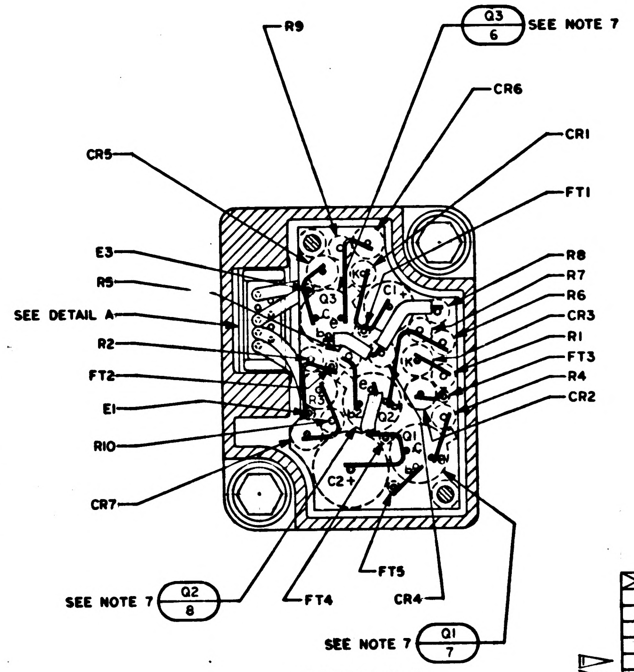
R5 14
CR1 9
FT1
CR6 10
R9 19
C1 12
R8 19
R7 16
R6 15
CR3 10
R1 20
FT3
R4 18
CR2 10
CR4 11
FT2
R10 15
FT4
FT5
A
A
E4
CR5 28
R2 17
R3 21 SEE NOTE 6
E5
CR7 10
C2 13
.660
.670
.000
.010



P1 5 SEE NOTES 9 AND 12 SEE DETAIL B
27
1.156 +.003 -.003 SEE NOTE 14
125
27
25
1
2
3
4 SEE NOTES 8 AND 12
.812 REF
.125 REF
.030 .040
.030 .040

SECTION A-A





R9
Q3 6 SEE NOTE 7
CR6
CR1
FT1
CR5
E3
R5
SEE DETAIL A
R2
FT2
E1
R10
CR7
R8
R7
R6
CR3
R1
FT3
R4
CR2
SEE NOTE 7 Q2 8
FT4
FT5
CR4
SEE NOTE 7 Q1 7

SECTION B-B

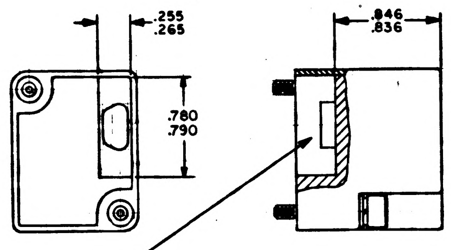
	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
	☒	1010127	SCHEMATIC	REF
▷	1	1010385	DIODE	28
▷	AR	1006776-21	INSULATION, SLEEVING, ELEC	27
▷	AR	1006787-2	WIRE, ELECTRICAL	26
▷	AR	1006757-1	WIRE, ELECTRICAL	25
	2	MS35338-78	WASHER, LOCK	24
	2	MS15795-303	WASHER, FLAT	23
▷	2	1008069-1	SCREW, SOC HD, EXT RELIEVED BODY	22
	1	1010364	RESISTOR (SEE NOTE 6)	21
	1	1006750-77	RESISTOR	20
	2	1006750-56	RESISTOR	19
	1	1006750-49	RESISTOR	18
	1	1006750-39	RESISTOR	17
	1	1006750-36	RESISTOR	16
	2	1006750-32	RESISTOR	15
▷	1	1006750-8	RESISTOR	14
▷	1	1010393-043	CAPACITOR	13
▷	1	1006755-77	CAPACITOR	12
▷	1	1010372-8	DIODE	11
▷	4	1010362-2	DIODE	10
▷	1	1010286-11	DIODE	9
	1	1010408	TRANSISTOR	8
▷	1	1010397-001	TRANSISTOR	7
▷	1	1010357	TRANSISTOR	6
	1	1010318-2	CONNECTOR	5
	2	1008067	SPACER, INSULATOR	4
	1	1008063	WIRING BOARD, BOTTOM	3
	1	1008062	WIRING BOARD, TOP	2
	1	1008056	HOUSING, INSEPARABLE ASSY	1

LIST OF MATERIALS

1007033 C

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003.
3. ALL WELDS TO BE PER ND1002005.
4. K DENOTES CATHODE END OF DIODE.
5. AR DENOTES AS REQUIRED.
6. R3 TO BE SELECTED.
7. BOND FIND NUMBERS 6, 7 AND 8 TO FIND NO. 2 PER ND1002004.
8. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND1002004.
9. SPARE LEADS ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH.
10. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON.
11. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION.
12. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004.
13. ENCAPSULATE MODULE PER ND1002106.
14. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
15. SERIALIZE AND MARK .060 TO .100 HIGH BLACK PER ND 1002023
16. FT DENOTES FEED THRU.
17. ▷ VENDOR ITEM SEE SPEC CONTROL DWG.



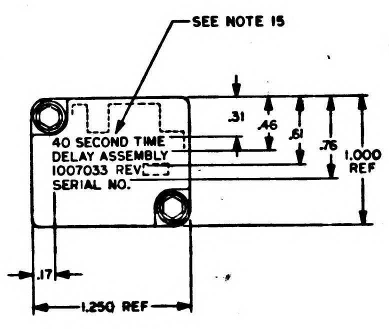
.255
.265
.780
.790
.846
.836

CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B

ENCAPSULATION CONFIGURATION DATA

SCALE: 2:1



SEE NOTE 15
40 SECOND TIME DELAY ASSEMBLY 1007033 REV
SERIAL NO.
.31
.46
.61
.76
1.000 REF
.17
1.250 REF

MARKING VIEW

SCALE: 2:1

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ±.02 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO CONTRACT
DRAWN Ken Healy DATE 5-3-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

40 SECOND TIME DELAY ASSEMBLY

CODE IDENT NO. SIZE E NASA DRAWING NO 1007033
SCALE 4:1 WT SHEET 1 OF 1

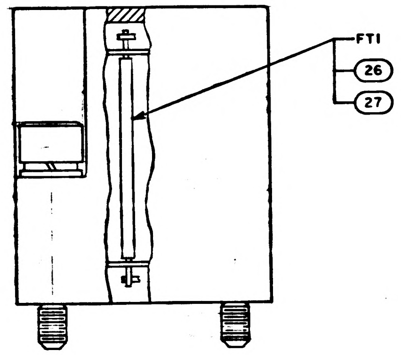
INCHES 0 1 2
PHOTOGRAPHIC SCALE ONLY

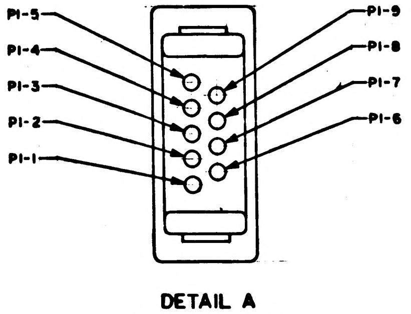
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REVISIONS CLASS II [illegible]

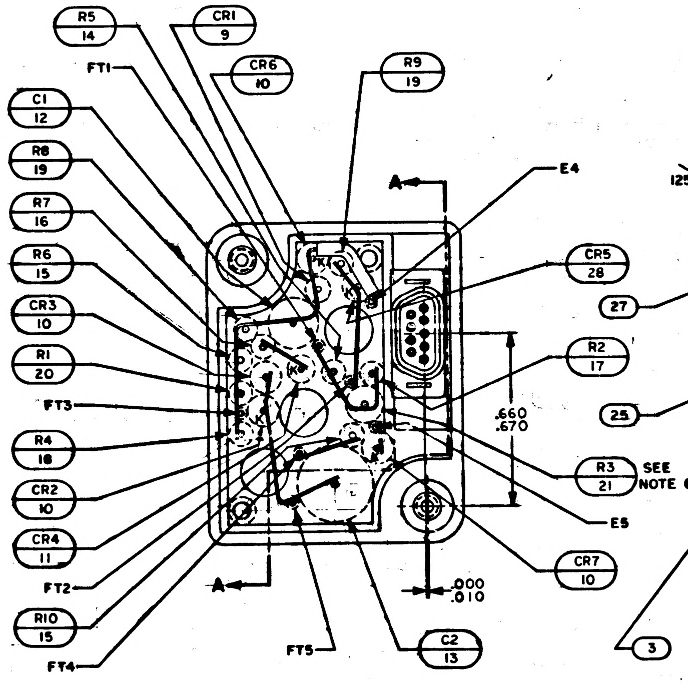
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED + UPGRADED TO CLASS II PER TDRR 01561	6-12-63	SS/GT. PMB
B	REVISED PER TDRR 02157	7-29-63	WK
C	REVISED PER TDRR 02843	8-21-63	
D	REVISED PER TDRR 05095	11/22/63	WK

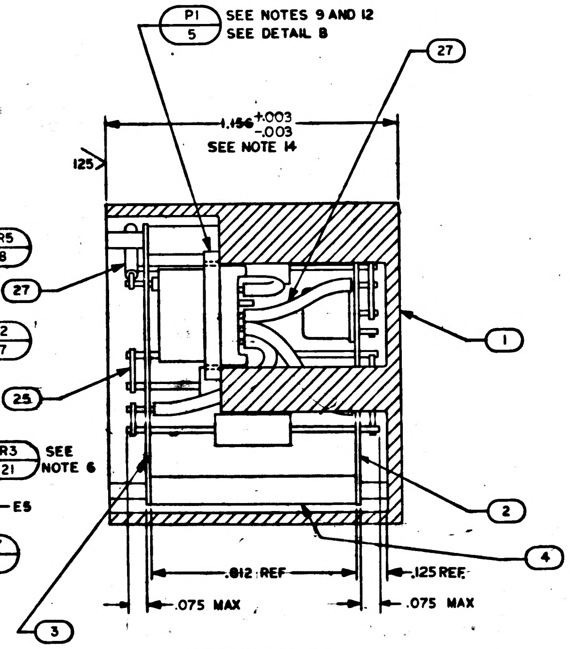
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E5	MODE REL COM
P1-2	E1	+28 VOLTS DC
P1-3	E3	TIME DELAY REL CONT
P1-4	SPARE	
P1-5	E4	0 VOLTS DC GROUND
P1-6	SPARE	
P1-7	SPARE	
P1-8	SPARE	
P1-9	SPARE	



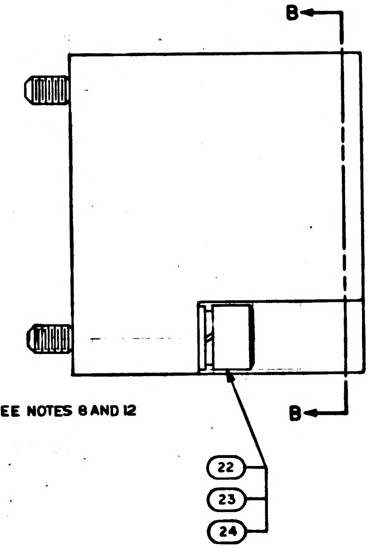

P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

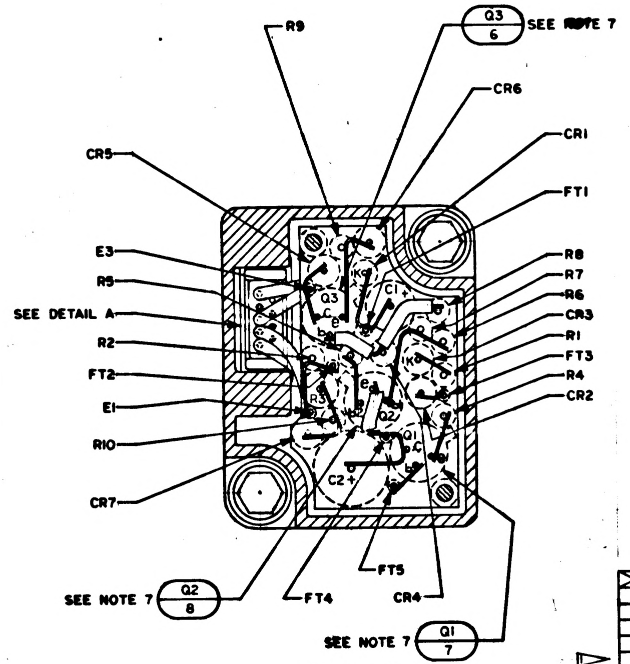
DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE


R5 14
CR1 9
FT1
CR6 10
R9 19
C1 12
R8 19
R7 16
R6 15
CR3 10
R1 20
FT3
R4 18
CR2 10
CR4 11
FT2
R10 15
FT4
FT5
C2 13
A
E4
CR5 28
R2 17
R3 21 SEE NOTE 6
E5
CR7 10
.660
.670
.000
.010

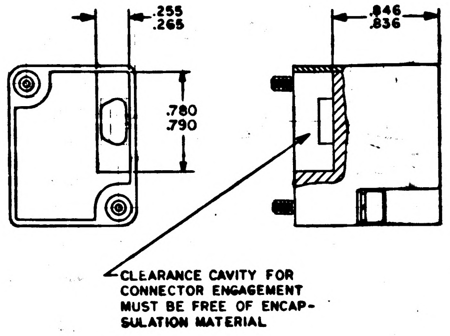

P1 5 SEE NOTES 9 AND 12
SEE DETAIL B
27
1.156 +.003 -.003
SEE NOTE 14
.125
27
25
1
2
3
4 SEE NOTES 8 AND 12
.812 REF
.125 REF
.075 MAX
.075 MAX

SECTION A-A

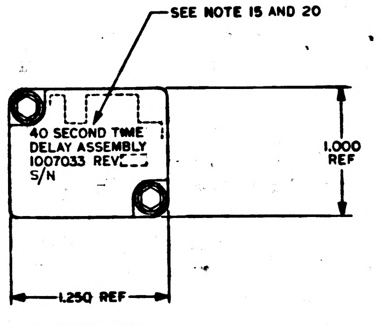



R9
Q3 6 SEE NOTE 7
CR6
CR1
FT1
CR5
E3
R5
SEE DETAIL A
R2
FT2
E1
R10
CR7
R8
R7
R6
CR3
R1
FT3
R4
CR2
Q2 8 SEE NOTE 7
FT4
FT5
CR4
Q1 7 SEE NOTE 7

SECTION B-B


.255
.265
.846
.836
.780
.790
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE:2:1


SEE NOTE 15 AND 20
40 SECOND TIME DELAY ASSEMBLY
1007033 REV
S/N
1.000 REF
1.250 REF

MARKING VIEW
SCALE:2:1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003.
3. ALL WELDS TO BE PER ND1002005.
4. K DENOTES CATHODE END OF DIODE.
5. AR DENOTES AS REQUIRED.
6. R3 TO BE SELECTED IN ACCORDANCE WITH ATP 1007033
7. BOND FIND NUMBERS 6, 7 AND 8 TO FIND NO. 2 PER ND1002004.
8. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND1002004.
9. SPARE LEADS ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH.
10. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN.
11. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION.
12. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004.
13. ENCAPSULATE MODULE PER ND1002106.
14. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
15. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND 1002023
16. FT DONOTES FEED THRU.
17. ▷ VENDOR ITEM SEE SPEC CONTROL DWG.
18. INSPECT PER PS 1007033
19. TEST PER FTM 1007033
20. PIECE MARKING TO BE CENTRALLY LOCATED ON SURFACE INDICATED

☒	1010127	SCHEMATIC	REF
▷ 1	1010385	DIODE	28
▷ AR	1006776-21	INSULATION, SLEEVING, ELEC	27
▷ AR	1006787-2	WIRE, ELECTRICAL	26
▷ AR	1006757-1	WIRE, ELECTRICAL	25
2	MS35338-78	WASHER, LOCK	24
2	MS15795-303	WASHER, FLAT	23
▷ 2	1008069-1	SCREW, SOC HD, EXT RELIEVED BODY	22
1	1010364	RESISTOR (SEE NOTE 6)	21
1	1006750-77	RESISTOR	20
2	1006750-56	RESISTOR	19
1	1006750-49	RESISTOR	18
1	1006750-39	RESISTOR	17
1	1006750-36	RESISTOR	16
2	1006750-32	RESISTOR	15
▷ 1	1006750-8	RESISTOR	14
▷ 1	1010393-043	CAPACITOR	13
▷ 1	1006755-77	CAPACITOR	12
▷ 1	1010372-8	DIODE	11
▷ 4	1010362-2	DIODE	10
▷ 1	1010286-11	DIODE	9
1	1010408	TRANSISTOR	8
▷ 1	1010397-001	TRANSISTOR	7
▷ 1	1010357	TRANSISTOR	6
1	1010318-2	CONNECTOR	5
2	1008067	SPACER, INSULATOR	4
1	1008063	WIRING BOARD, BOTTOM	3
1	1008062	WIRING BOARD, TOP	2
1	1008056	HOUSING, INSEPARABLE ASSY	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ±.02 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN Ken Healy DATE 5-3-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

40 SECOND TIME DELAY ASSEMBLY

CODE IDENT NO. SIZE E NASA DRAWING NO. 1007033
SCALE 4:1 WT SHEET 1 OF 1

1007033 D

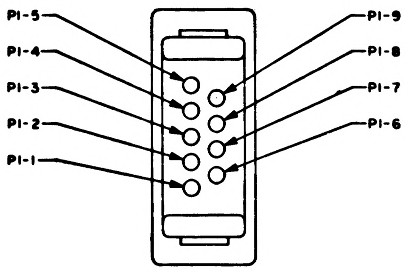
MASTER

NOTICE – WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

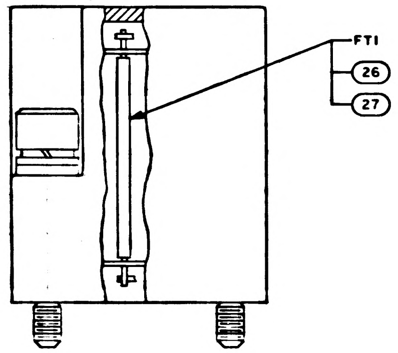
REVISIONS CLASS II TDRR-0866

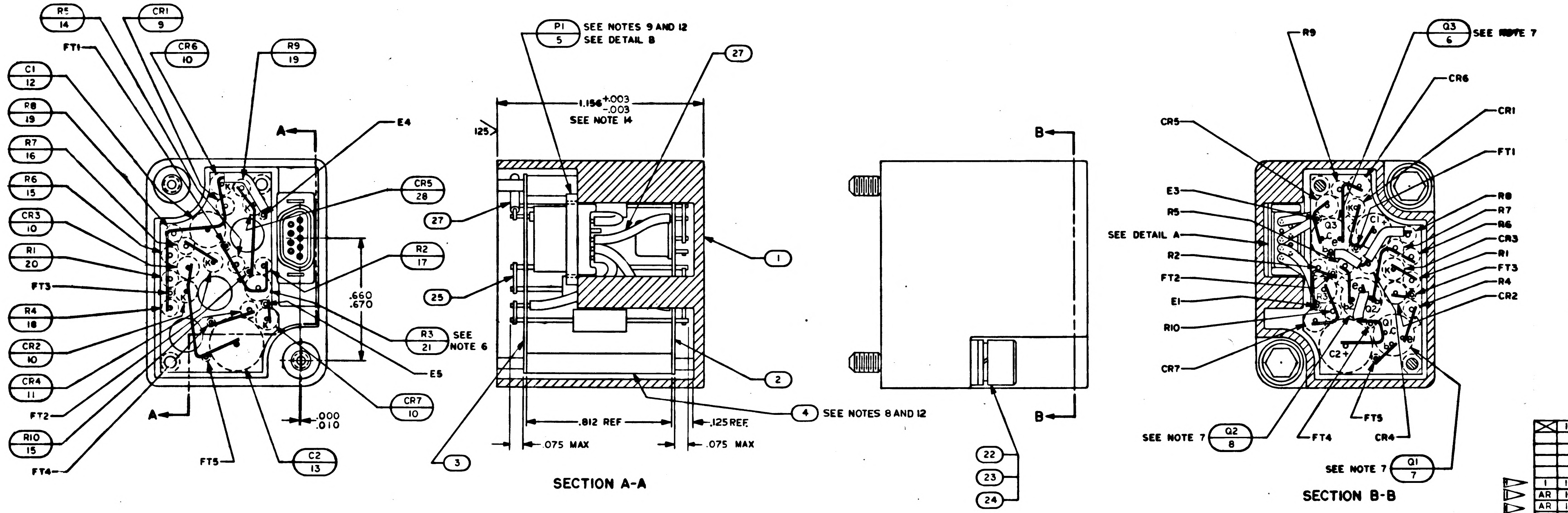
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED + UPGRADED TO CLASS "A" PER TDRR 31561	8-12-63	SS PKB
B	REVISED PER TDRR 02157	7-29-63	WK
C	REVISED PER TDRR 02543	[illegible]	
D	REVISED PER TDRR 05095	[illegible]	WK
E	REVISED PER TDRR 12860	SEP	

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E5	MODE REL COM
P1-2	E1	+28 VOLTS DC
P1-3	E3	TIME DELAY REL CONT
P1-4	SPARE	
P1-5	E4	0 VOLTS DC GROUND
P1-6	SPARE	
P1-7	SPARE	
P1-8	SPARE	
P1-9	SPARE	


P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE

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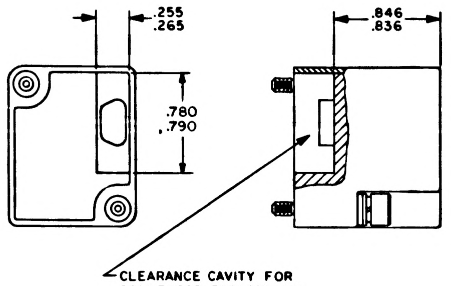
CR1 9
CR6 10
R9 19
FT1
C1 12
R8 19
R7 16
R6 15
CR3 10
R1 20
FT3
R4 18
CR2 10
CR4 11
FT2
R10 15
FT4
FT5
C2 13
A
A
E4
CR5 28
R2 17
R3 21 SEE NOTE 6
E5
CR7 10
.660
.670
.000
.010
P1 5 SEE NOTES 9 AND 12 SEE DETAIL B
27
1.156 +.003 -.003
SEE NOTE 14
.125
27
25
1
2
3
4 SEE NOTES 8 AND 12
.812 REF
.125 REF
.075 MAX
.075 MAX
B
B
22
23
24
R9
Q3 6 SEE NOTE 7
CR6
CR1
FT1
CR5
E3
R5
SEE DETAIL A
R2
FT2
E1
R10
CR7
R8
R7
R6
CR3
R1
FT3
R4
CR2
SEE NOTE 7 Q2 8
FT4
FT5
CR4
SEE NOTE 7 Q1 7

SECTION A-A

SECTION B-B

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003.
3. ALL WELDS TO BE PER ND1002005.
4. K DENOTES CATHODE END OF DIODE.
5. AR DENOTES AS REQUIRED.
6. R3 TO BE SELECTED IN ACCORDANCE WITH ATP 1007033
7. BOND FIND NUMBERS 6, 7 AND 8 TO FIND NO. 2 PER ND1002004.
8. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND1002004.
9. SPARE LEADS ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH.
10. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN.
11. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION.
12. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004.
13. ENCAPSULATE MODULE PER ND1002106.
14. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
15. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND 1002023
16. FT DONOTES FEED THRU.
17. ▷ VENDOR ITEM SEE SPEC CONTROL DWG.
18. INSPECT PER PS 1007033
19. TEST PER FTM 1007033
20. PIECE MARKING TO BE CENTRALLY LOCATED ON SURFACE INDICATED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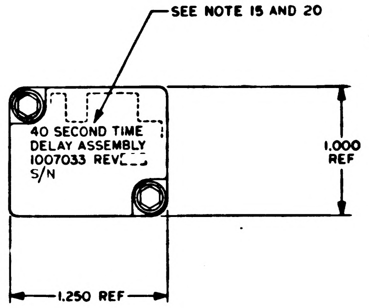
.265
.846
.836
.780
.790

CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE:2:1


SEE NOTE 15 AND 20
40 SECOND TIME DELAY ASSEMBLY 1007033 REV
S/N
1.000 REF
1.250 REF

MARKING VIEW
SCALE:2:1

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	☒	1010127	SCHEMATIC	REF
▷	1	1010385	DIODE	28
▷	AR	1006776-21	INSULATION, SLEEVING, ELEC	27
▷	AR	1006787-2	WIRE, ELECTRICAL	26
▷	AR	1006757-1	WIRE, ELECTRICAL	25
	2	MS35338-78	WASHER, LOCK	24
	2	MS15795-303	WASHER, FLAT	23
▷	2	1008069-3	SCREW, SOC HD, EXT RELIEVED BODY	22
	1	1010364	RESISTOR (SEE NOTE 6)	21
	1	1006750-77	RESISTOR	20
	2	1006750-56	RESISTOR	19
	1	1006750-49	RESISTOR	18
	1	1006750-39	RESISTOR	17
	1	1006750-36	RESISTOR	16
	2	1006750-32	RESISTOR	15
▷	1	1006750-8	RESISTOR	14
▷	1	1010393-043	CAPACITOR	13
▷	1	1006755-77	CAPACITOR	12
▷	1	1010372-8	DIODE	11
▷	4	1010362-2	DIODE	10
▷	1	1010286-11	DIODE	9
▷	1	1010408	TRANSISTOR	8
▷	1	1010397-001	TRANSISTOR	7
	1	1010357	TRANSISTOR	6
	1	1010318-2	CONNECTOR	5
	2	1008067	SPACER, INSULATOR	4
	1	1008063	WIRING BOARD, BOTTOM	3
	1	1008062	WIRING BOARD, TOP	2
	1	1021720	HOUSING, INSEPARABLE ASSY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ±.02 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN Don Healy DATE 5-3-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

40 SECOND TIME DELAY ASSEMBLY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007033
SCALE 4:1
WT
SHEET 1 OF 1

1007033 E

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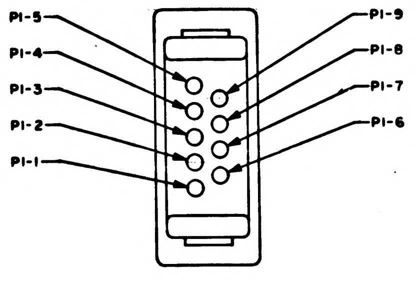
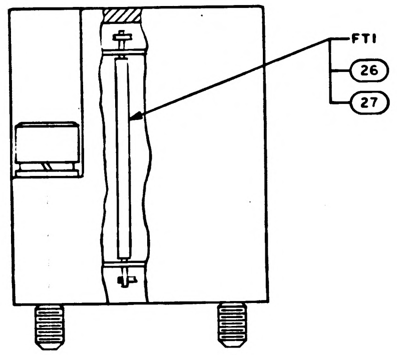
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

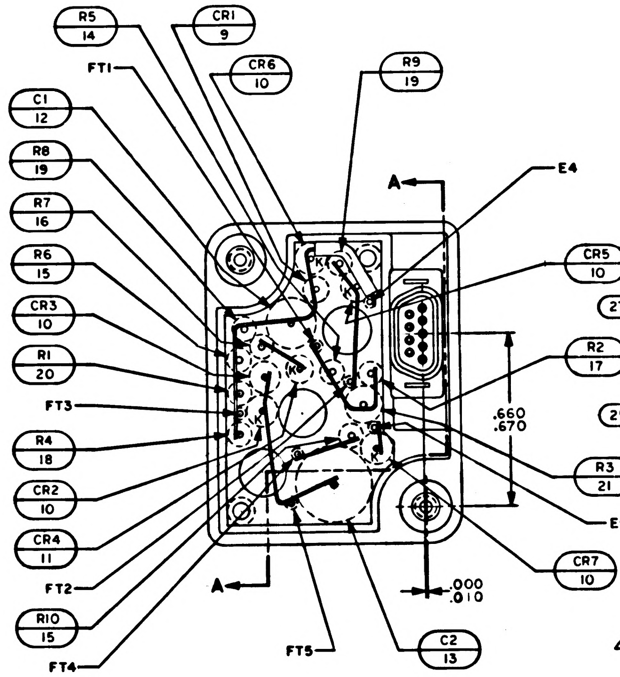
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E5	MODE REL COM
P1-2	E1	+28 VOLTS DC
P1-3	E3	TIME DELAY REL CONT
P1-4	SPARE	
P1-5	E4	SIGNAL GROUND
P1-6	SPARE	
P1-7	SPARE	
P1-8	SPARE	
P1-9	SPARE	


P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL
IDENTIFICATION VIEW
NO SCALE



FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 01366 DATE 22 May 63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CR6 10
R9 19
FT1
C1 12
R8 19
R7 16
R6 15
CR3 10
R1 20
FT3
R4 18
CR2 10
CR4 11
FT2
R10 15
FT4
FT5
C2 13
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E5
R3 21 SEE NOTE 6
R2 17
CR5 10
E4
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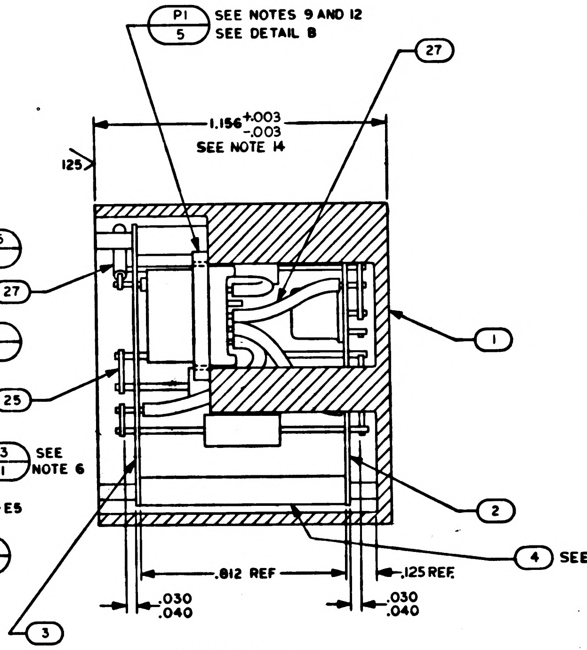
.670
.000
.010


P1 5 SEE NOTES 9 AND 12
SEE DETAIL B
27
1.156 +.003 -.003
SEE NOTE 14
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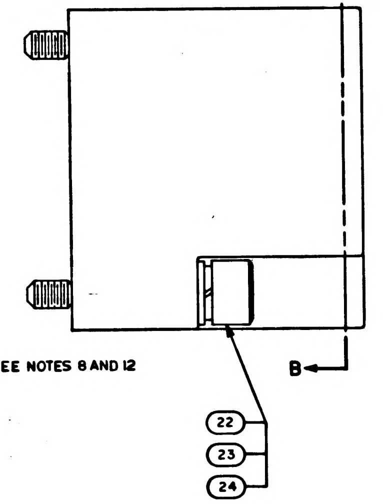
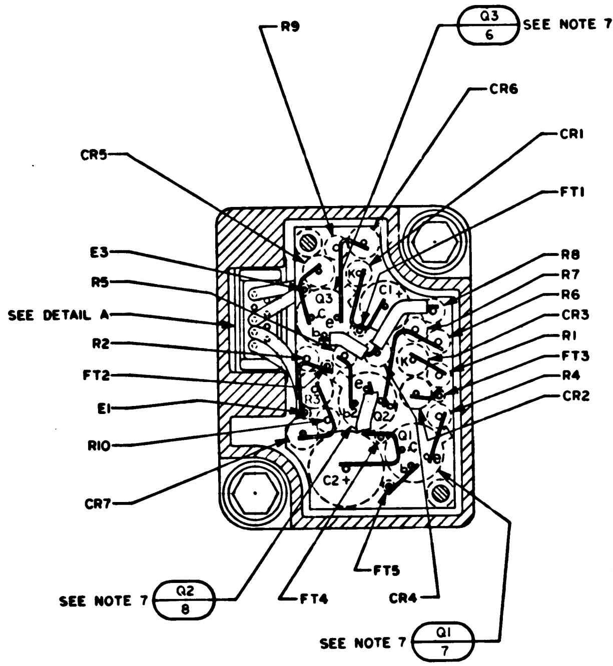
2
3
.812 REF
.125 REF
.030
.040
.030
.040
4 SEE NOTES 8 AND 12



SECTION A-A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CR6
CR1
FT1
CR5
E3
R5
SEE DETAIL A
R2
FT2
E1
R10
CR7
R8
R7
R6
CR3
R1
FT3
R4
CR2
SEE NOTE 7 Q2 8
FT4
FT5
CR4
SEE NOTE 7 Q1 7
C1
Q3
C2
Q1

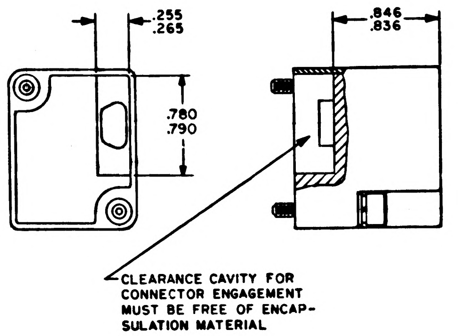
SECTION B-B

	1010127	SCHEMATIC	REF

	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
▷	AR	1006776-21	INSULATION, SLEEVING, ELEC	27
▷	AR	1006787-2	WIRE, ELECTRICAL	26
▷	AR	1006757-1	WIRE, ELECTRICAL	25
	2	MS35338-78	WASHER, LOCK	24
	2	MS15795-303	WASHER, FLAT	23
▷	2	1008069	SCREW, SOC HD, EXT RELIEVED BODY	22
	1	1010364	RESISTOR (SEE NOTE 6)	21
	1	1006750-77	RESISTOR	20
	2	1006750-56	RESISTOR	19
	1	1006750-49	RESISTOR	18
	1	1006750-39	RESISTOR	17
	1	1006750-36	RESISTOR	16
	2	1006750-32	RESISTOR	15
▷	1	1006750-8	RESISTOR	14
▷	1	1010393-043	CAPACITOR	13
▷	1	1006755-77	CAPACITOR	12
▷	1	1010372-8	DIODE	11
▷	5	1010362-2	DIODE	10
▷	1	1010286-11	DIODE	9
	1	1010408	TRANSISTOR	8
▷	1	1010397-001	TRANSISTOR	7
▷	1	1010357	TRANSISTOR	6
	1		CONNECTOR	5
	2	1008067	SPACER, INSULATOR	4
	1	1008063	WIRING BOARD, BOTTOM	3
	1	1008062	WIRING BOARD, TOP	2
	1	1008056	HOUSING, INSEPARABLE ASSY	

LIST OF MATERIALS

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003.
3. ALL WELDS TO BE PER ND1002005.
4. K DENOTES CATHODE END OF DIODE.
5. AR DENOTES AS REQUIRED.
6. R3 TO BE SELECTED.
7. BOND FIND NUMBERS 6, 7 AND 8 TO FIND NO. 2 PER ND1002004.
8. BOND FIND NO. 4 TO FIND NO. 2 AND FIND NO. 3 PER ND1002004.
9. SPARE LEADS ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH.
10. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON.
11. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION.
12. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004.
13. ENCAPSULATE MODULE PER ND1002106.
14. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION.
15. MARK .060 TO .100 HIGH BLACK PER ND1002019.
16. FT DONOTES FEED THRU.
17. ▷ VENDOR ITEM SEE SPEC CONTROL DWG.


.255
.265
.846
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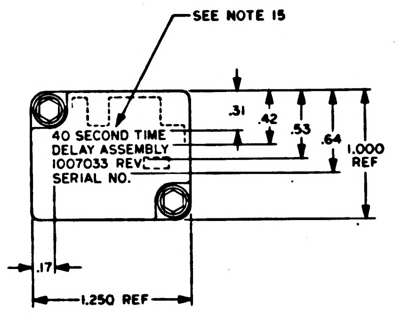
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 2:1


SEE NOTE 15
40 SECOND TIME DELAY ASSEMBLY 1007033 REV
SERIAL NO.
.31
.42
.53
.64
1.000 REF
.17
1.250 REF

MARKING VIEW
SCALE: 2:1

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± # DECIMALS ±.02 ANGLES ± # DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB Cambridge, Mass DWG NO CONTRACT	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
APPLICATION		MATERIAL #	DRAWN Ken Healy DATE 5-3-63 CHECKED APPROVAL APPROVAL	40 SECOND TIME DELAY ASSEMBLY
		HEAT TREATMENT #	NASA APPROVAL 5-22-63	CODE IDENT NO · SIZE E · NASA DRAWING NO 1007033
		FINAL FINISH #	MIT APPROVAL 22 May 63	SCALE 4:1 · WT · SHEET 1 OF 1

1007033

INCHES
PHOTOGRAPHIC SCALE ONLY

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A | 1007034

M

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
A	SUPERSEDED BY TDRR 01613	6-18-63	JJM WK

PICTURE INCOMPLETE

REV "A" REPLACED BY REV "B"

DRAWING FOR REFERENCE
1014500 SCHEM DIAG-DEMODULATOR

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1		CONNECTOR	
1	1010313	↑	
1	1010315		
1	1010454	TRANSFORMER	
1	1006760-38	↑	
1	1006750-80		
1	1006750-72		
1	1006750-55		
2	1006750-25		
2	1006750-8	RESISTOR	
2	1010367	TRANSISTOR	
2	1010397	TRANSISTOR	
1	1010372-19	DIODE	
2	1010279-249	↑	
2	1006755-89		
1	1010279-250	CAPACITOR	

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± # ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN R. L. Rue DATE 21 MAY 63
CHECKED F. J. Boehme 5/21/63
APPROVAL J. Nevins
APPROVAL
NASA APPROVAL W. J. Rhine 5-22-63
MIT APPROVAL W Kupfer 22 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DEMODULATOR- ATTITUDE ERROR

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007034
SCALE #
WT
SHEET OF

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007034 A
31 January 1964
Class A Release
TDRR 06062

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
4/7/64	A	07484	2 and 3	WK	WSS

This specification consists of page i to iii and 1 to [illegible] inclusive.

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Attitude Error Demodulator Assembly for use in APOLLO Guidance and Navigation equipment.

WA Kupfer 31 Jan 64
MIT/IL DATE

1/31/64
NASA/MSC DATE

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Attitude Error Demodulator Assembly, Drawing 1007034, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007034	Final Test Method for Attitude Error Demodulator Assembly

DRAWINGS

APOLLO G&N

1007034	Attitude Error Demodulator Assembly
1014500	Demodulator, Attitude Error Schematic Diagram
1010336	Meter, Electrical Indicating -(Yaw, Pitch, Roll Special)

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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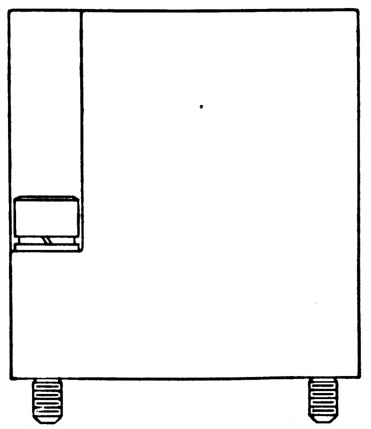
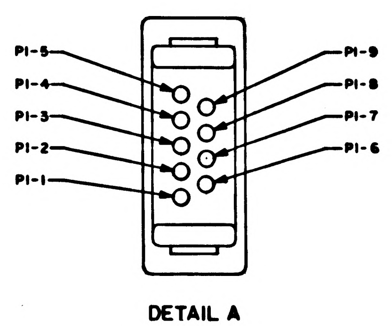
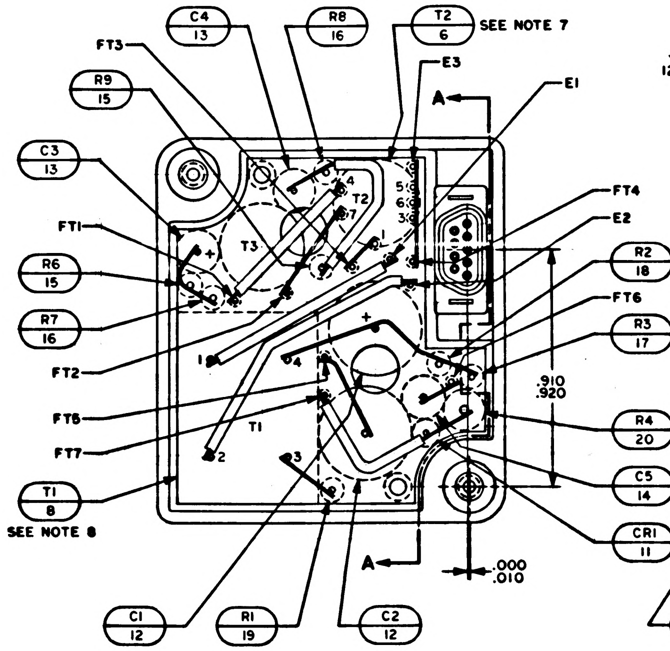
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 01613	6-18-63	JJ9 WK

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	INPUT
P1-2	E2	INPUT
P1-3	E3	28 VOLTS DC GRD
P1-4	E4	OUTPUT −
P1-5	E5	+28 VOLTS DC
P1-6	E6	28V RMS 800 CPS LO
P1-7	E7	28V RMS 800 CPS HI
P1-8	E8	OUTPUT +
P1-9	SPARE	




P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE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SEE NOTE 7
E3
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T2
R2 18
FT6
R7 16
R3 17
FT2
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FT8
T1
R4 20
FT7
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T1 8
SEE NOTE 8
CR1 11
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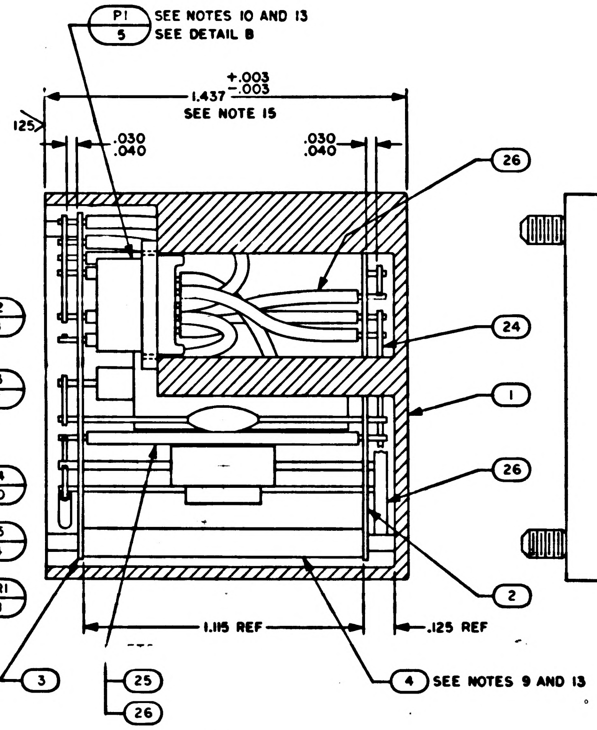
C1 12
R1 19
C2 12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SEE NOTES 10 AND 13
SEE DETAIL B
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−.003
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SEE NOTE 15
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.040
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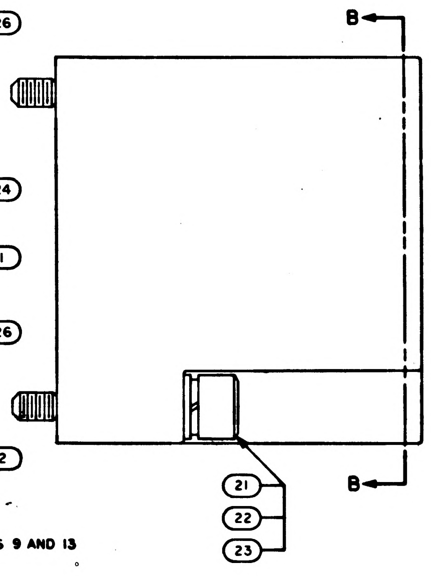
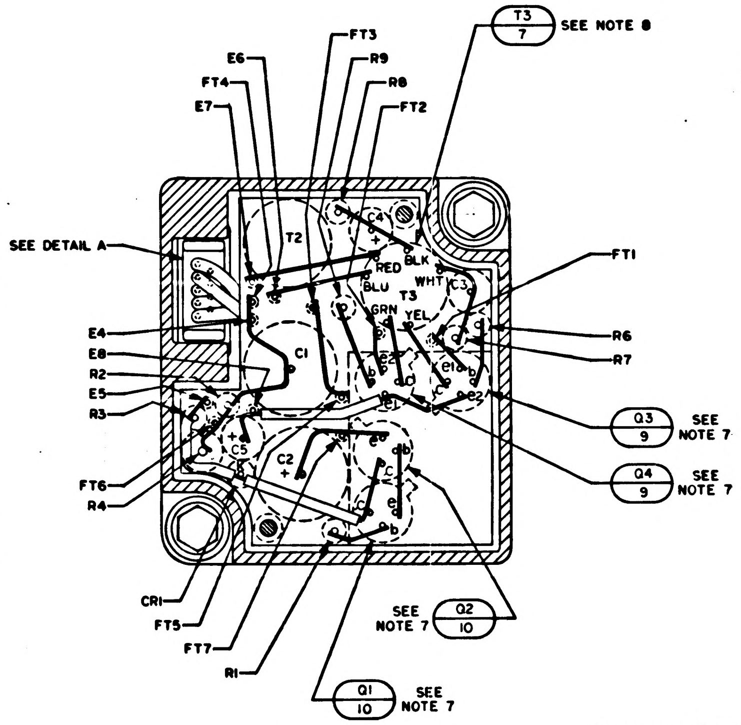
26
4
SEE NOTES 9 AND 13

SECTION A-A

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SEE DETAIL A
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FT1
T3
GRN
YEL
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E8
C1
R6
R2
R7
E5
R3
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SEE NOTE 7
C5
Q4 9
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CR1
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R1
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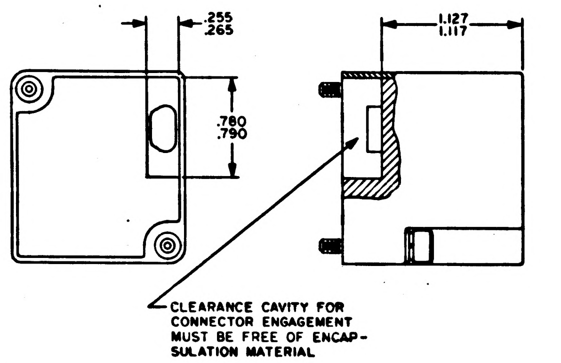
Q1 10
SEE NOTE 7

SECTION B-B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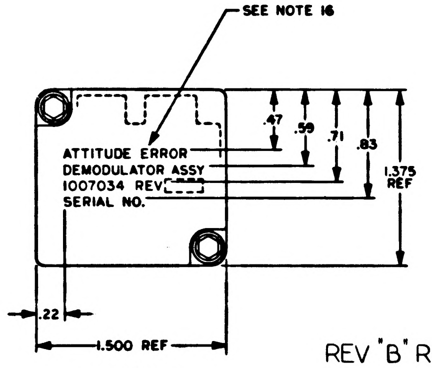
.780
.790

CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 2:1


SEE NOTE 16
ATTITUDE ERROR
DEMODULATOR ASSY
1007034 REV
SERIAL NO.
.47
.59
.71
.83
1.375 REF
.22
1.500 REF

MARKING VIEW
SCALE: 2:1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. FT DENOTES FEED THRU
6. AR DENOTES AS REQUIRED
7. BOND FIND NUMBERS 6, 9 AND 10 TO FIND NO. 2 PER ND1002004
8. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 3 PER ND1002004
9. BOND FIND NO. 4 TO FIND NUMBERS 2 AND 3 PER ND1002004
10. SPARE LEAD ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH
11. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
12. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
13. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. MARK .060 TO .100 HIGH BLACK PER ND1002019

REV "B" REPLACES REV "A"

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1014500	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	26
AR	1006787-2	WIRE, ELECTRICAL	25
AR	1006757-1	WIRE, ELECTRICAL	24
2	MS35338-78	WASHER, LOCK	23
2	MS15795-303	WASHER, FLAT	22
2	1008069-1	SCREW, SOC HD, EXT RELIEVED BODY	21
1	1006760-38	RESISTOR	20
1	1006750-80	RESISTOR	19
1	1006750-72	RESISTOR	18
1	1006750-55	RESISTOR	17
2	1006750-25	RESISTOR	16
2	1006750-8	RESISTOR	15
1	1010279-250	CAPACITOR	14
2	1010279-249	CAPACITOR	13
2	1006755-89	CAPACITOR	12
1	1010372-19	DIODE	11
2	1010397-001	TRANSISTOR	10
2	1010367	TRANSISTOR	9
1	1010454	TRANSFORMER	8
1	1010315	TRANSFORMER	7
1	1010313	TRANSFORMER	6
1	1010318-2	CONNECTOR	5
2	1008068	SPACER	4
1	1008081	WIRING BOARD, BOTTOM	3
1	1008080	WIRING BOARD, TOP	2
1	1007032	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± .02 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN Wm Healy DATE 5-22-63
CHECKED C. P. Ryan 12 Jun 63
APPROVAL N. Sykes 6/14/63
APPROVAL L. C. Smith 6/14/63
NASA APPROVAL W. J. Rhine 6-19-63
MIT APPROVAL W. Kupfer 19 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ATTITUDE ERROR DEMODULATOR ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007034
SCALE 4:1
WT
SHEET 1 OF 1

1007034

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007034 B
31 January 1964
Class A Release
TDRR 06062

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
4/7/64	A	07484	2 and 3	WK	WSA
6/9/64	B	10072	2	WK	WSA

*This specification consists of page i to iii and 1 to [illegible] inclusive.

APOLLO G&N Specification
PS-1007034
31 January 1964

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Attitude Error Demodulator Assembly for use in APOLLO Guidance and Navigation equipment.

31 Jan 64
MIT/IL DATE

1/31/64
NASA/MSC DATE

APOLLO G&N Specification
PS-1007034
31 January 1964

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Attitude Error Demodulator Assembly, Drawing 1007034, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002219	General Specification for Procurement of APOLLO Guidance and Navigation ~~Assemblies and Subassemblies~~
FTM-1007034	Final Test Method for Attitude Error Demodulator Assembly

DRAWINGS

APOLLO G&N

1007034	Attitude Error Demodulator Assembly
1014508	Demodulator, Attitude Error Schematic Diagram
1016336	Meter, Electrical Indicating -(Yaw, Pitch, Roll Special)

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007034 B
31 January 1964
Class A Release
TDRR 06062

PROCUREMENT SPECIFICATION
FOR
ATTITUDE ERROR DEMODULATOR ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
4/7/64	A	07484	2 and 3		
6/9/64	B	10072	2	WR	

This specification consists of page i
to iii and 1 to 6 inclusive.

APOLLO G&N Specification
PS-1007034
31 January 1964

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Attitude Error Demodulator Assembly for use in APOLLO Guidance and Navigation equipment.

WA Kupfer 31 Jan 64
MIT/IL DATE

W S Swingle 1/31/64
NASA/MSC DATE

PREPARED BY	**TITLE**	**DATE**
E. P. Armstrong	Spec. Engr. Writer	12-6-63
AC Spark Plug		
EXAMINED BY	**TITLE**	**DATE**
R. E. Priest	Proj. Engr.	12-6-63
AC Spark Plug		
APPROVED BY	**TITLE**	**DATE**
	Asst. Dir.	1/28/64
MIT/IL		
APPROVED BY	**TITLE**	**DATE**
MIT/IL		
APPROVED BY	**TITLE**	**DATE**
MIT/IL		

APOLLO G&N Specification
PS-1007034
[illegible] January [illegible]

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Attitude Error Demodulator Assembly. Drawing 1007034, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007034	Final Test Method for Attitude Error Demodulator Assembly

DRAWINGS

APOLLO G&N

1007034	Attitude Error Demodulator Assembly
1014500	Demodulator, Attitude Error Schematic Diagram
1010336	Meter, Electrical Indicating -(Yaw, Pitch, Roll Special)

3. REQUIREMENTS.

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of the Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly shall be used in the Display and Control Electronics to demodulate the difference signal between the Inertial Measurement Unit (IMU) and the Coupling Display Unit (CDU) such that it may be used to drive the IMU-CDU Difference Meter, Drawing 1010336.

3.3 FUNCTIONAL REQUIREMENTS.

3.3.1 Electrical Inputs. The assembly shall perform as specified herein with the following electrical inputs:

a.	DC Supply Voltage:	25 to 31 VDC
b.	Reference Voltage:	28.0±2.8V, 800 ± 80 cps
c.	Input Signal:	0 to 31.0V, 800 ± 80 cps (Synchronous with reference voltage)

3.3.2 Continuity and DC Resistance. With no power applied, the continuity and dc resistance of the assembly shall be as specified in Table I using Method 303 of Standard MIL-STD-202. (Reference Drawing 1014500).

3.3.3 Current Drain. With an input signal of 28.0±1.0V rms, 800 ± 80 cps, a dc supply voltage of 30.8±0.1 vdc, a 28.0±2.8V, 800 ± 80 cps reference supply voltage, synchronous with the input signal, and an output load of 2200±220 ohms applied to the assembly, the maximum dc current drain shall be 18.0 ma or less and the maximum reference supply current shall be 4.0 ma rms or less.

3.3.4 Input Impedance. With an input signal of 28.0±1.0V rms, 800 ± 80 cps, a dc supply voltage of 30.8±0.1 vdc, a 28.0±2.8V, 800 ± 80 cps reference supply voltage, which is synchronous with the input signal, and an output load 2200 ± 220 ohms applied to the assembly, the input impedance of the assembly shall be 70k ohms or greater. With an input signal of 1.0±0.1V rms, 800 ± 80 cps, and all other supply signals retained as above, the input impedance of the assembly shall be 100k ohms or greater.

TABLE I

CONTINUITY AND DC RESISTANCE

P-1		RESISTANCE (ohms)	
From Pin*	To Pin	Minimum	Maximum
1	2	608	912
1	3	100 M	
1	5	↑	
1	6	↓	
1	8	100 M	
3	4		0.5
3	7	100 M	
3	8	800 K	
5	7	100 M	
6	7	680	1020
6	8	100 M	

*Positive Ohmmeter lead

3.3.5 Output Amplitude, Phase Sensitivity, and Frequency Sensitivity. The output voltage amplitude shall vary directly as the signal input voltage amplitude is varied to a maximum value of 5.2 volts output for both 0° and 180° phase angles with respect to the reference excitation in accordance with Table II. Hereafter, increasing the signal input amplitude shall not increase the output voltage amplitude. The output voltage amplitude shall be insensitive to ±10° phase shift of the input signal to reference voltage, but shall be + for 0° and - for 180° phase shift. The above requirements shall be at the frequencies of the input signals specified in Table II.

TABLE II

OUTPUT AMPLITUDE

SIGNAL INPUT VOLTAGE AT 800±80 cps *1 AMPLITUDE	DC OUTPUT SIGNAL VOLTAGE AMPLITUDE *2
0.000 *3	0.000±0.010
0.028	0.028±0.003
0.056	0.056±0.006
0.084	0.084±0.009
0.112	0.112±0.012
0.140	0.140±0.014
0.168	0.168±0.017
0.196	0.196±0.020
0.224	0.224±0.023
0.252	0.252±0.026
0.280	0.280±0.028
0.560	0.560±0.056
0.840	0.840±0.084
1.120	1.120±0.112
1.400	1.400±0.140
1.500	1.500±0.150
2.200	2.200±0.220
31.000	5.20 max *4

NOTES:

*1: Input from Pin 1 (Hi) to Pin 2 (Lo).
*2: Output from Pin 8 (+) to Pin 4 (-).
*3: Input shorted.
*4: Maximum value of output signal amplitude.

3.3.6 Output Ripple. With the reference voltage adjusted to 28.0±2.8V rms, and the dc supply voltage adjusted to 27.5±2.5 vdc, the AC signal superimposed on the output signal, in the range of 1/10 to 3200 cps shall be less than 0.010V rms with the signal input shorted and less than 0.160V rms with the input signal input adjusted to 28.0 ±2.8V rms.

3.4 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.4.1 Service Life.

3.4.1.1 Operating Life. The assembly shall meet performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.4.1.2 Shelf Life. The assembly shall have a life of at least 3 years, without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.4.2 Reliability. Design objectives require maximum reliability of the assembly during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 3 failures per million hours.

4. QUALITY ASSURANCE PROVISIONS

4.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all quality assurance provisions of Specification ND-1002210 shall form a part of this specification.

4.2 NASA ACCEPTANCE INSPECTION. The NASA acceptance inspection shall be in accordance with Specification FTM-1007034.

5. PREPARATION FOR DELIVERY

5.1 GENERAL. Preparation for delivery shall be in accordance with Specification ND-1002210.

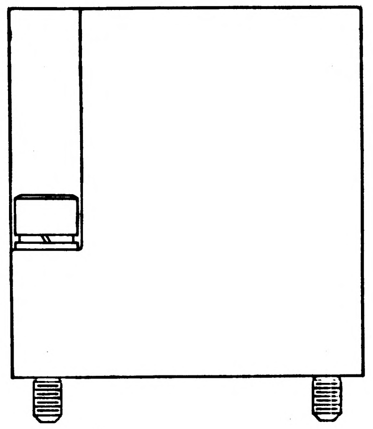
6. NOTES.

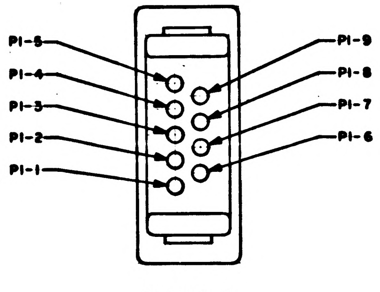
Notice: When APOLLO G&N drawings, specifications, or other data are used for any purpose other than in connection with a definitely related NASA procurement operation, NASA thereby incurs no responsibility nor any obligation whatsoever, and the fact that NASA may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture, use, or sell any patented invention that may be in any way be related thereto.

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

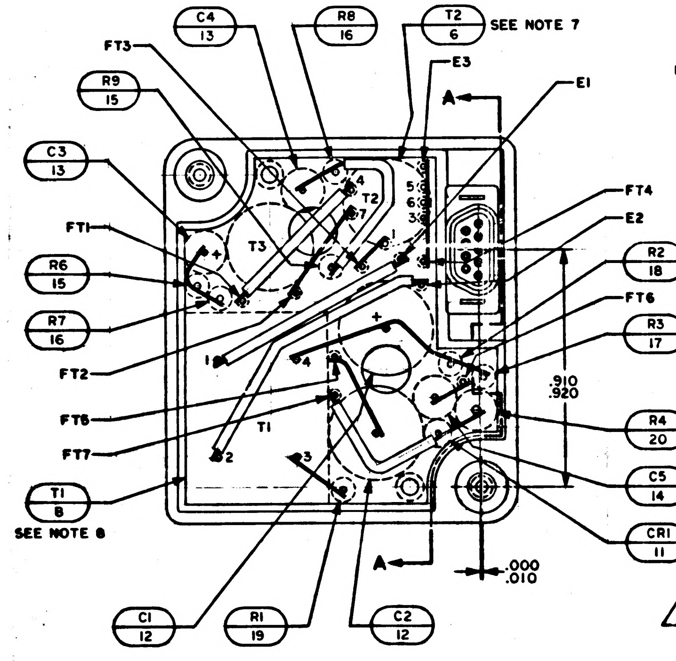
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 01613	6-18-63	JJM WK
C	REVISED PER TDRR 02158	7-24-63	JJM. WK

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	INPUT
P1-2	E2	INPUT
P1-3	E3	28 VOLTS DC GRD
P1-4	E4	OUTPUT −
P1-5	E5	+28 VOLTS DC
P1-6	E6	28V RMS 800 CPS LO
P1-7	E7	28V RMS 800 CPS HI
P1-8	E8	OUTPUT +
P1-9	SPARE	




P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL
IDENTIFICATION VIEW
NO SCALE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R8 16
T2 6 SEE NOTE 7
E3
E1
FT3
R9 15
A
C3 13
FT1
R6 15
R7 16
FT2
FT8
FT7
T1 8
SEE NOTE 8
T3
T1
FT4
E2
R2 18
FT6
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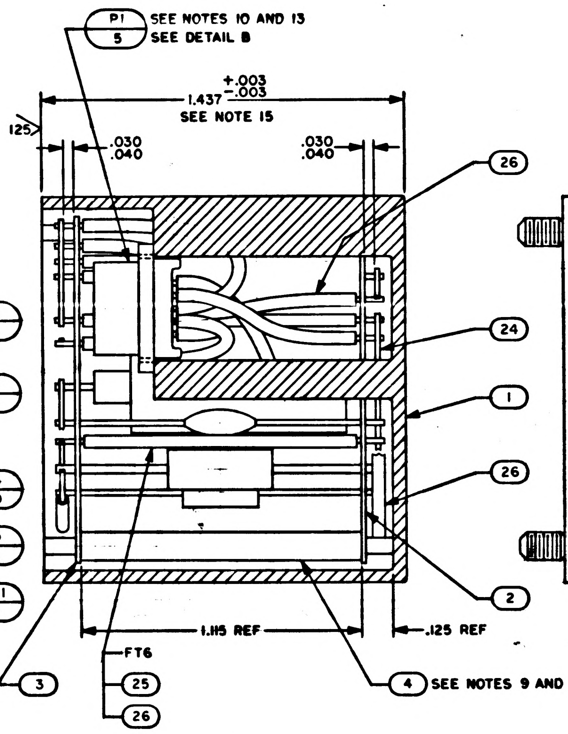
.910
.920
R4 20
C5 14
CR1 11
A
.000
.010
C1 12
R1 19
C2 12


P1 5 SEE NOTES 10 AND 13
SEE DETAIL B
+.003
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SEE NOTE 15
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.040
.030
.040
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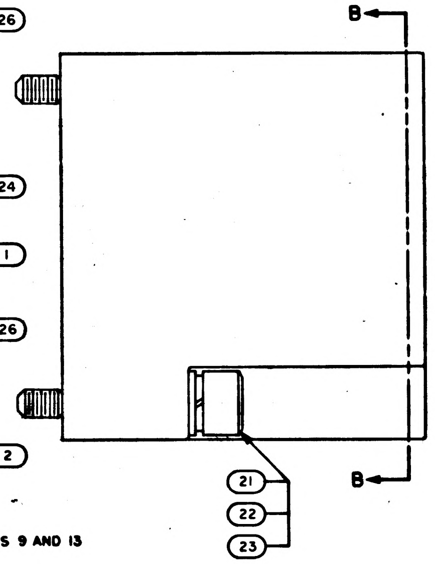
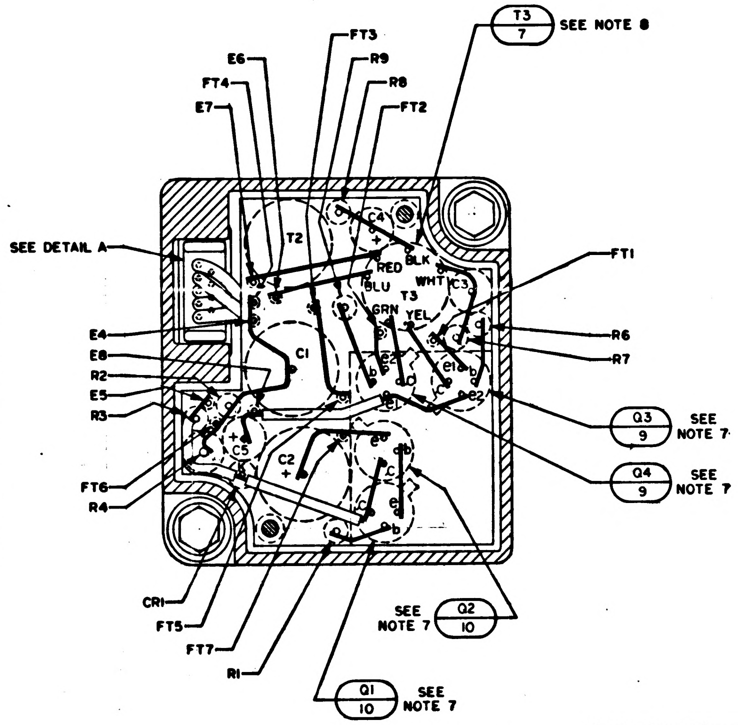
26
2
1.115 REF
.125 REF
3
FT6
25
26
4 SEE NOTES 9 AND 13

SECTION A-A

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E6
FT3
R9
FT4
R8
E7
FT2
SEE DETAIL A
FT1
T2
RED
BLK
BLU
WHT
GRN
T3
YEL
C4
C3
C1
E4
E8
R2
E5
R3
R6
R7
Q3 9 SEE NOTE 7
Q4 9 SEE NOTE 7
C5
C2
FT6
R4
CR1
FT5
FT7
R1
SEE NOTE 7 Q2 10
Q1 10 SEE NOTE 7

SECTION B-B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1014500	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	26
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AR	1006757-1	WIRE, ELECTRICAL	24
2	MS35338-78	WASHER, LOCK	23
2	MS15795-303	WASHER, FLAT	22
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1	1006750-55	RESISTOR	17
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2	1006750-8	RESISTOR	15
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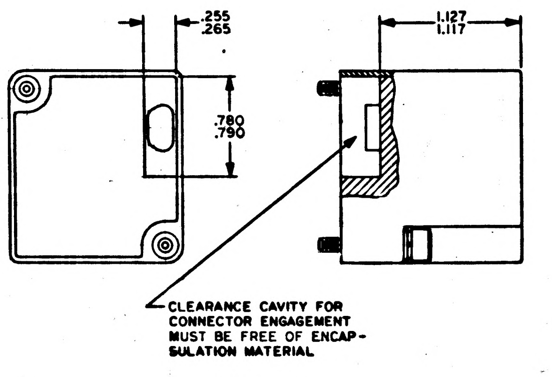
2	1010279-249	CAPACITOR	13
2	1006755-89	CAPACITOR	12
1	1010372-19	DIODE	11
2	1010397-001	TRANSISTOR	10
2	1010367	TRANSISTOR	9
1	1010454	TRANSFORMER	8
1	1010315-1	TRANSFORMER	7
1	1010313	TRANSFORMER	6
1	1010318-2	CONNECTOR	5
2	1008068	SPACER	4
1	1008081	WIRING BOARD, BOTTOM	3
1	1008080	WIRING BOARD, TOP	2
1	1007032	HOUSING	1

LIST OF MATERIALS

1007034 C

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. FT DENOTES FEED THRU
6. AR DENOTES AS REQUIRED
7. BOND FIND NUMBERS 6, 9 AND 10 TO FIND NO. 2 PER ND1002004
8. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 3 PER ND1002004
9. BOND FIND NO. 4 TO FIND NUMBERS 2 AND 3 PER ND1002004
10. SPARE LEAD ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH
11. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
12. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
13. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. MARK .060 TO .100 HIGH BLACK PER ND1002019


.255
.265
1.127
1.117
.780
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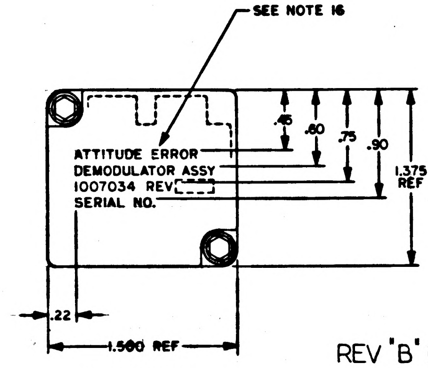
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 2:1


SEE NOTE 16
ATTITUDE ERROR
DEMODULATOR ASSY
1007034 REV
SERIAL NO.
.45
.60
.75
.90
1.375 REF
.22
1.500 REF

MARKING VIEW
SCALE: 2:1

REV "B" REPLACES REV "A"

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ±.02 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN Ken Healy DATE 5-22-63
CHECKED L. C. King June 12 1963
APPROVAL N. Sabatino 6/14/63
APPROVAL L. Smith 6/14/63
NASA APPROVAL W. J. Rhine 6-14-63
MIT APPROVAL W. Kupfer 19 June 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ATTITUDE ERROR
DEMODULATOR ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007034
SCALE 4:1
WT
SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

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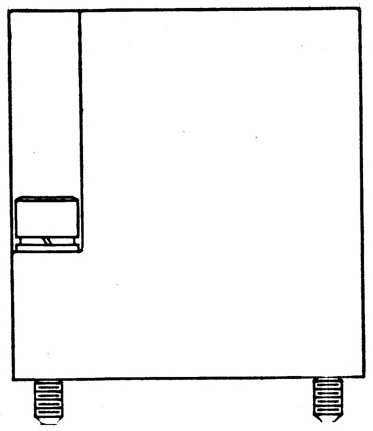
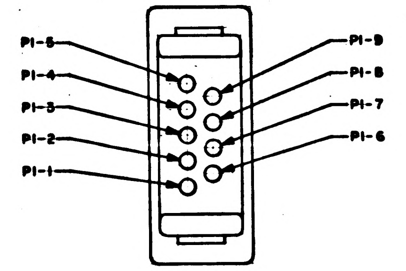
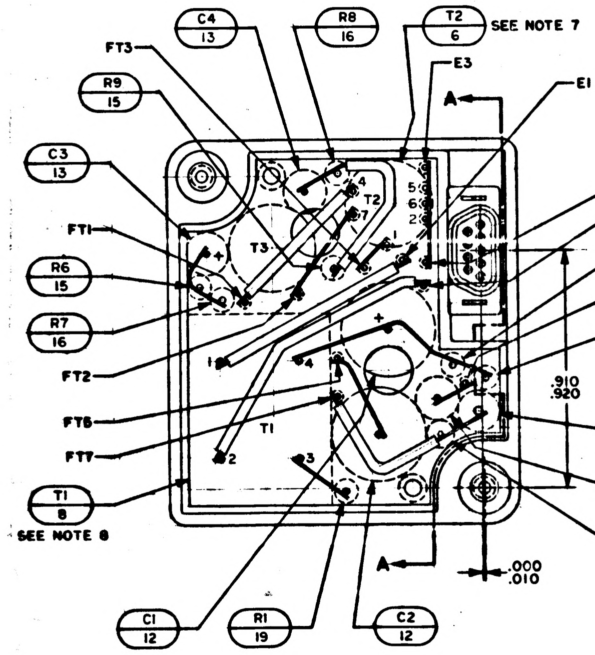
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 01613	6-18-63	JJA WK
C	REVISED PER TDRR 02158	[illegible]	JJA WK
D	REVISED PER TDRR 02542	8-21-63	[illegible]

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	INPUT
P1-2	E2	INPUT
P1-3	E3	28 VOLTS DC GRD
P1-4	E4	OUTPUT −
P1-5	E5	+28 VOLTS DC
P1-6	E6	28V RMS 800 CPS LO
P1-7	E7	28V RMS 800 CPS HI
P1-8	E8	OUTPUT +
P1-9	SPARE	




P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE


C4
13
R8
16
T2
6
SEE NOTE 7
E3
FT3
R9
15
A
E1
C3
13
FT1
R6
15
R7
16
FT2
FT8
FT7
T1
8
SEE NOTE 8
T3
FT4
E2
R2
18
FT6
R3
17
R4
20
C5
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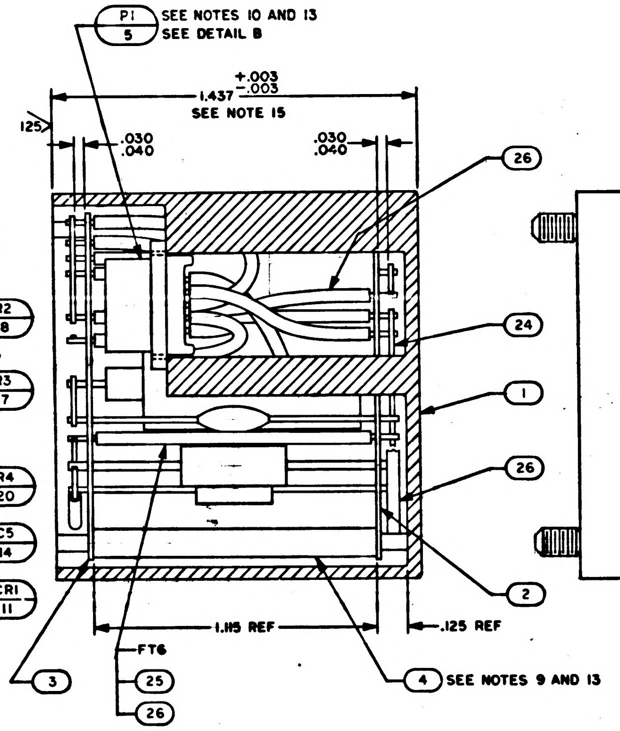
CR1
11
.910
.920
A
.000
.010
C1
12
R1
19
C2
12


P1
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SEE NOTES 10 AND 13
SEE DETAIL B
1.437 +.003 −.003
SEE NOTE 15
.125
.030
.040
.030
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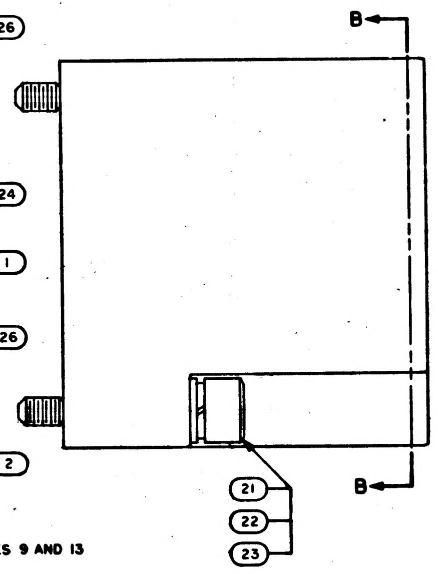
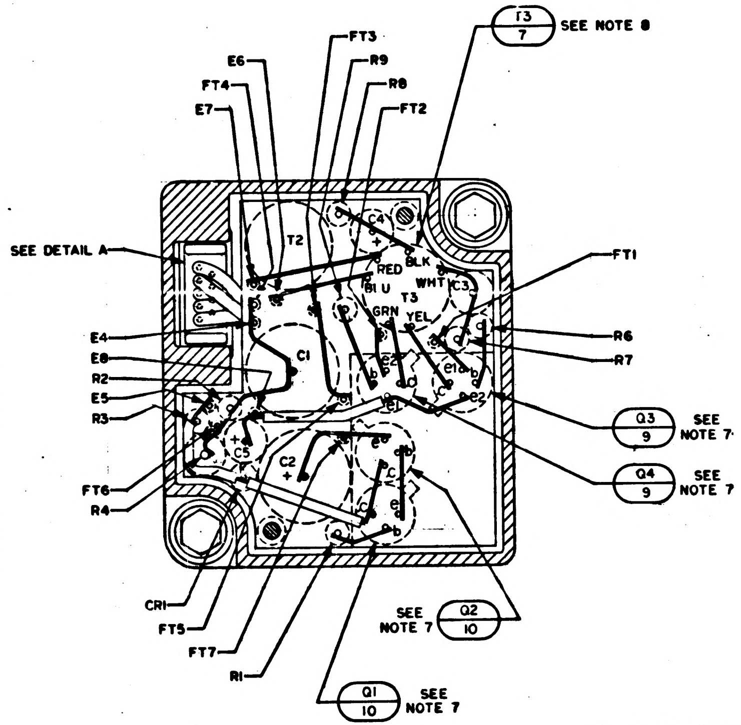
2
1.115 REF
.125 REF
FT6
3
25
26
4
SEE NOTES 9 AND 13

SECTION A-A

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FT3
E6
R9
FT4
R8
E7
FT2
SEE DETAIL A
T2
C4
FT1
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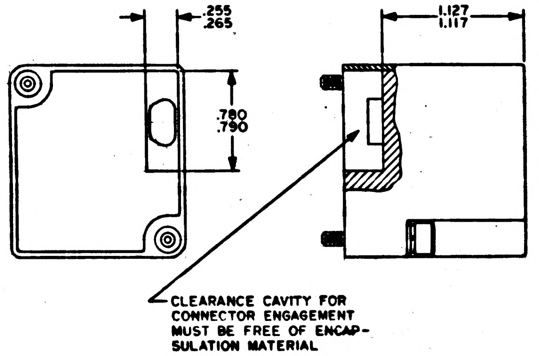
BLU
WHT
C3
T3
GRN
YEL
E4
E8
R2
E5
R3
C1
R6
R7
E1
E2
Q3
9
SEE NOTE 7
Q4
9
SEE NOTE 7
FT6
R4
C5
C2
CR1
FT5
FT7
R1
SEE NOTE 7
Q2
10
Q1
10
SEE NOTE 7

SECTION B-B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.265
.780
.790
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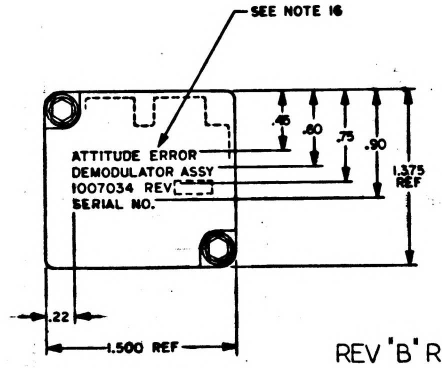
1.117

CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 2:1


SEE NOTE 16
ATTITUDE ERROR
DEMODULATOR ASSY
1007034 REV
SERIAL NO.
.45
.60
.75
.90
1.375 REF
.22
1.500 REF

MARKING VIEW
SCALE: 2:1

REV 'B' REPLACES REV 'A'

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. FT DENOTES FEED THRU
6. AR DENOTES AS REQUIRED
7. BOND FIND NUMBERS 6, 9 AND 10 TO FIND NO. 2 PER ND1002004
8. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 3 PER ND1002004
9. BOND FIND NO. 4 TO FIND NUMBERS 2 AND 3 PER ND1002004
10. SPARE LEAD ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH
11. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
12. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
13. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. MARK .060 TO .100 HIGH BLACK PER ND 1002023

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1014500	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	26
AR	1006787-2	WIRE, ELECTRICAL	25
AR	1006757-1	WIRE, ELECTRICAL	24
2	MS35338-78	WASHER, LOCK	23
2	MS15795-303	WASHER, FLAT	22
2	1008069-1	SCREW, SOC HD, EXT RELIEVED BODY	21
1	1006760-38	RESISTOR	20
1	1006750-80	RESISTOR	19
1	1006750-72	RESISTOR	18
1	1006750-55	RESISTOR	17
2	1006750-25	RESISTOR	16
2	1006750-8	RESISTOR	15
1	1010279-250	CAPACITOR	14
2	1010279-249	CAPACITOR	13
2	1006755-89	CAPACITOR	12
1	1010372-19	DIODE	11
2	1010397-001	TRANSISTOR	10
2	1010367	TRANSISTOR	9
1	1010454	TRANSFORMER	8
1	1010315-1	TRANSFORMER	7
1	1010313	TRANSFORMER	6
1	1010318-2	CONNECTOR	5
2	1008068	SPACER	4
1	1008081	WIRING BOARD, BOTTOM	3
1	1008080	WIRING BOARD, TOP	2
1	1007032	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± .02 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN Wm Healy DATE 5-22-63
CHECKED L. P. King 12 Jun 63
APPROVAL N. Jekabs 6/14/63
APPROVAL L. C. Smith 6/14/63
NASA APPROVAL W. G. Robinson 6-14-63
MIT APPROVAL W. King 15 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ATTITUDE ERROR DEMODULATOR ASSY

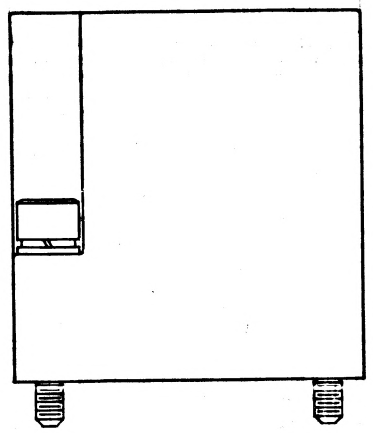
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007034
SCALE 4:1 WT SHEET 1 OF 1

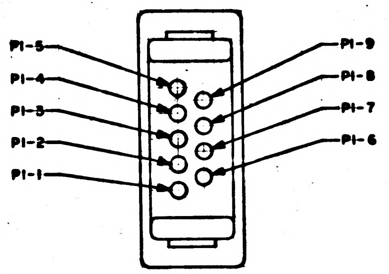
1007034 D

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 01613	6-18-63	JJA
C	REVISED PER TDRR 02158		JJA
D	REVISED PER TDRR 02542	8 21 63	PME
E	REVISED PER TDRR 02860	9-28-63	PME

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	INPUT
P1-2	E2	INPUT
P1-3	E3	28 VOLTS DC GRD
P1-4	E4	OUTPUT −
P1-5	E5	+28 VOLTS DC
P1-6	E6	28V RMS 800 CPS LO
P1-7	E7	28V RMS 800 CPS HI
P1-8	E8	OUTPUT +
P1-9	SPARE	

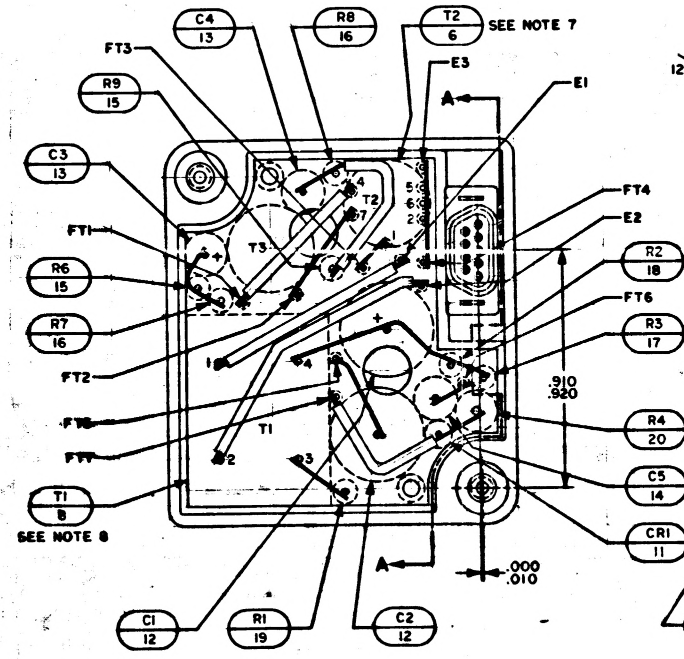


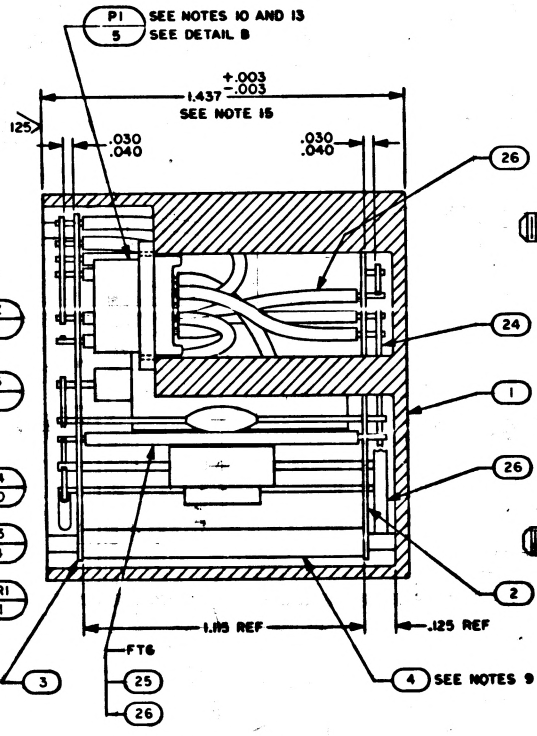

P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A

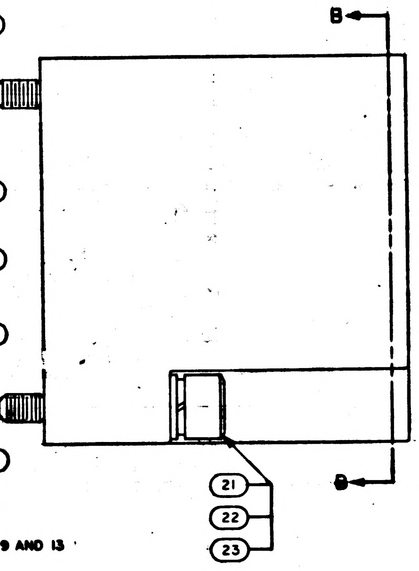
CONNECTOR TERMINAL IDENTIFICATION VIEW

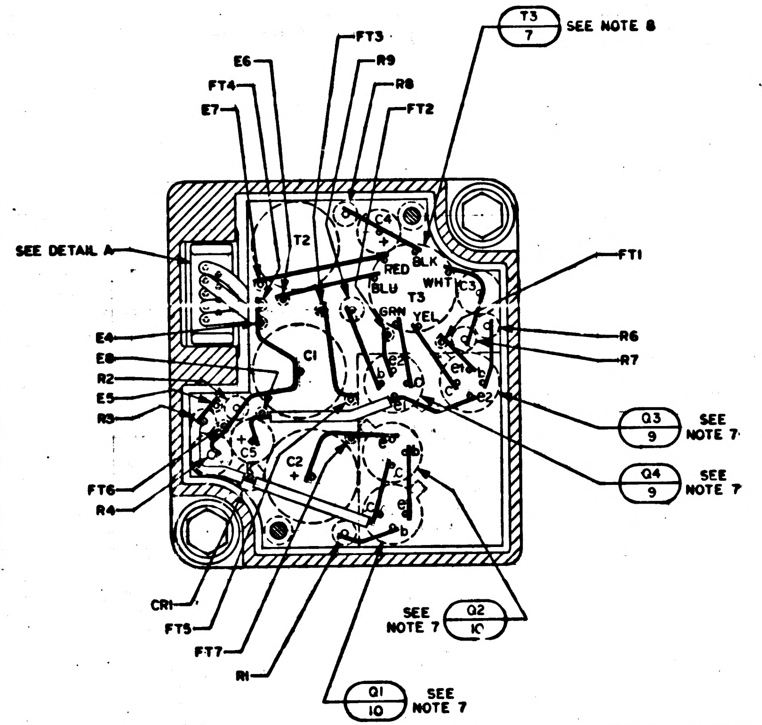
NO SCALE


C4 13
R8 16
T2 6
SEE NOTE 7
E3
FT3
R9 15
A
E1
C3 13
FT4
E2
FT1
R6 15
R2 18
R7 16
FT6
R3 17
FT2
.910
.920
R4 20
FT5
FT7
C5 14
T1 8
SEE NOTE 8
CR1 11
A
.000
.010
C1 12
R1 19
C2 12
T3
T1


P1 5
SEE NOTES 10 AND 13
SEE DETAIL B
+.003
1.437 −.003
SEE NOTE 15
.125
.030
.040
.030
.040
26
24
1
26
2
1.115 REF
.125 REF
FT6
25
26
3
4
SEE NOTES 9 AND 13

SECTION A-A



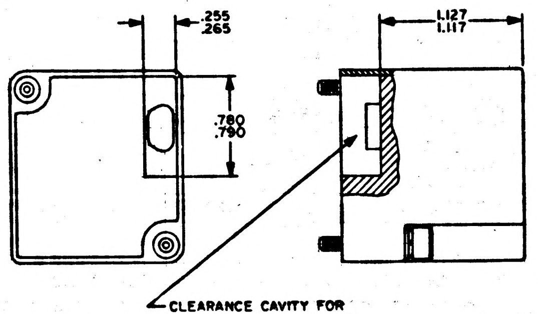

T3 7
SEE NOTE 8
FT3
E6
R9
FT4
R8
E7
FT2
SEE DETAIL A
FT1
T2
BLK
RED
WHT
C3
BLU
T3
GRN
YEL
R6
R7
E4
E8
R2
E5
R5
C1
Q3 9
SEE NOTE 7
Q4 9
SEE NOTE 7
FT6
R4
C2
C5
CR1
FT5
FT7
SEE NOTE 7
Q2 10
R1
Q1 10
SEE NOTE 7

SECTION B-B

☒	1014500	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	26
AR	1006787-2	WIRE, ELECTRICAL	25
AR	1006757-1	WIRE, ELECTRICAL	24
2	MS35338-78	WASHER, LOCK	23
2	MS15795-303	WASHER, FLAT	22
2	1008069-1	SCREW, SOC HD, EXT RELIEVED BODY	21
1	1006760-38	RESISTOR	20
1	1006750-80	RESISTOR	19
1	1006750-72	RESISTOR	18
1	1006750-55	RESISTOR	17
2	1006750-25	RESISTOR	16
2	1006750-8	RESISTOR	15
1	1010279-250	CAPACITOR	14
2	1010279-249	CAPACITOR	13
2	1006755-69	CAPACITOR	12
1	1010372-19	DIODE	11
2	1010397-001	TRANSISTOR	10
2	1010367	TRANSISTOR	9
1	1010454	TRANSFORMER	8
1	1010315-1	TRANSFORMER	7
1	1010313	TRANSFORMER	6
1	1010318-2	CONNECTOR	5
2	1008068	SPACER	4
1	1008081	WIRING BOARD, BOTTOM	3
1	1008080	WIRING BOARD, TOP	2
1	1007032	HOUSING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. FT DENOTES FEED THRU
6. AR DENOTES AS REQUIRED
7. BOND FIND NUMBERS 6, 9 AND 10 TO FIND NO.2 PER ND1002004
8. BOND FIND NUMBERS 7 AND 8 TO FIND NO.3 PER ND1002004
9. BOND FIND NO.4 TO FIND NUMBERS 2 AND 3 PER ND1002004
10. SPARE LEAD ON FIND NO.5 TO BE CUT TO .030 TO .090 LENGTH
11. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
12. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
13. BOND FIND NUMBERS 4 AND 5 TO FIND NO.1 PER ND1002004
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. MARK .060 TO .100 HIGH BLACK PER ND 1002023

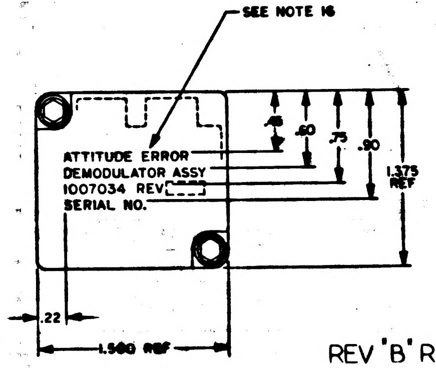

.255
.265
1.127
1.117
.780
.790

CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B

ENCAPSULATION CONFIGURATION DATA

SCALE: 2:1


SEE NOTE 16
ATTITUDE ERROR
DEMODULATOR ASSY
1007034 REV
SERIAL NO.
.45
.60
.75
.90
1.375 REF
.22
1.560 REF

MARKING VIEW

SCALE: 2:1

REV 'B' REPLACES REV 'A'

MASTER

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± # DECIMALS ± .02 ANGLES ± # DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.
APPLICATION		MATERIAL #	DRAWN Hilbert DATE 5-22-63 CHECKED 12 Jun 63 APPROVAL 6/14/63 APPROVAL
		HEAT TREATMENT #	NASA APPROVAL 6-14-63
		FINAL FINISH #	MIT APPROVAL 11 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ATTITUDE ERROR DEMODULATOR ASSY

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	E	1007034
SCALE 4:1	WT	SHEET 1 OF 1

PHOTOGRAPHIC SCALE ONLY
INCHES

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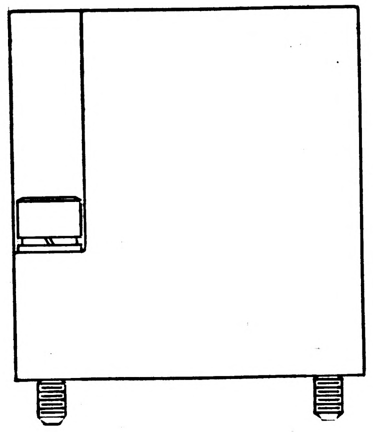
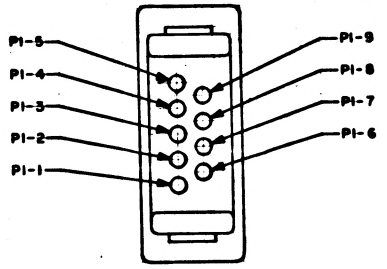
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 01613	6-18-63	
C	REVISED PER TDRR 02158		
D	REVISED PER TDRR 02542		
E	REVISED PER TDRR 02860		
F	REVISED PER TDRR 04004		

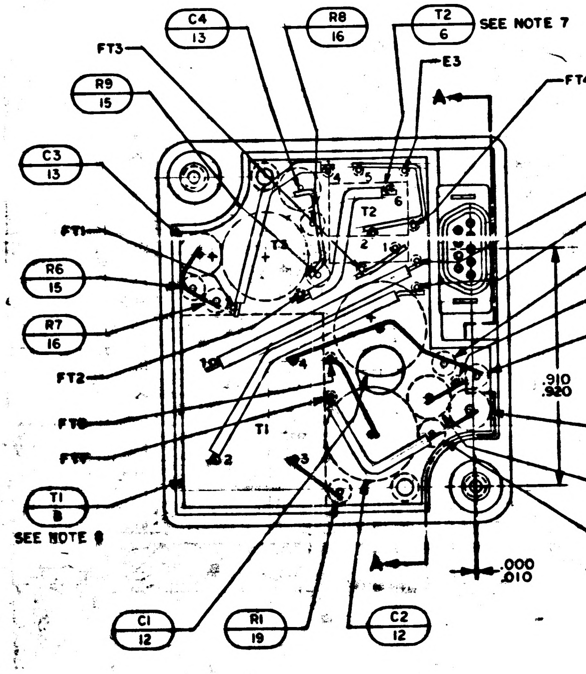
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	INPUT
P1-2	E2	INPUT
P1-3	E3	28 VOLTS DC GRD
P1-4	E4	OUTPUT -
P1-5	E5	+28 VOLTS DC
P1-6	E6	28V RMS 800 CPS LO
P1-7	E7	28V RMS 800 CPS HI
P1-8	E8	OUTPUT +
P1-9	SPARE	

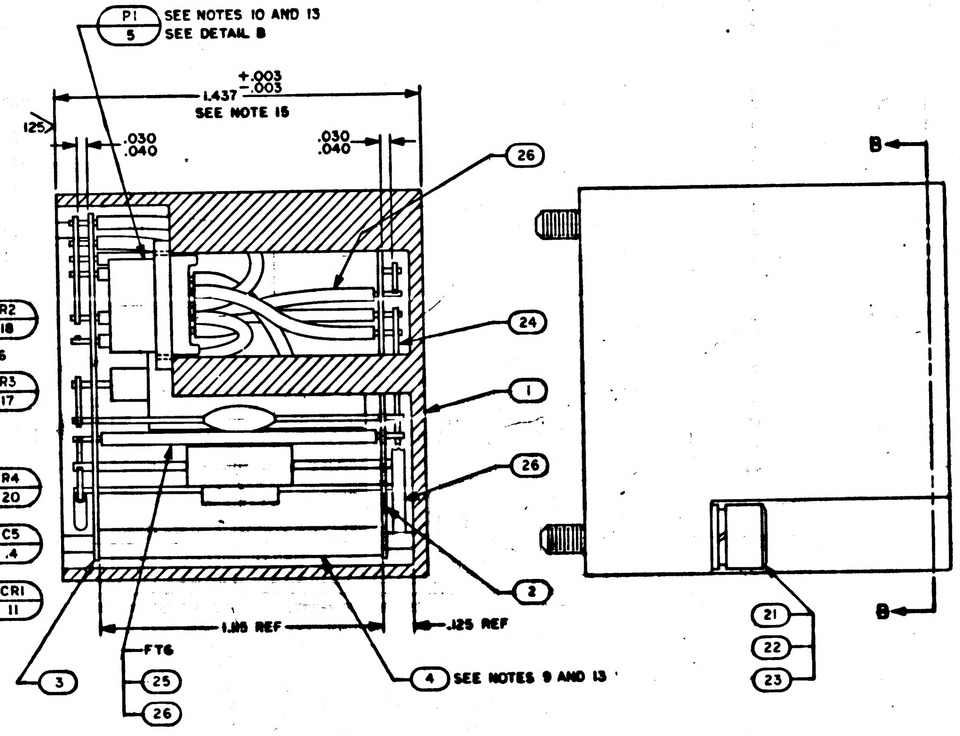



P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

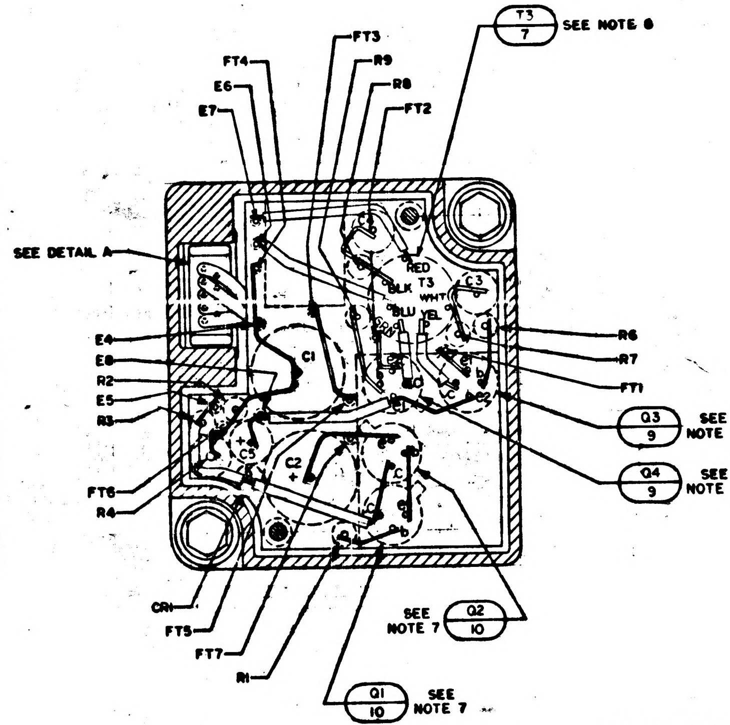
DETAIL A

CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE


C4 13
R8 16
T2 6
SEE NOTE 7
FT3
E3
FT4
R9 15
C3 13
FT1
R6 15
R7 16
FT2
FT5
FT7
T1 8
SEE NOTE 8
A
E1
E2
R2 18
FT6
R3 17
.910
.920
R4 20
C5 14
CR1 11
.000
.010
C1 12
R1 19
C2 12


P1 5
SEE NOTES 10 AND 13
SEE DETAIL B
+.003
1.437 -.003
SEE NOTE 15
.125
.030
.040
.030
.040
26
24
1
26
2
3
1.115 REF
.125 REF
FT6
25
26
4
SEE NOTES 9 AND 13
B
21
22
23

SECTION A-A


T3 7
SEE NOTE 8
FT3
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FT2
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YEL
C3
C1
E4
E8
R2
E5
R3
R6
R7
FT1
Q3 9
SEE NOTE 7
Q4 9
SEE NOTE 7
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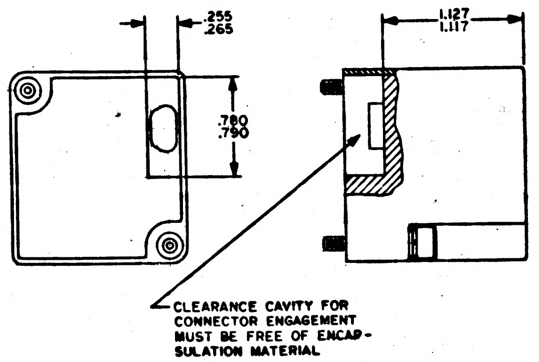
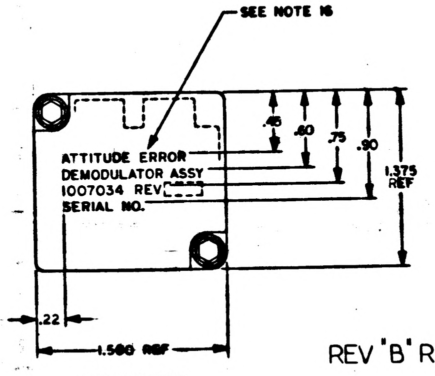
SEE NOTE 7
Q2 10
Q1 10
SEE NOTE 7

SECTION B-B


.255
.265
1.127
1.117
.780
.790
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B

ENCAPSULATION CONFIGURATION DATA
SCALE: 2:1


SEE NOTE 16
ATTITUDE ERROR
DEMODULATOR ASSY
1007034 REV
SERIAL NO.
.45
.60
.75
.90
1.375 REF
.22
1.560 REF

MARKING VIEW
SCALE: 2:1

REV 'B' REPLACES REV 'A'

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. FT DENOTES FEED THRU
6. AR DENOTES AS REQUIRED
7. BOND FIND NUMBERS 6, 9 AND 10 TO FIND NO. 2 PER ND1002004
8. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 3 PER ND1002004
9. BOND FIND NO. 4 TO FIND NUMBERS 2 AND 3 PER ND1002004
10. SPARE LEAD ON FIND NO. 5 TO BE CUT TO .030 TO .090 LENGTH
11. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
12. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
13. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. MARK .060 TO .100 HIGH BLACK PER ND 1002023

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1014500	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	26
AR	1006787-2	WIRE, ELECTRICAL	25
AR	1006757-1	WIRE, ELECTRICAL	24
2	MS35338-78	WASHER, LOCK	23
2	MS15795-303	WASHER, FLAT	22
2	1008069-1	SCREW, SOC HD, EXT RELIEVED BODY	21
1	1006760-38	RESISTOR	20
1	1006750-80	RESISTOR	19
1	1006750-72	RESISTOR	18
1	1006750-55	RESISTOR	17
2	1006750-3	RESISTOR	16
2	1006750-8	RESISTOR	15
1	1010279-250	CAPACITOR	14
2	1010279-249	CAPACITOR	13
2	1006755-89	CAPACITOR	12
1	1010372-19	DIODE	
2	1010397-001	TRANSISTOR	10
2	1010367	TRANSISTOR	9
1	1010454	TRANSFORMER	8
1	1010315-1	TRANSFORMER	7
1	1010291-5	TRANSFORMER	6
1	1010318-2	CONNECTOR	5
2	1008068	SPACER	4
1	1008081	WIRING BOARD, BOTTOM	3
1	1008080	WIRING BOARD, TOP	2
1	1007032	HOUSING	1

LIST OF MATERIALS

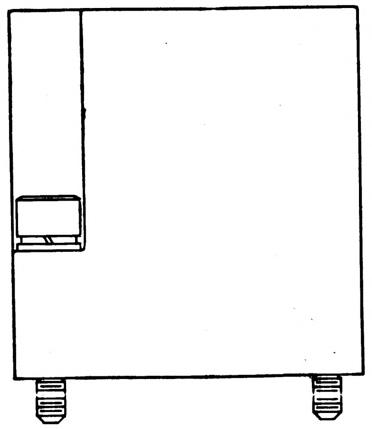
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± # DECIMALS ±.02 ANGLES ± # DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
		MATERIAL #	DRAWN Wm Healy DATE 5-22-63 CHECKED 12 Jun 63 APPROVAL 6/14/63 APPROVAL 6/14/63	ATTITUDE ERROR DEMODULATOR ASSY
		HEAT TREATMENT #	NASA APPROVAL 6-1-63	CODE IDENT NO. | SIZE E | NASA DRAWING NO. 1007034
NEXT ASSY	USED ON	FINAL FINISH #	MIT APPROVAL 15 Jun 63	SCALE 4:1 | WT | SHEET 1 OF 1
APPLICATION				

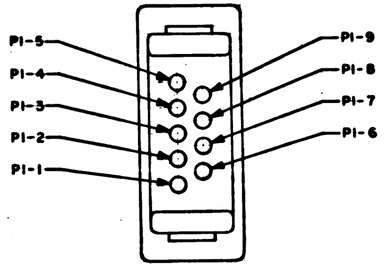
1007034 E

MASTER

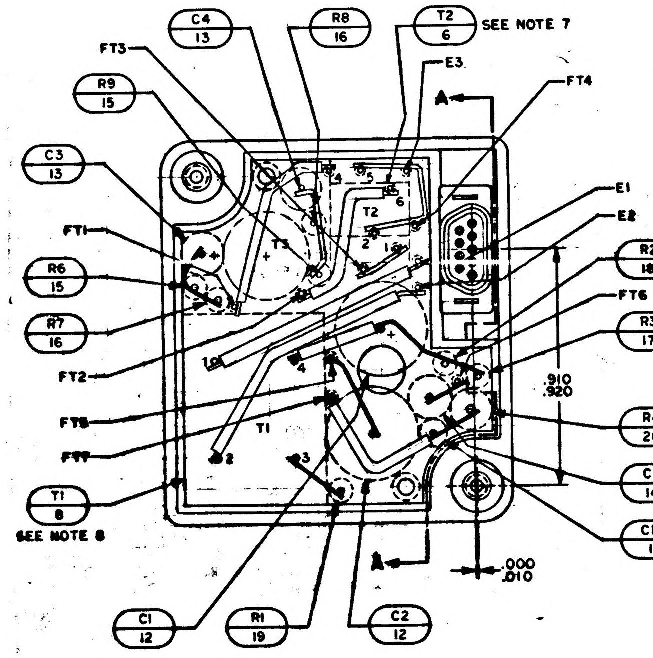
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 01613	6-13-63	JJA WK
C	REVISED PER TDRR 02158	9-24-63	JJA WK
D	REVISED PER TDRR 02542	8-21-63	
E	REVISED PER TDRR 02860	8-28-63	
F	REVISED PER TDRR 04000		WK
G	REVISED PEP TDRR C5093		WK

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	INPUT
P1-2	E2	INPUT
P1-3	E3	28 VOLTS DC GRD
P1-4	E4	OUTPUT −
P1-5	E5	+28 VOLTS DC
P1-6	E6	28V RMS 800 CPS LO
P1-7	E7	28V RMS 800 CPS HI
P1-8	E8	OUTPUT +
P1-9	SPARE	




P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE


FT3
R9 15
C3 13
FT1
R6 15
R7 16
FT2
FT5
FT7
T1 8
SEE NOTE 8
C4 13
R8 16
T2 6
SEE NOTE 7
E3
FT4
A
E1
E2
R2 18
FT6
R3 17
.910 .920
R4 20
C5 14
CR1 11
.000 .010
A
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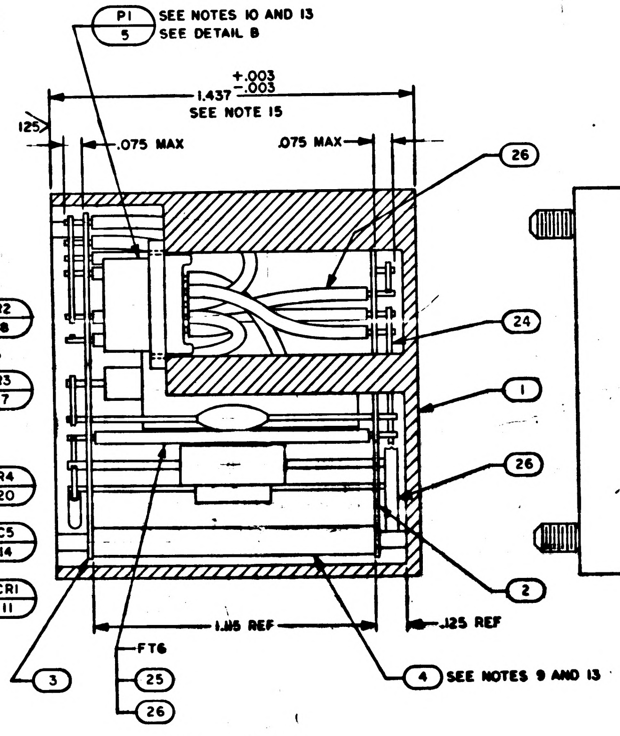
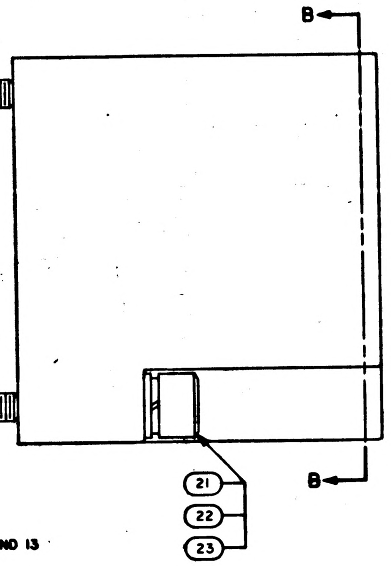
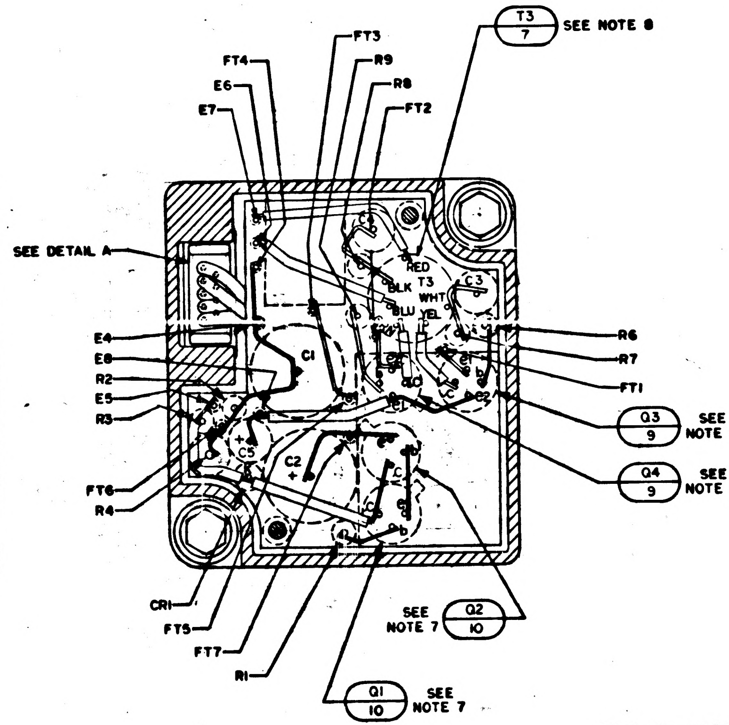
R1 19
C2 12
T1
T2
T3

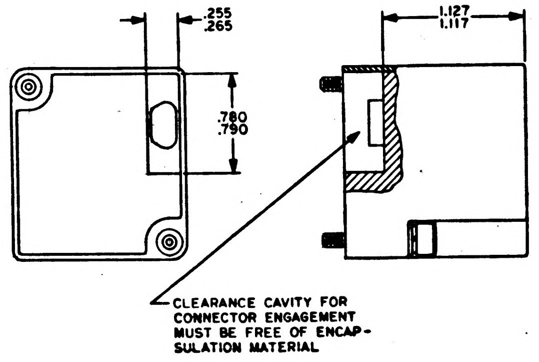

P1 5
SEE NOTES 10 AND 13
SEE DETAIL B
+.003 1.437 −.003
SEE NOTE 15
.125
.075 MAX
.075 MAX
26
24
1
26
2
1.115 REF
.125 REF
FT6
25
26
3
4
SEE NOTES 9 AND 13

SECTION A-A

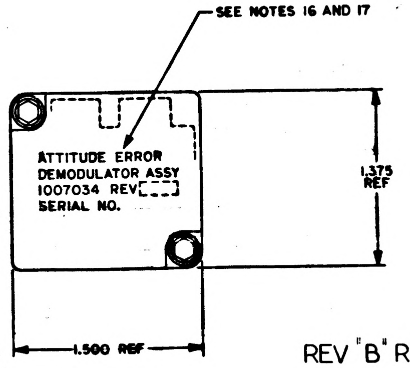



T3 7
SEE NOTE 8
FT4
E6
E7
FT3
R9
R8
FT2
SEE DETAIL A
E4
E8
R2
E5
R3
FT6
R4
CR1
FT5
FT7
R1
RED
BLK
T3
WHT
BLU
YEL
C1
C2
C3
C5
R6
R7
FT1
Q3 9
SEE NOTE 7
Q4 9
SEE NOTE 7
Q2 10
SEE NOTE 7
Q1 10
SEE NOTE 7

SECTION B-B


.255 .265
.780 .790
1.127 1.117
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE:2:1


SEE NOTES 16 AND 17
ATTITUDE ERROR
DEMODULATOR ASSY
1007034 REV
SERIAL NO.
1.375 REF
1.500 REF

MARKING VIEW
SCALE:2:1

REV "B" REPLACES REV "A"

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. FT DENOTES FEED THRU
6. AR DENOTES AS REQUIRED
7. BOND FIND NUMBERS 6, 9 AND 10 TO FIND NO.2 PER ND1002004
8. BOND FIND NUMBERS 7 AND 8 TO FIND NO.3 PER ND1002004
9. BOND FIND NO.4 TO FIND NUMBERS 2 AND 3 PER ND1002004
10. SPARE LEAD ON FIND NUMBERS 5 AND 6 TO BE CUT TO .030 TO .090 LENGTH
11. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN.
12. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
13. BOND FIND NUMBERS 4 AND 5 TO FIND NO.1 PER ND1002004
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND1002023
17. PIECEMARKING TO BE CENTRALLY LOCATED ON SURFACE INDICATED
18. INSPECT PER PS 1007034
19. TEST PER FTM 1007034

☒	1014500	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	26
AR	1006787-2	WIRE, ELECTRICAL	25
AR	1006757-1	WIRE, ELECTRICAL	24
2	MS35338-78	WASHER, LOCK	23
2	MS15795-303	WASHER, FLAT	22
2	1008069-1	SCREW, SOC HD, EXT RELIEVED BODY	21
1	1006760-38	RESISTOR	20
1	1006750-80	RESISTOR	19
1	1006750-72	RESISTOR	18
1	1006750-55	RESISTOR	17
2	1006750-3	RESISTOR	16
2	1006750-8	RESISTOR	15
1	1010279-250	CAPACITOR	14
2	1010279-249	CAPACITOR	13
2	1006755-89	CAPACITOR	12
1	1010372-19	DIODE	11
2	1010397-001	TRANSISTOR	10
2	1010367	TRANSISTOR	9
1	1010454	TRANSFORMER	8
1	1010315-1	TRANSFORMER	7
1	1010291-5	TRANSFORMER	6
1	1010318-2	CONNECTOR	5
2	1008068	SPACER	4
1	1008081	WIRING BOARD, BOTTOM	3
1	1008080	WIRING BOARD, TOP	2
1	1007032	HOUSING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007034 G

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± #   DECIMALS ±.02   ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO.   CONTRACT
DRAWN Wm Healy DATE 5-28-63
CHECKED 12 Jun 63
APPROVAL 6/14/63
APPROVAL C. Smith 6/14/63
NASA APPROVAL 6-14-63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ATTITUDE ERROR DEMODULATOR ASSY

CODE IDENT NO.   SIZE E   NASA DRAWING NO. 1007034
SCALE 4:1   WT   SHEET 1 OF 1

MASTER

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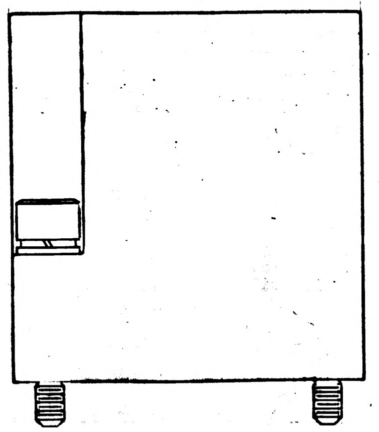
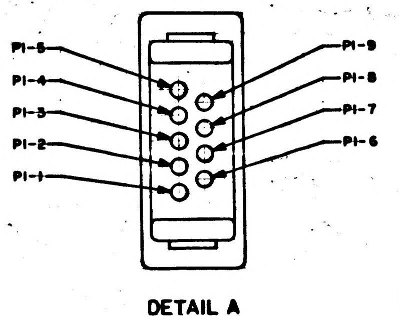
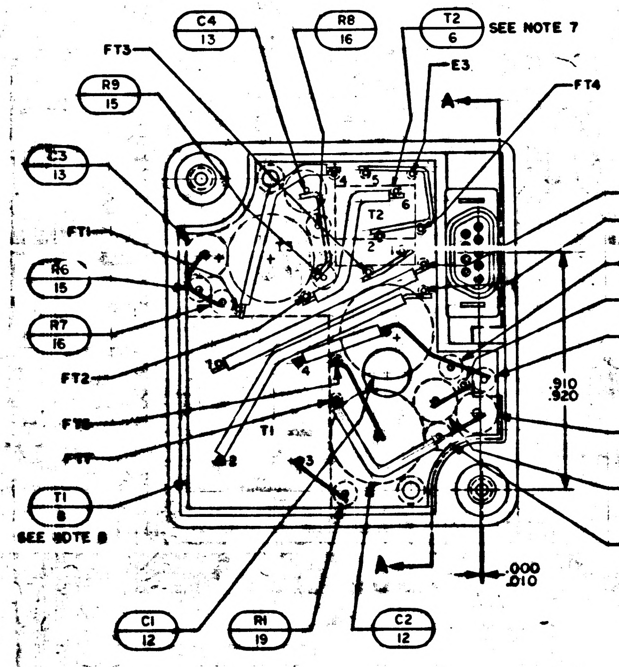
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 01613	6-18-63	[illegible]
C	REVISED PER TDRR 02157	[illegible]	[illegible]
D	REVISED PER TDRR 02542	[illegible]	[illegible]
E	REVISED PER TDRR 02860	8-28-63	[illegible]
F	REVISED PER TDRR [illegible]	[illegible]	[illegible]
G	REVISED PER TDRR 05093	[illegible]	[illegible]
H	REVISED PER TDRR 05702	[illegible]	[illegible]

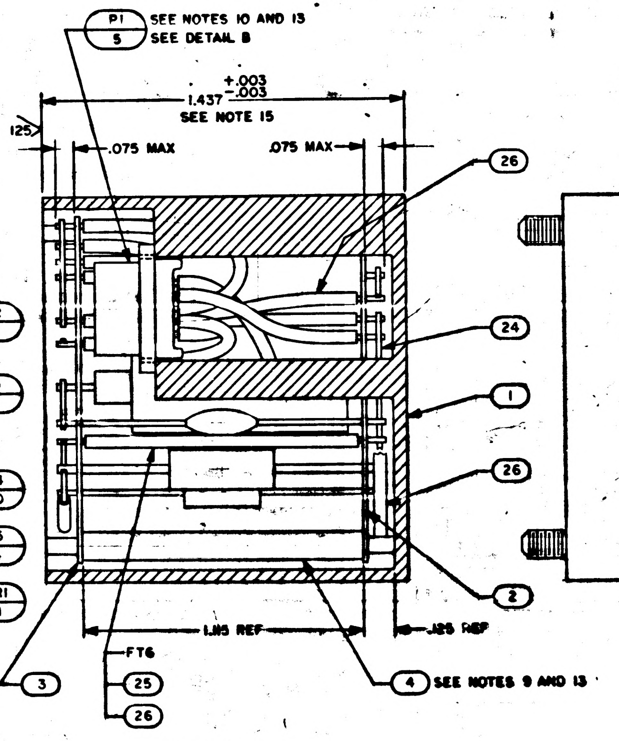
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	INPUT
P1-2	E2	INPUT
P1-3	E3	28 VOLTS DC GRD
P1-4	E4	OUTPUT −
P1-5	E5	+28 VOLTS DC
P1-6	E6	28V RMS 800 CPS LO
P1-7	E7	28V RMS 800 CPS HI
P1-8	E8	OUTPUT +
P1-9	SPARE	



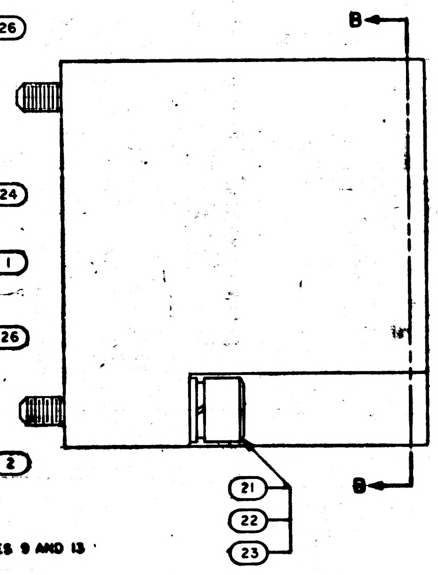

P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

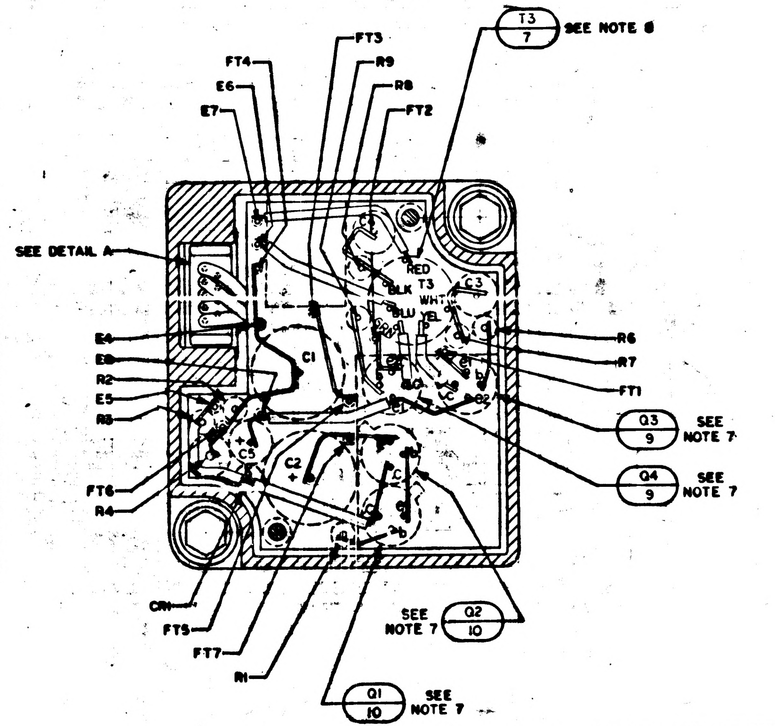
DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE


C4 13
R8 16
T2 6
SEE NOTE 7
E3
FT3
R9 15
FT4
C3 13
A
FT1
R6 15
R7 16
FT2
FT6
FT7
T1 8
SEE NOTE 8
E1
E2
R2 18
FT6
R3 17
.910 .920
R4 20
C5 14
CR1 11
C1 12
R1 19
C2 12
A
.000 .010

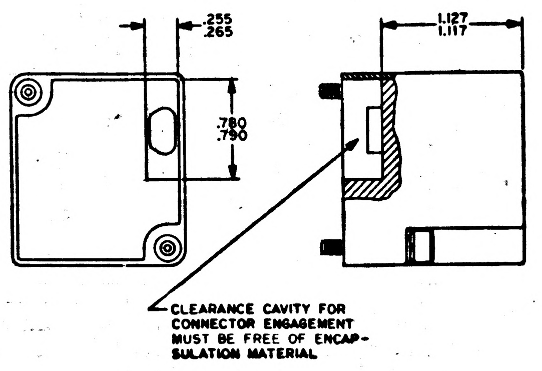

P1 5
SEE NOTES 10 AND 13
SEE DETAIL B
+.003 −.003
1.437
SEE NOTE 15
.125
.075 MAX
.075 MAX
26
24
1
26
2
1.115 REF
.125 REF
FT6
25
26
3
4
SEE NOTES 9 AND 13

SECTION A-A



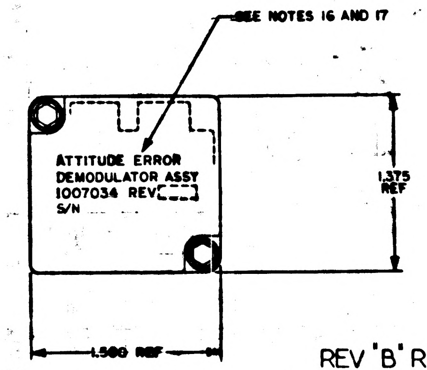

T3 7
SEE NOTE 8
FT3
FT4
R9
E6
R8
E7
FT2
SEE DETAIL A
RED
BLK
T3
WHT
BLU
YEL
C3
E4
E8
R2
E5
R5
C1
R6
R7
FT1
Q3 9
SEE NOTE 7
Q4 9
SEE NOTE 7
FT6
R4
C5
C2
CR1
FT5
FT7
R1
SEE NOTE 7
Q2 10
Q1 10
SEE NOTE 7

SECTION B-B


.255 .265
.780 .790
1.127 1.117

CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 2:1


SEE NOTES 16 AND 17
ATTITUDE ERROR
DEMODULATOR ASSY
1007034 REV
S/N
1.375 REF
1.500 REF

MARKING VIEW
SCALE: 2:1

REV 'B' REPLACES REV 'A'

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. FT DENOTES FEED THRU
6. AR DENOTES AS REQUIRED
7. BOND FIND NUMBERS 6, 9 AND 10 TO FIND NO. 2 PER ND1002004
8. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 3 PER ND1002004
9. BOND FIND NO. 4 TO FIND NUMBERS 2 AND 3 PER ND1002004
10. SPARE LEAD ON FIND NUMBERS 5 AND 6 TO BE CUT TO .030 TO .090 LENGTH
11. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN.
12. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
13. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND1002023
17. PIECEMARKING TO BE CENTRALLY LOCATED ON SURFACE INDICATED
18. INSPECT PER PS 1007034
19. TEST PER FTM 1007034

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1014500	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	26
AR	1006787-2	WIRE, ELECTRICAL	25
AR	1006757-1	WIRE, ELECTRICAL	24
2	MS35338-78	WASHER, LOCK	23
2	MS15795-303	WASHER, FLAT	22
2	1008069-1	SCREW, SOC HD, EXT RELIEVED BODY	21
1	1006760-38	RESISTOR	20
1	1006750-80	RESISTOR	19
1	1006750-72	RESISTOR	18
1	1006750-55	RESISTOR	17
2	1006750-3	RESISTOR	16
2	1006750-8	RESISTOR	15
1	1010279-250	CAPACITOR	14
2	1010279-249	CAPACITOR	13
2	1006755-89	CAPACITOR	12
1	1010372-19	DIODE	11
2	1010397-001	TRANSISTOR	10
2	1010367	TRANSISTOR	9
1	1010454	TRANSFORMER	8
1	1010315-1	TRANSFORMER	7
1	1010291-5	TRANSFORMER	6
1	1010318-2	CONNECTOR	5
2	1008068	SPACER	4
1	1008081	WIRING BOARD, BOTTOM	3
1	1008080	WIRING BOARD, TOP	2
1	1007032	HOUSING	1

LIST OF MATERIALS

1007034 H

NEXT ASSY	USED ON		
APPLICATION			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± — DECIMALS ± .02 ANGLES ± — DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWG NO CONTRACT	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
MATERIAL — HEAT TREATMENT — FINAL FINISH —	DRAWN [illegible] DATE [illegible] CHECKED [illegible] 12 Jun 63 APPROVAL [illegible] 6/14/63 APPROVAL [illegible] NASA APPROVAL W G [illegible] 6-14-63 MIT APPROVAL [illegible] 15 Jun 63	ATTITUDE ERROR DEMODULATOR ASSY	
		CODE IDENT NO.	SIZE E
		NASA DRAWING NO. 1007034	
		SCALE 4:1	WT
		SHEET 1 OF [illegible]	

MASTER

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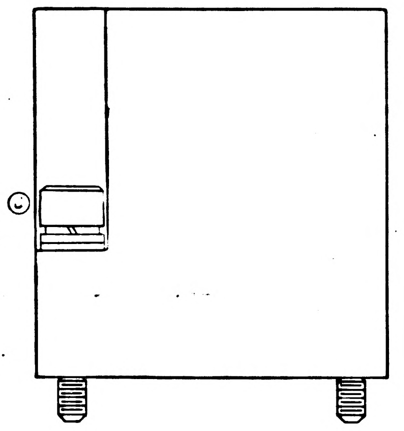
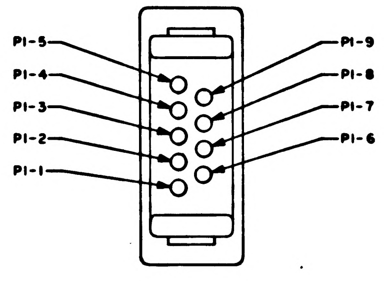
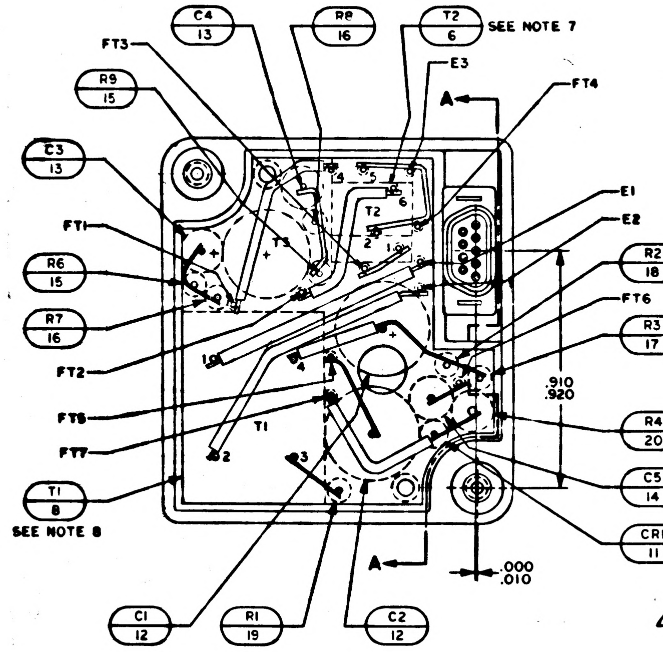
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 01613	6-13-63	WR
C	REVISED PER TDRR 02158	[illegible]	WR
D	REVISED PER TDRR 02542	[illegible]	[illegible]
E	REVISED PER TDRR 02860	[illegible]	[illegible]
F	REVISED PER TDRR 04008	[illegible]	[illegible]
G	REVISED PER TDRR 05093	[illegible]	WR
H	REVISED PER TDRR 05702	[illegible]	[illegible]
J	REVISED PER TDRR 12861	29 SEP 64	JJ

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	INPUT
P1-2	E2	INPUT
P1-3	E3	28 VOLTS DC GRD
P1-4	E4	OUTPUT −
P1-5	E5	+28 VOLTS DC
P1-6	E6	28V RMS 800 CPS LO
P1-7	E7	28V RMS 800 CPS HI
P1-8	E8	OUTPUT +
P1-9	SPARE	




P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE


C4 13
R8 16
T2 6
SEE NOTE 7
FT3
E3
R9 15
FT4
A
C3 13
FT1
R6 15
R7 16
FT2
FT5
FT7
T1 8
SEE NOTE 8
T2
T3
T1
E1
E2
R2 18
FT6
R3 17
.910
.920
R4 20
C5 14
CR1 11
A
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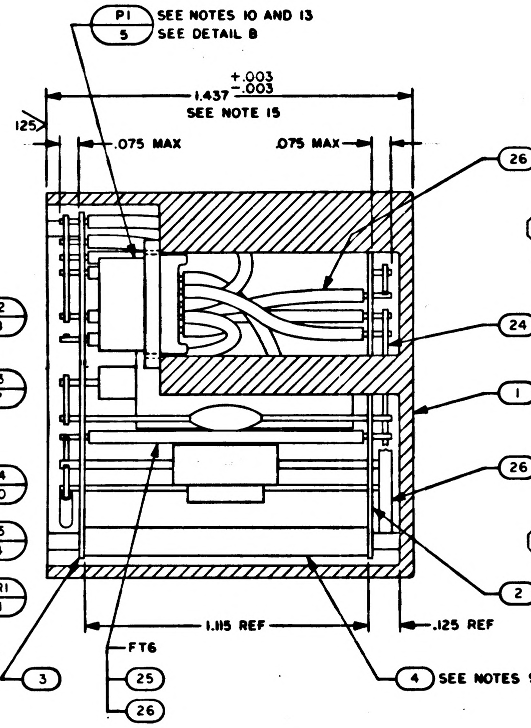
.010
C1 12
R1 19
C2 12


P1 5
SEE NOTES 10 AND 13
SEE DETAIL B
+.003
1.437 −.003
SEE NOTE 15
125
.075 MAX
.075 MAX
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24
1
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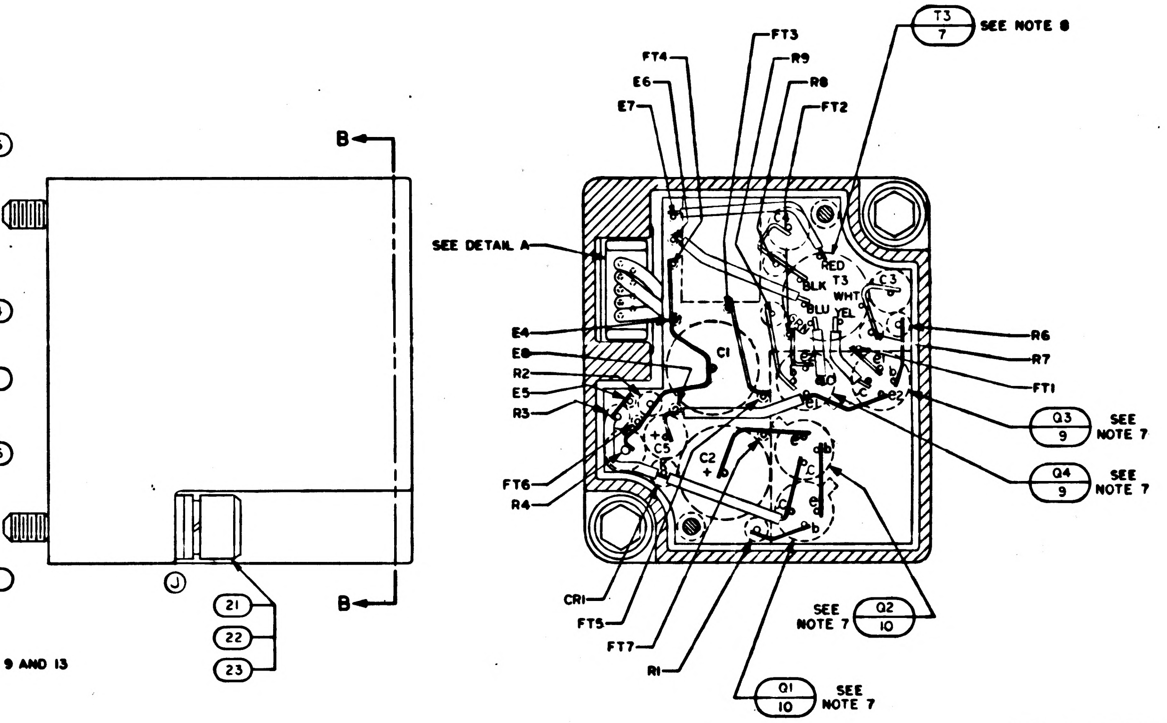
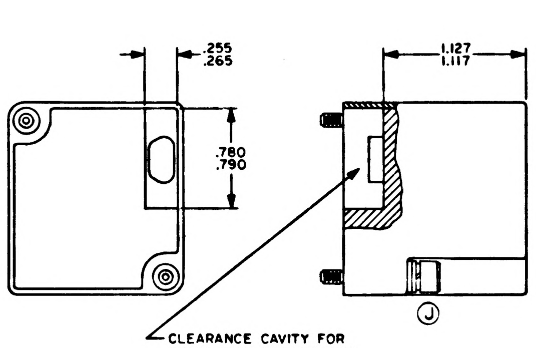
2
1.115 REF
.125 REF
FT6
25
26
3
4
SEE NOTES 9 AND 13

SECTION A-A

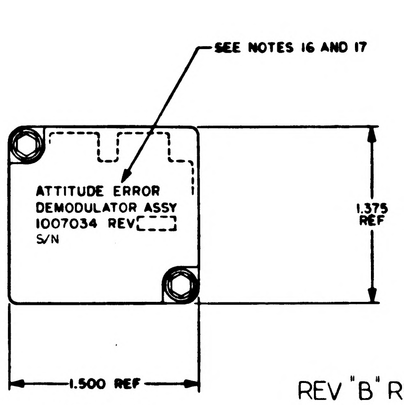

B
B
J
21
22
23
SEE DETAIL A
FT4
E6
E7
FT3
R9
R8
FT2
T3 7
SEE NOTE 8
RED
BLK
T3
WHT
BLU
YEL
C3
C1
E4
E8
R2
E5
R3
FT6
R4
C5
C2
R6
R7
FT1
Q3 9
SEE NOTE 7
Q4 9
SEE NOTE 7
CR1
FT5
FT7
R1
Q2 10
SEE NOTE 7
Q1 10
SEE NOTE 7

SECTION B-B


.255
.265
1.127
1.117
.780
.790
J

CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE: 2:1


SEE NOTES 16 AND 17
ATTITUDE ERROR
DEMODULATOR ASSY
1007034 REV
S/N
1.375 REF
1.500 REF

MARKING VIEW
SCALE: 2:1

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. FT DENOTES FEED THRU
6. AR DENOTES AS REQUIRED
7. BOND FIND NUMBERS 6, 9 AND 10 TO FIND NO. 2 PER ND1002004
8. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 3 PER ND1002004
9. BOND FIND NO. 4 TO FIND NUMBERS 2 AND 3 PER ND1002004
10. SPARE LEAD ON FIND NUMBERS 5 AND 6 TO BE CUT TO .030 TO .090 LENGTH
11. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN
12. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
13. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND1002023
17. PIECEMARKING TO BE CENTRALLY LOCATED ON SURFACE INDICATED
18. INSPECT PER PS 1007034
19. TEST PER FTM 1007034

REV "B" REPLACES REV "A"

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1014500	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	26
AR	1006787-2	WIRE, ELECTRICAL	25
AR	1006757-1	WIRE, ELECTRICAL	24
2	MS35338-78	WASHER, LOCK	23
2	MS15795-303	WASHER, FLAT	22
2	1008069-3	SCREW, SOC HD, EXT RELIEVED BODY	21
1	1006760-38	RESISTOR	20
1	1006750-80	RESISTOR	19
1	1006750-72	RESISTOR	18
1	1006750-55	RESISTOR	17
2	1006750-3	RESISTOR	16
2	1006750-8	RESISTOR	15
1	1010279-250	CAPACITOR	14
2	1010279-249	CAPACITOR	13
2	1006755-89	CAPACITOR	12
1	1010372-19	DIODE	11
2	1010397-001	TRANSISTOR	10
2	1010367	TRANSISTOR	9
1	1010454	TRANSFORMER	8
1	1010315-1	TRANSFORMER	7
1	1010291-5	TRANSFORMER	6
1	1010318-2	CONNECTOR	5
2	1008068	SPACER	4
1	1008081	WIRING BOARD, BOTTOM	3
1	1008080	WIRING BOARD, TOP	2
1	1021721	HOUSING ASSEMBLY	1

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± .02 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO CONTRACT
DRAWN Wm Healy DATE 5-22-63
CHECKED C.P. [illegible] 12 Jun 63
APPROVAL N. Sakelos 6/14/63
APPROVAL C. Smith 6/14/63
NASA APPROVAL W. G. [illegible] 6-14-63
MIT APPROVAL W Kupfer 14 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ATTITUDE ERROR
DEMODULATOR ASSY

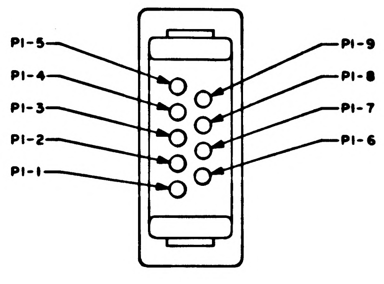
CODE IDENT NO.
SIZE E
NASA DRAWING NO. 1007034
SCALE 4:1
WT
SHEET 1 OF 1

1007034

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

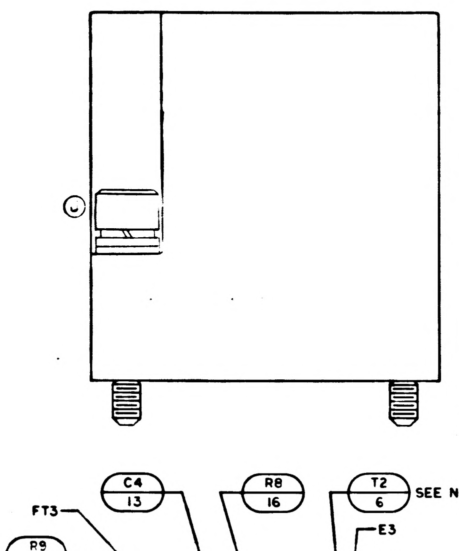
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 01613		
C	REVISED PER TDRR 02158		
D	REVISED PER TDRR 02542		
E	REVISED PER TDRR 02860		
F	REVISED PER TDRR 04007		
G	REVISED PER TDRR 05093		
H	REVISED PER TDRR 05702		
J	REVISED PER TDRR 12861	29 SEP 64	
K	REVISED PER TDRR 13644	27 OCT 64	

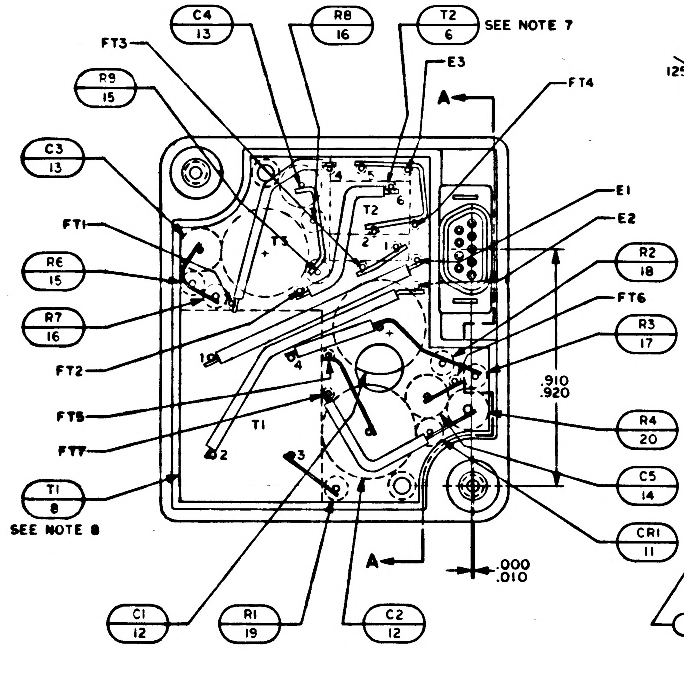
WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	INPUT
P1-2	E2	INPUT
P1-3	E3	28 VOLTS DC GRD
P1-4	E4	OUTPUT –
P1-5	E5	+28 VOLTS DC
P1-6	E6	28V RMS 800 CPS LO
P1-7	E7	28V RMS 800 CPS HI
P1-8	E8	OUTPUT +
P1-9	SPARE	



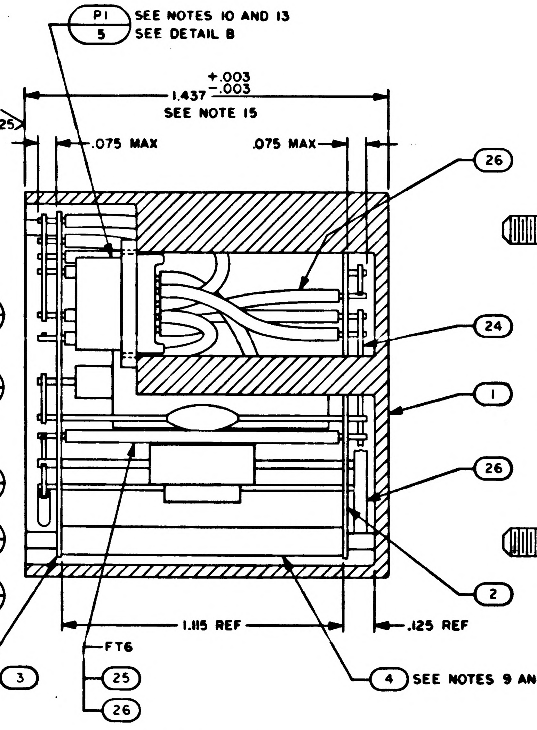
P1-5
P1-4
P1-3
P1-2
P1-1
P1-9
P1-8
P1-7
P1-6

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW
NO SCALE



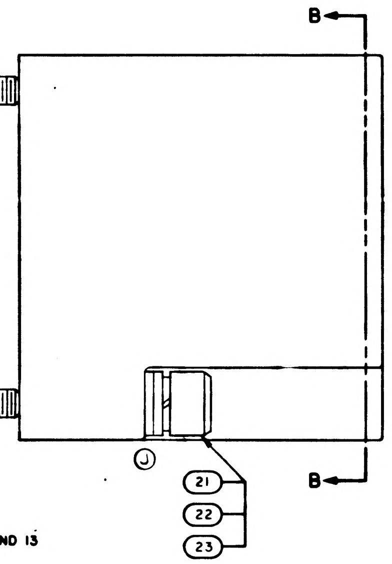


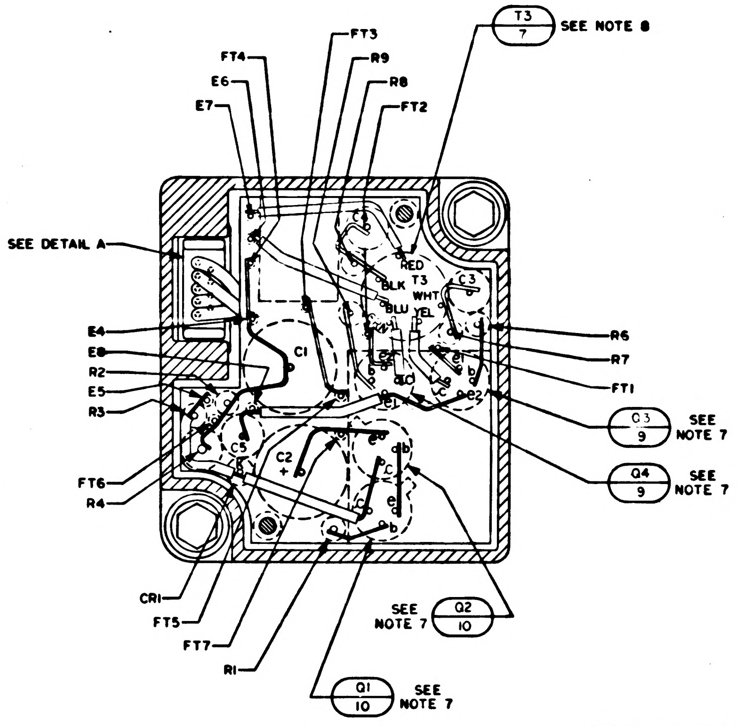
C4 13
R8 16
T2 6
SEE NOTE 7
FT3
E3
R9 15
A
FT4
C3 13
FT1
R6 15
R7 16
FT2
FT5
FT7
T1 8
SEE NOTE 8
E1
E2
R2 18
FT6
R3 17
.910
.920
R4 20
C5 14
CR1 11
.000
.010
C1 12
R1 19
C2 12
T3
T1



P1 5
SEE NOTES 10 AND 13
SEE DETAIL B
+.003
1.437 -.003
SEE NOTE 15
.125
.075 MAX
.075 MAX
26
24
1
26
2
1.115 REF
.125 REF
FT6
25
26
3
4
SEE NOTES 9 AND 13

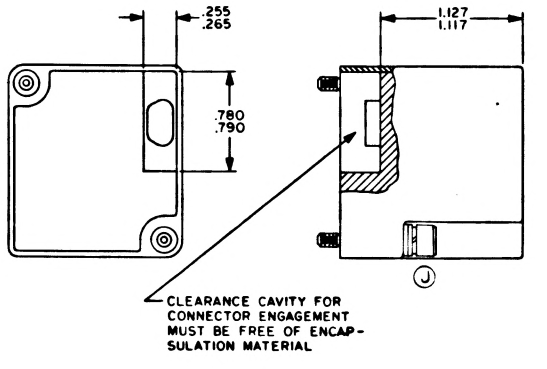
SECTION A-A





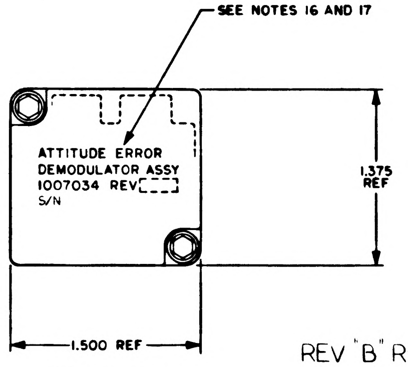
T3 7
SEE NOTE 8
FT4
FT3
R9
E6
R8
E7
FT2
SEE DETAIL A
RED
BLK
T3
WHT
C3
BLU
YEL
E4
E8
R2
E5
R3
C1
R6
R7
FT1
C3 9
SEE NOTE 7
Q4 9
SEE NOTE 7
FT6
R4
C5
C2
CR1
FT5
FT7
R1
SEE NOTE 7
Q2 10
Q1 10
SEE NOTE 7

SECTION B-B



.255
.265
.780
.790
1.127
1.117
J
CLEARANCE CAVITY FOR CONNECTOR ENGAGEMENT MUST BE FREE OF ENCAPSULATION MATERIAL

DETAIL B
ENCAPSULATION CONFIGURATION DATA
SCALE 2:1



SEE NOTES 16 AND 17
ATTITUDE ERROR
DEMODULATOR ASSY
1007034 REV
S/N
1.375 REF
1.500 REF

MARKING VIEW
SCALE 2:1

REV "B" REPLACES REV "A"

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. ALL WIRING TO COMPLY WITH STANDARDS PRESCRIBED BY ND1002003
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. FT DENOTES FEED THRU
6. AR DENOTES AS REQUIRED
7. BOND FIND NUMBERS 6, 9 AND 10 TO FIND NO. 2 PER ND1002004
8. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 3 PER ND1002004
9. BOND FIND NO. 4 TO FIND NUMBERS 2 AND 3 PER ND1002004
10. SPARE LEAD ON FIND NUMBERS 5 AND 6 TO BE CUT TO .030 TO .090 LENGTH
11. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN
12. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
13. BOND FIND NUMBERS 4 AND 5 TO FIND NO. 1 PER ND1002004
14. ENCAPSULATE MODULE PER ND1002106
15. MACHINE TO DIMENSION SHOWN AFTER ENCAPSULATION
16. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND1002023
17. PIECEMARKING TO BE CENTRALLY LOCATED ON SURFACE INDICATED
18. INSPECT PER PS 1007034
19. TEST PER FTM 1007034

☒	1014500	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	26
AR	1006787-2	WIRE, ELECTRICAL	25
AR	1006757-1	WIRE, ELECTRICAL	24
2	MS35338-78	WASHER, LOCK	23
2	MS15795-303	WASHER, FLAT	22
2	1008069-3	SCREW, SOC HD, EXT RELIEVED BODY	21
1	1006760-38	RESISTOR	20
1	1006750-80	RESISTOR	19
1	1006750-72	RESISTOR	18
1	1006750-55	RESISTOR	17
2	1006750-3	RESISTOR	16
2	1006750-8	RESISTOR	15
1	1010279-250	CAPACITOR	14
2	1010279-249	CAPACITOR	13
2	1006755-89	CAPACITOR	12
1	1010372-19	DIODE	11
2	1010397-001	TRANSISTOR	10
2	1010367	TRANSISTOR	9
1	1010454	TRANSFORMER	8
1	1010315-1	TRANSFORMER	7
1	1010291-5	TRANSFORMER	6
1	1010318-2	CONNECTOR	5
2	1008068	SPACER	4
1	1008081	WIRING BOARD, BOTTOM	3
1	1008080	WIRING BOARD, TOP	2
1	1021721	HOUSING ASSEMBLY	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ±.02 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DWG NO CONTRACT
DRAWN Wm Healy DATE 5-22-63
CHECKED C. P. [illegible] 12 Jun 63
APPROVAL N. [illegible] 6/14/63
APPROVAL L. C. Smith 6/14/63
NASA APPROVAL W. J. [illegible] 6-14-63
MIT APPROVAL W [illegible] 19 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

ATTITUDE ERROR DEMODULATOR ASSY

CODE IDENT NO.
SIZE E
NASA DRAWING NO 1007034
SCALE 4:1
WT
SHEET 1 OF 1

4 3 2 1

1007034

REVISIONS TDRR 01353

SYM	DESCRIPTION	DATE	APPROVAL

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PICTURE INCOMPLETE

DRAWING FOR REFERENCE
1014500 SCHEM DIAG-DEMODULATOR

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1		CONNECTOR	
1	1010313		
1	1010315		
1	1010454	TRANSFORMER	
1	1006760-38		
1	1006750-80		
1	1006750-72		
1	1006750-55		
2	1006750-25		
2	1006750-8	RESISTOR	
2	1010367	TRANSISTOR	
2	1010397	TRANSISTOR	
1	1010372-19	DIODE	
2	1010279-249		
2	1006755-89		
1	1010279-250	CAPACITOR	

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± # ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN R LaDue DATE 21 MAY 63
CHECKED F J Boehme 5/21/63
APPROVAL
APPROVAL
NASA APPROVAL W J Rhine 5-22-63
MIT APPROVAL 22 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DEMODULATOR- ATTITUDE ERROR

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007034
SCALE #
WT
SHEET OF

MASTER

4 3 2 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007034
31 January 1964
Class A Release
TDRR 06062

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 6 inclusive.

APOLLO G&N Specification
PS-1007034
31 January 1964

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Attitude Error Demodulator Assembly for use in APOLLO Guidance and Navigation equipment.

31 Jan 64
MIT/IL DATE

1/31/64
NASA/MSC DATE

APOLLO G&N Specification
PS-1007034
31 January 1964

PROCUREMENT SPECIFICATION

FOR

ATTITUDE ERROR DEMODULATOR ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Attitude Error Demodulator Assembly, Drawing 1007034, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007034	Final Test Method for Attitude Error Demodulator Assembly

DRAWINGS

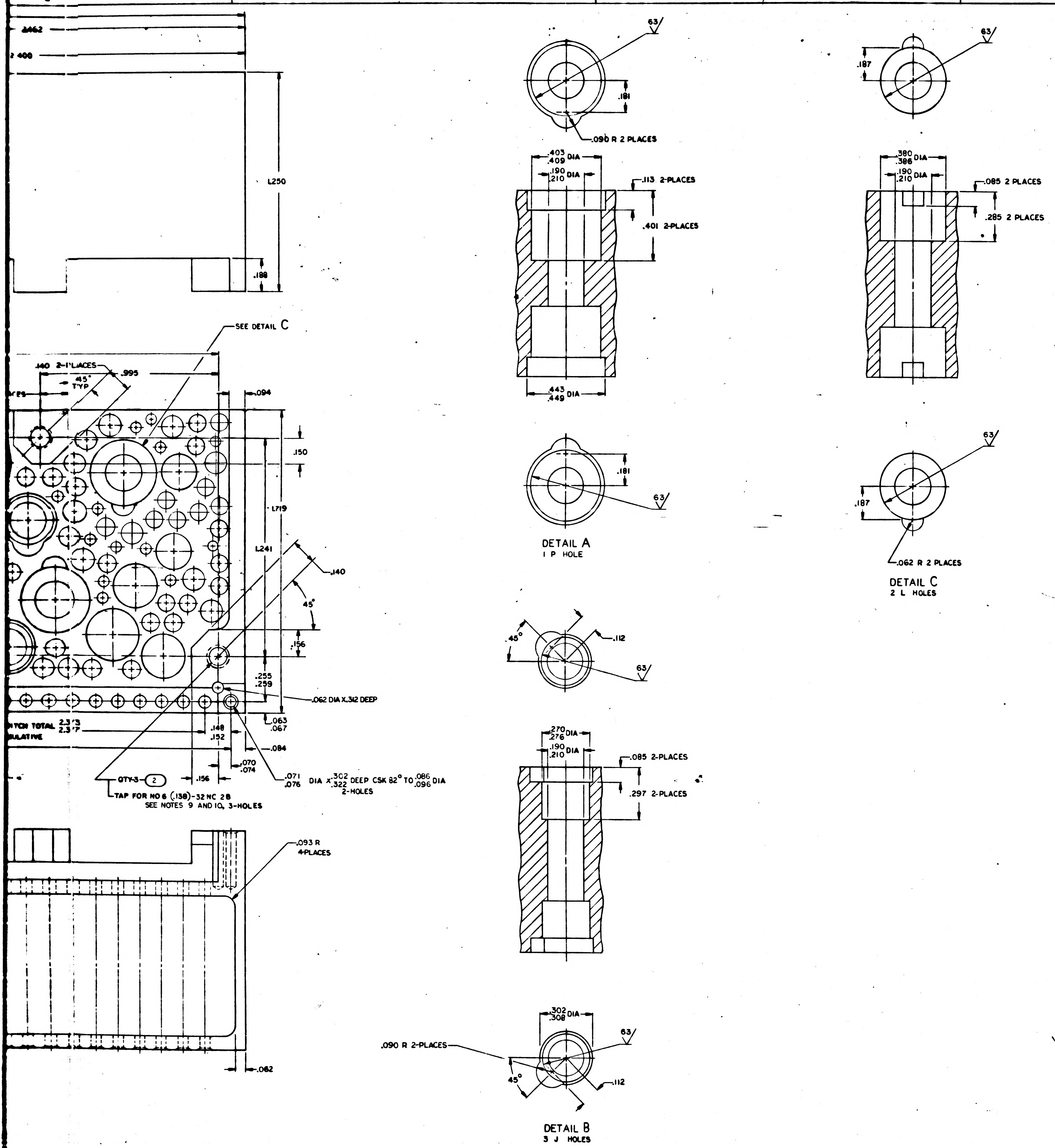
APOLLO G&N

1007034	Attitude Error Demodulator Assembly
1014500	Demodulator, Attitude Error Schematic Diagram
1010336	Meter, Electrical Indicating -(Yaw, Pitch, Roll Special)

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

REVISIONS	TDRR01257		
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDER 01865	7-2-63	

1007035



2.462
2.400
1.250
.188
SEE DETAIL C
.140 2-PLACES
45° TYP
.995
.094
.150
1.719
1.241
.140
45°
.156
.255
.259
.062 DIA X.312 DEEP
PITCH TOTAL 2.313 2.317
CUMULATIVE
.148
.152
.063
.067
.084
.070
.074
.156
QTY-3-2
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA
2-HOLES
.093 R
4-PLACES
.062
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
.187
.380 .386 DIA
.085 2 PLACES
.285 2 PLACES
.062 R 2 PLACES
45°
.112
.270 .276 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
.090 R 2-PLACES

DETAIL A
1 P HOLE

DETAIL C
2 L HOLES

DETAIL B
3 J HOLES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS 1222-06E	INSERT, SCREW LOCKING	2
1	1007035-1	HEATSINK	1

LIST OF MATERIALS

1007027	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .002 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN W. Horgan DATE 8 MAY 63
CHECKED
APPROVAL D. R. [illegible] 5-15-63
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL W. Kupfer 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

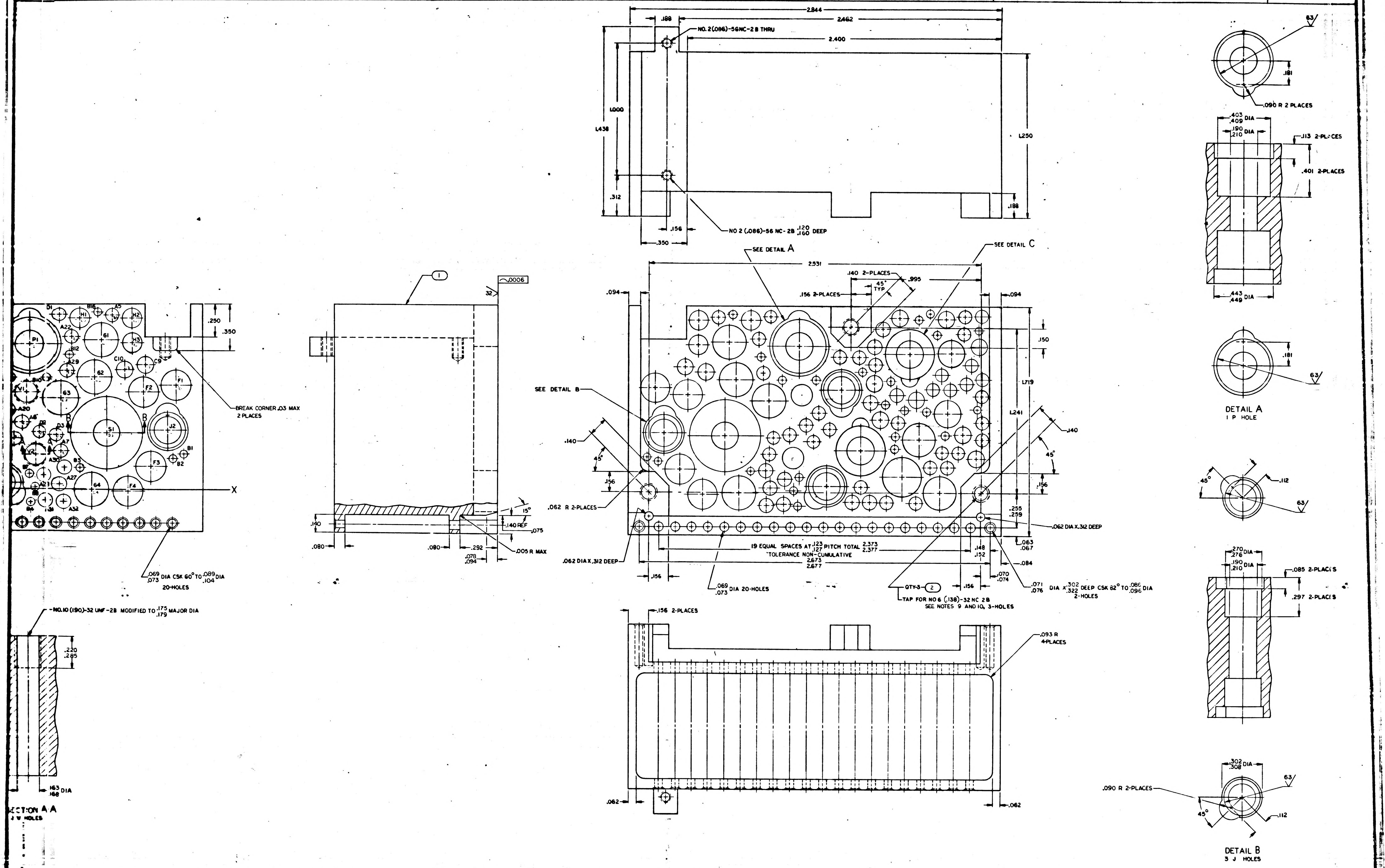
HEATSINK
BINARY CURRENT SWITCH
COMPUTER OUTPUT

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007035
SCALE 5/1
WT
SHEET 1 OF 1

1007035

INCHES
PHOTOGRAPHIC SCALE ONLY

E3 1007035


8
7
6
5
4
2.844
2.462
2.400
.188
NO. 2 (.086)-56NC-2B THRU
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120 .160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
45° TYP
.995
.156 2-PLACES
.094
.094
.150
1.719
1.241
SEE DETAIL B
.140
45°
.140
45°
.156
.156
.062 R 2-PLACES
.255 .259
.062 DIA X .312 DEEP
.062 DIA X .312 DEEP
19 EQUAL SPACES AT .123 .127 PITCH TOTAL 2.373 2.377
TOLERANCE NON-CUMULATIVE
2.673 2.677
.148 .152
.063 .067
.084
.156
.156
.070 .074
.069 .073 DIA 20-HOLES
QTY-3-②
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA
2-HOLES
.156 2-PLACES
.093 R
4-PLACES
.062
.062
①
.0006
32
15°
.140
.140 REF
.075
.080
.080
.292
.078 .094
.005 R MAX
D1
B16
A5
H1
H2
P1
A22
G1
H3
B12
A29
C10
C9
G2
F2
F1
B10
V1
G3
A20
A6
D2
D3
B
B
S1
J2
A
A
V2
A7
A30
B3
B1
B2
F3
A27
A23
G4
F4
X
B4
A31
A32
.250
.350
BREAK CORNER .03 MAX
2 PLACES
.069 .073 DIA CSK 60° TO .089 .104 DIA
20-HOLES
NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA
.220 .285
.163 .168 DIA
ECTION A-A
4 V HOLES
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
3 J HOLES
7
6
5
4

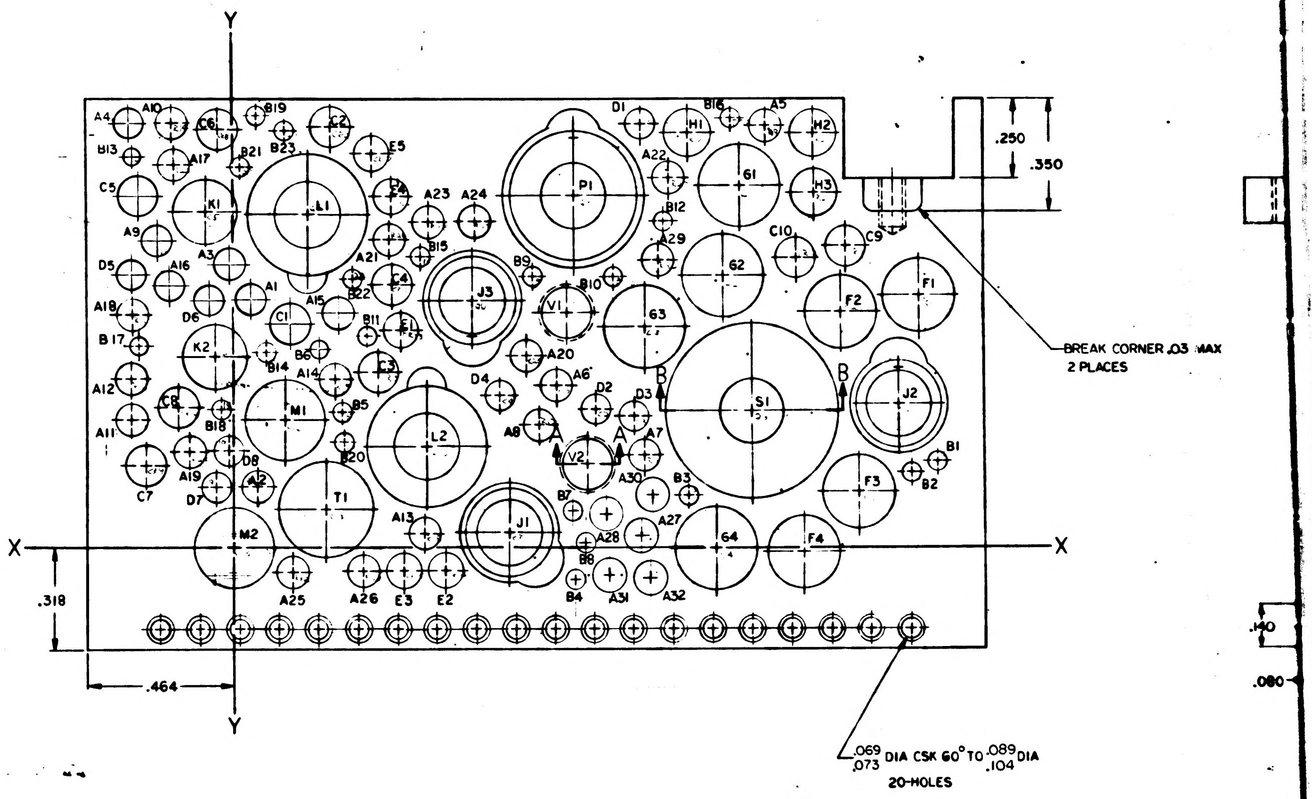
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

E2

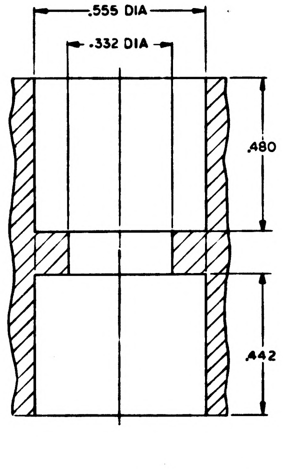
1007035

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⊕ DIA	HOLE DIA	QTY
A1	.052	.774	.006	.100 .104	32
A2	.073	.191			
A3	-.015	.884			
A4	-.332	1.326			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	-.245	.961			
A10	-.195	1.326			
A11	-.324	.400			
A12	-.322	.428			
A13	.605	.044			
A14	.318	.526			
A15	.331	.735			
A16	-.207	.819			
A17	-.188	1.197			
A18	-.321	.728			
A19	-.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	-.076			
A26	.408	-.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268	.006	.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	-0.100			
B5	.340	.422			
B6	.271	.620			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	-.303	1.222			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	-.295	.629			
B18	-.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.210	.684	.006	.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	-.303	1.098			
C6	-.049	1.307			
C7	-.276	.258			
C8	-.176	.438			
C9	1.940	.943			
C10	1.779	.905			

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⊕ DIA	HOLE DIA	QTY
D1	1.292	1.324	.006	.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	-.324	.852			
D6	-.080	.774			
D7	-.056	.191			
D8	-.018	.304			
E1	.530	.677	.006	.108 .112	5
E2	.670	-.071			
E3	.538	-.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787	.006	.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	-.012			
G1	1.604	1.132	.006	.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295	.006	.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048	.006	SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	-.090	1.048	.006	.202 .206	2
K2	-.061	.596			
L1	.233	1.040	.006	SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398	.006	.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100	.006	SEE DETAIL A	1
S1	1.641	.428	.006	SEE SECTION B-B	1
T1	.290	.120	.006	.300 .307	1
V1	1.054	.734	.006	SEE SECTION A-A	2
V2	1.120	.260			

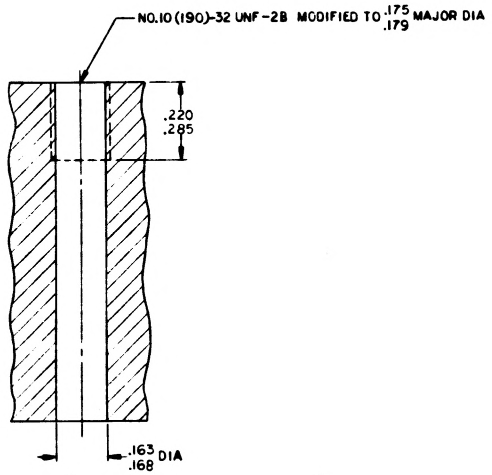


Y
Y
X
X
A4
A10
C6
B19
C2
B13
A17
B21
B23
E5
C5
K1
L1
E4
A23
A24
A9
A3
A21
B15
D5
A16
A1
B22
C4
J3
B9
V1
B10
A18
D6
A15
B11
E1
B17
C1
K2
B6
B14
A14
C3
A20
A12
C8
M1
B5
D4
A6
D2
D3
A11
B18
L2
A8
A7
D8
B20
V2
C7
A19
A2
A30
B3
D7
T1
B7
A13
J1
A28
A27
M2
B8
A25
A26
E3
E2
B4
A31
A32
D1
B16
A5
H1
H2
A22
P1
G1
H3
B12
A29
C10
C9
G2
G3
F1
F2
S1
J2
F3
B1
B2
G4
F4
A
A
B
B
.250
.350
BREAK CORNER .03 MAX
2 PLACES
.318
.464
.140
.080
.069/.073 DIA CSK 60° TO .089/.104 DIA
20-HOLES



.555 DIA
.332 DIA
.480
.442

SECTION B-B



NO.10 (190)-32 UNF-2B MODIFIED TO .175/.179 MAJOR DIA
.220
.285
.163/.168 DIA

SECTION A-A
2 V HOLES

NOTES

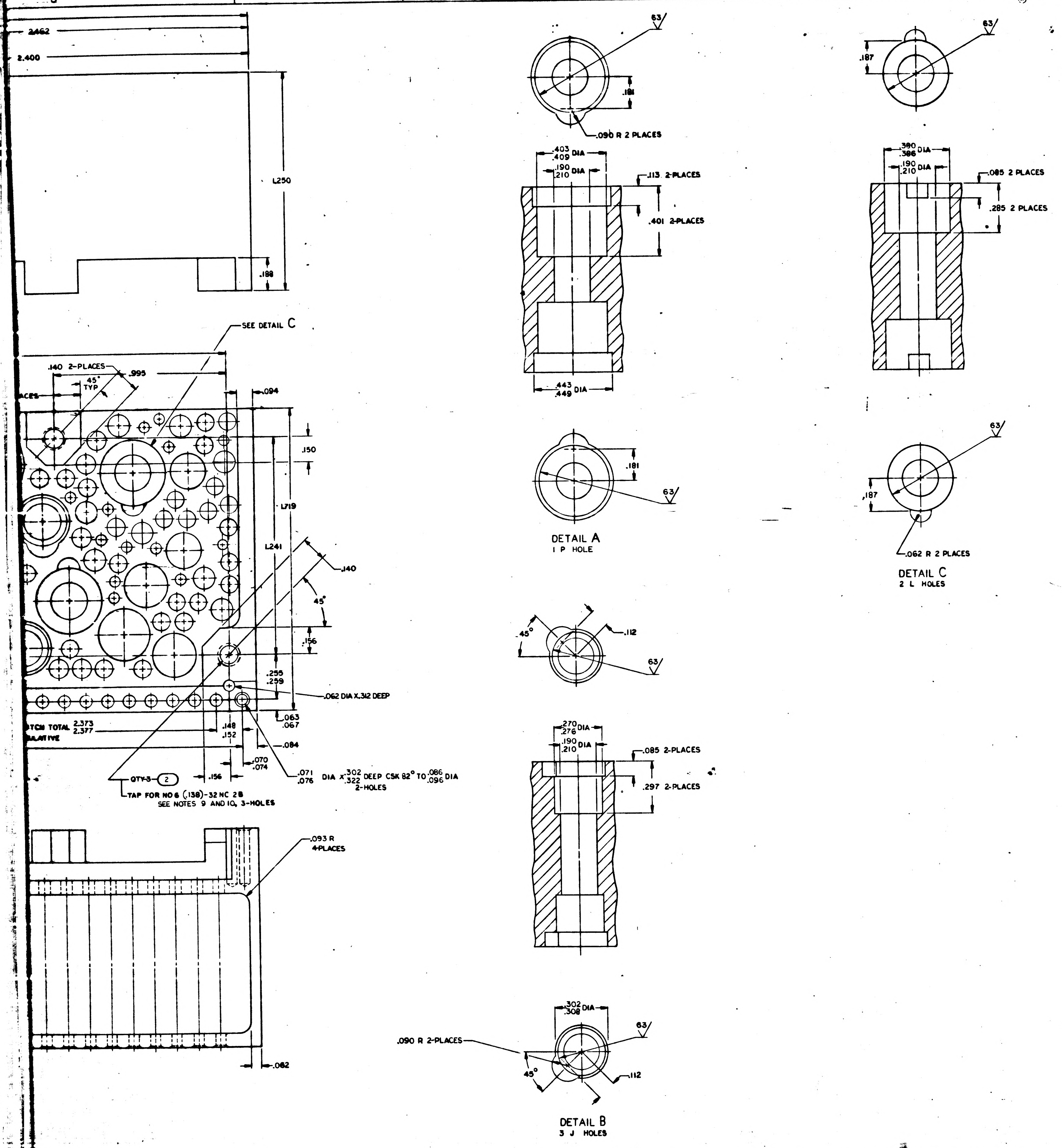
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. TRUE POSITIONING AS SHOWN IN CHART.
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIM F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV

INCHES
0 2
PHOTOGRAPHIC SCALE ONLY

1007035 B

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01865	7-2-63	J.J.M.
B	REVISED PER TDRR 02535	[illegible]	J.J.M.

REVISIONS FDRR01257



2.462
2.400
1.250
.188
SEE DETAIL C
.140 2-PLACES
45° TYP
.995
.094
.150
1.719
1.241
.140
45°
.156
.255
.259
.062 DIA X .312 DEEP
.063
.067
TOTAL 2.373
2.377
.148
.152
.084
.070
.074
.156
QTY-3 ②
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
.071
.076 DIA X .302
.322 DEEP CSK 82° TO .086
.096 DIA
2-HOLES
.093 R
4-PLACES
.062
63
.181
.090 R 2 PLACES
.403
.409 DIA
.190
.210 DIA
.113 2-PLACES
.401 2-PLACES
.443
.449 DIA
DETAIL A
1 P HOLE
45°
.112
.270
.276 DIA
.085 2-PLACES
.297 2-PLACES
.302
.308 DIA
.090 R 2-PLACES
DETAIL B
3 J HOLES
.187
.380
.386 DIA
.085 2 PLACES
.285 2 PLACES
.062 R 2 PLACES
DETAIL C
2 L HOLES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS 1222-06E	INSERT, SCREW LOCKING	2
1	1007035-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007027	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .002 ANGLES ± 1/2
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 11

MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.
DRAWN W. Horgan DATE 8 MAY 63
CHECKED
APPROVAL D. R. Tait 5-15-63
APPROVAL
NASA APPROVAL
MIT APPROVAL W. Kupfer 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

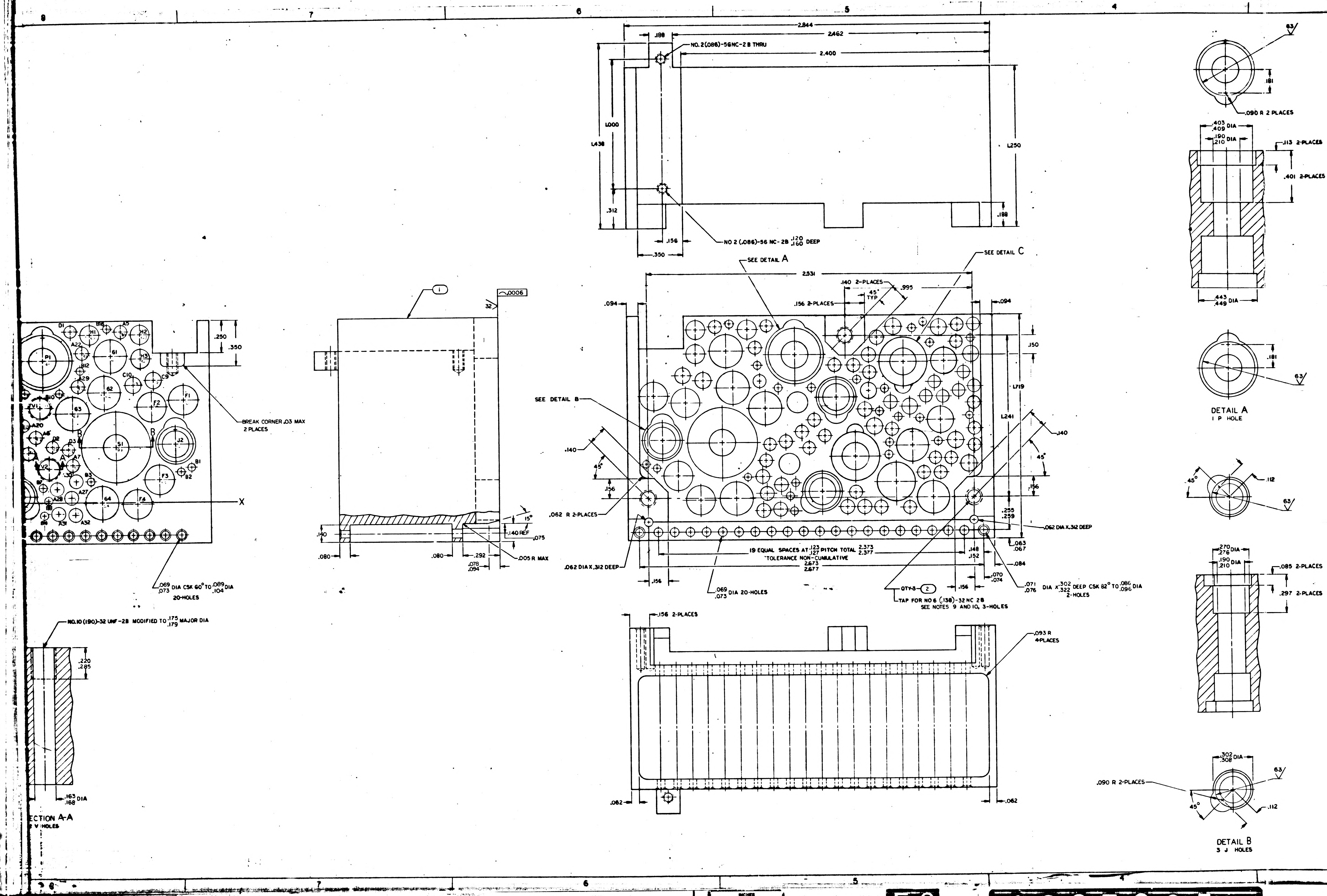
HEATSINK
BINARY CURRENT SWITCH
COMPUTER OUTPUT

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007035
SCALE 5/1 | WT | SHEET 1 OF 1

1007035

INCHES
PHOTOGRAPHIC SCALE ONLY

F3 1007035


2.844
2.462
2.400
.188
NO. 2(.086)-56NC-2B THRU
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120 .160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
45° TYP
.995
.156 2-PLACES
.094
.094
.150
1.719
1.241
SEE DETAIL B
.140
45°
.140
45°
.156
.156
.062 R 2-PLACES
.255 .259
.062 DIA X .312 DEEP
.063 .067
.084
19 EQUAL SPACES AT .123 .127 PITCH TOTAL 2.373 2.377
TOLERANCE NON-CUMULATIVE
2.673 2.677
.148 .152
.070 .074
.062 DIA X .312 DEEP
.156
.069 .073 DIA 20-HOLES
QTY-3 ②
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA
2-HOLES
.156 2-PLACES
.093 R 4-PLACES
.062
.062
①
.0006
32
.140
.080
.080
.292
.078 .094
15°
.140 REF
.075
.005 R MAX
D1 B16 A5 H1 H2 P1 A22 G1 H3 B12 A29 C10 C9 G2 B10 F1 F2 V1 G3 A20 A6 D2 D3 B S1 J2 A A7 V2 B1 B3 B2 F3 A27 A28 B8 B6 A31 A32 G4 F4
.250
.350
X
BREAK CORNER .03 MAX 2 PLACES
.069 .073 DIA CSK 60° TO .089 .104 DIA
20-HOLES
NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA
.220 .285
.163 .168 DIA
ECTION A-A
2 V HOLES
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
3 J HOLES
8 7 6 5 4

INCHES
PHOTOGRAPHIC SCALE ONLY

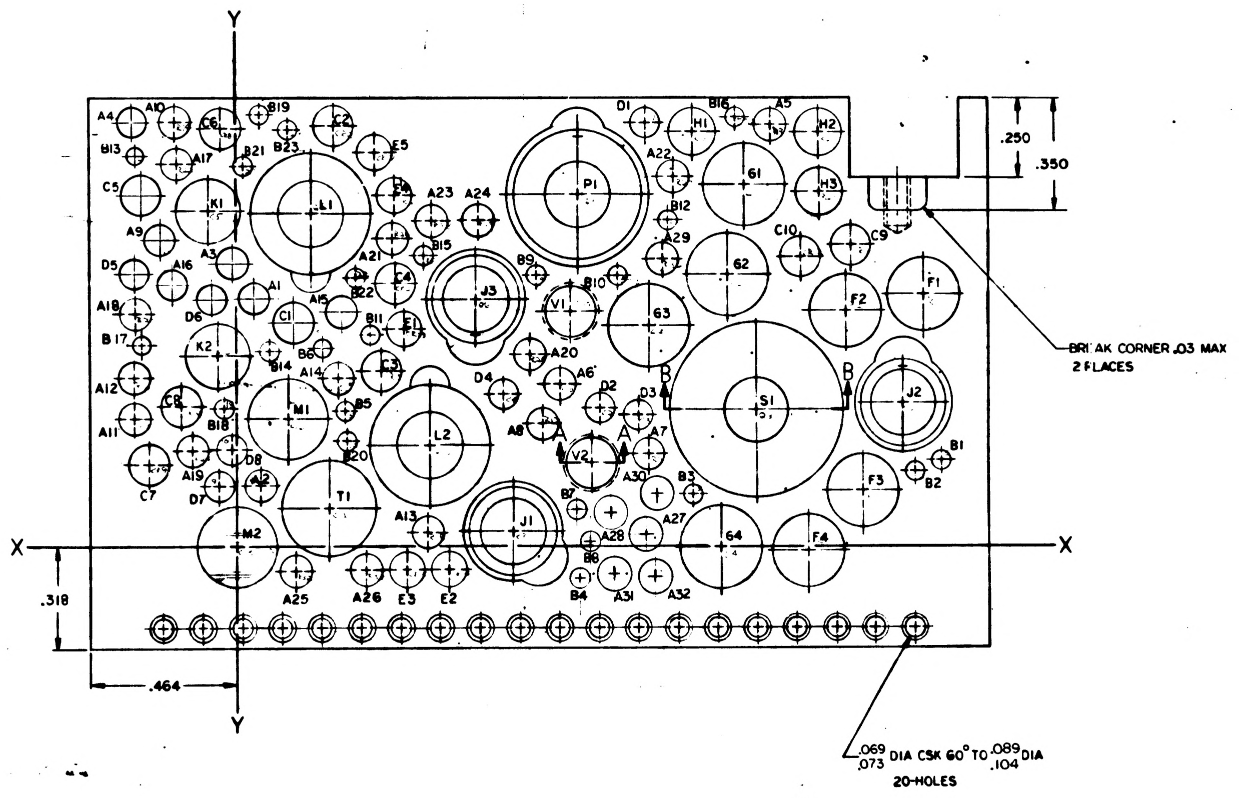
F-2

1007035

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⊕ DIA	HOLE DIA	QTY
A1	.052	.774	.006	.100 .104	32
A2	.073	.191			
A3	-.015	.884			
A4	-.332	1.326			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	-.245	.961			
A10	-.195	1.326			
A11	-.324	.400			
A12	-.322	.428			
A13	.605	.044			
A14	.318	.526			
A15	.331	.735			
A16	-.207	.819			
A17	-.188	1.197			
A18	-.321	.726			
A19	-.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	-.076			
A26	.408	-.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268	.006	.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	-0.100			
B5	.340	.422			
B6	.271	.620			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	-.303	1.222			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	-.295	.629			
B18	-.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.180	.700	.006	.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	-.303	1.098			
C6	-.049	1.307			
C7	-.276	.258			
C8	-.176	.438			
C9	1.940	.943			
C10	1.779	.905			

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⊕ DIA	HOLE DIA	QTY
D1	1.292	1.324	.006	.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	-.324	.852			
D6	-.080	.774			
D7	-.056	.191			
D8	-.018	.304			
E1	.530	.677	.006	.108 .112	5
E2	.670	-.071			
E3	.538	-.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787	.006	.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	-.012			
G1	1.604	1.132	.006	.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295	.006	.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048	.006	SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	-.090	1.048	.006	.202 .206	2
K2	-.061	.596			
L1	.233	1.040	.006	SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398	.006	.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100	.006	SEE DETAIL A	1
S1	1.641	.428	.006	SEE SECTION B-B	1
T1	.290	.120	.006	.300 .307	1
V1	1.054	.734	.006	SEE SECTION A-A	2
V2	1.120	.260			

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. TRUE POSITIONING AS SHOWN IN CHART.
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125√ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIM F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV


Y
X
Y
X
.250
.350
BREAK CORNER .03 MAX
2 PLACES
.318
.464
$^{.069}_{.073}$ DIA CSK 60° TO $^{.089}_{.104}$ DIA
20-HOLES
A
A
B
B
A4
A10
C6
B19
C2
D1
B16
H1
A5
H2
B13
A17
B21
B23
E5
A22
G1
H3
C5
K1
L1
P1
A23
A24
B12
A29
C10
C9
A9
A3
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A15
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C4
J3
V1
B10
F1
F2
A18
D6
C1
B11
E1
G3
B17
K2
B6
A20
J2
S1
B14
A14
C3
D4
A6
D2
D3
A12
C8
M1
B5
A8
A7
B1
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B7
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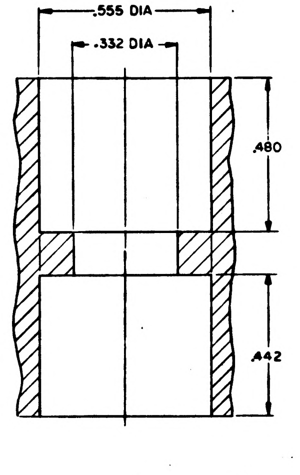
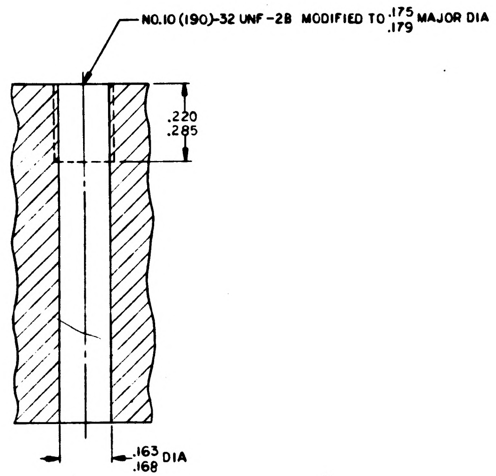
E3
E2
B4
A31
A32


.555 DIA
.332 DIA
.480
.442
SECTION B-B


NO.10 (190)-32 UNF-2B MODIFIED TO $^{.175}_{.179}$ MAJOR DIA
.220
.285
$^{.163}_{.168}$ DIA
SECTION A-A
2 V HOLES

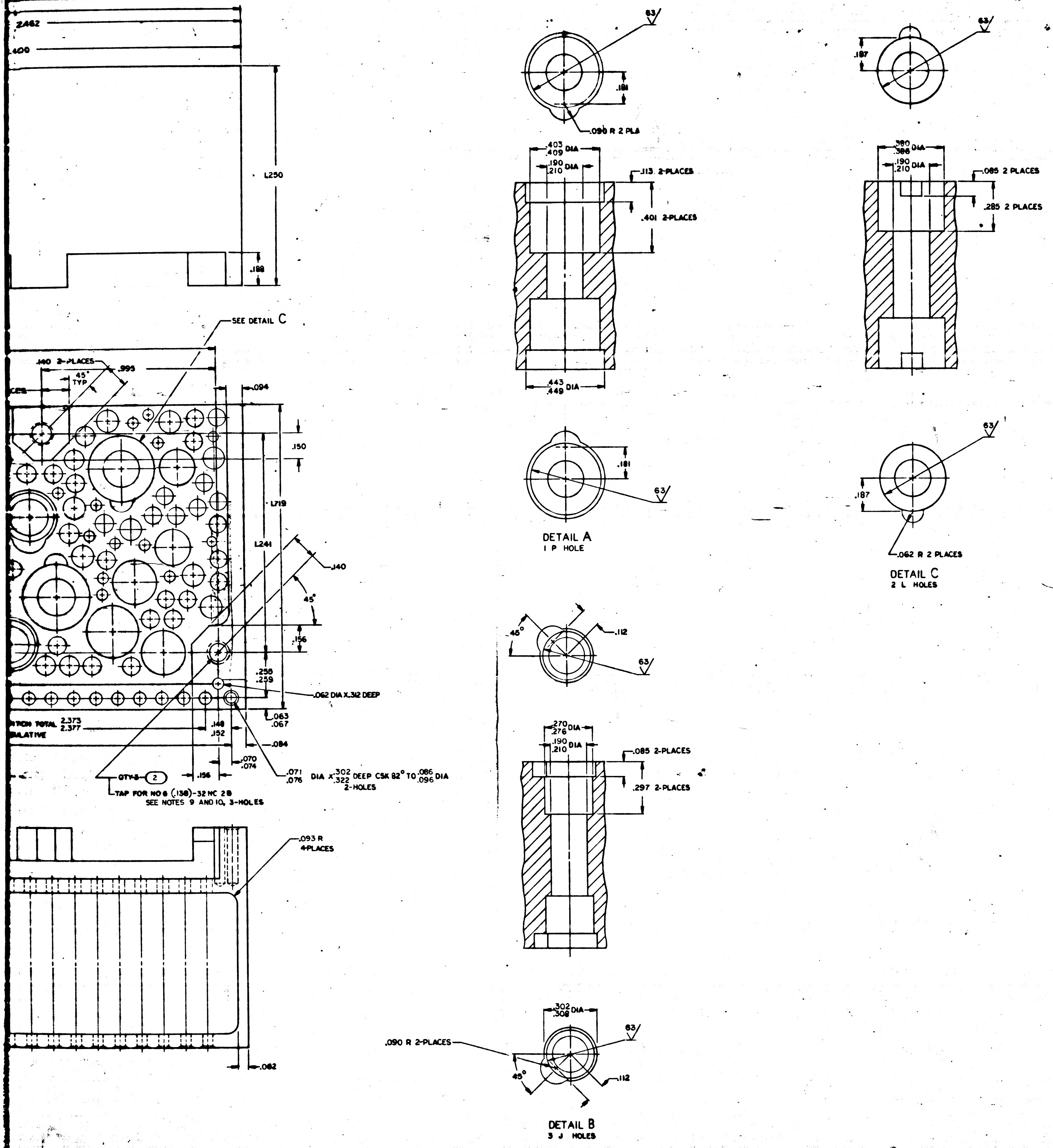
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

E1 1007035

	1007035	D

REVISIONS TDRR01257

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TCER 01865	7-2-63	JJM
B	REVISED PER TDRR 02535	[illegible]	JJM
C	REVISED PER TDRR 03651	10-14-63	[illegible]
D	REVISED PER TDRR 03853	10-14-63	[illegible]


2.462
.400
1.250
.188
SEE DETAIL C
.140 2-PLACES
45° TYP
.995
.094
.150
1.719
1.241
.140
45°
.156
.256
.259
.062 DIA X .312 DEEP
PITCH TOTAL 2.373 2.377
CUMULATIVE
.148
.152
.063
.067
.084
.070
.074
.156
QTY-3 (2)
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
.093 R 4-PLACES
.082
63
.181
.090 R 2 PLS
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
DETAIL A
1 P HOLE
.187
.380 .386 DIA
.190 .210 DIA
.085 2 PLACES
.285 2 PLACES
.062 R 2 PLACES
DETAIL C
2 L HOLES
45°
.112
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
.090 R 2-PLACES
DETAIL B
3 J HOLES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS21209 C0620	INSERT, SCREW LOCKING	2
1	1007035-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007027	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .002 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTE 2
HEAT TREATMENT
—
FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN W. Horgan DATE 8 May 63
CHECKED
APPROVAL D. R. [illegible] 5-15-63
APPROVAL
NASA APPROVAL [illegible]
MIT APPROVAL W Kupfer 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
BINARY CURRENT SWITCH
COMPUTER OUTPUT

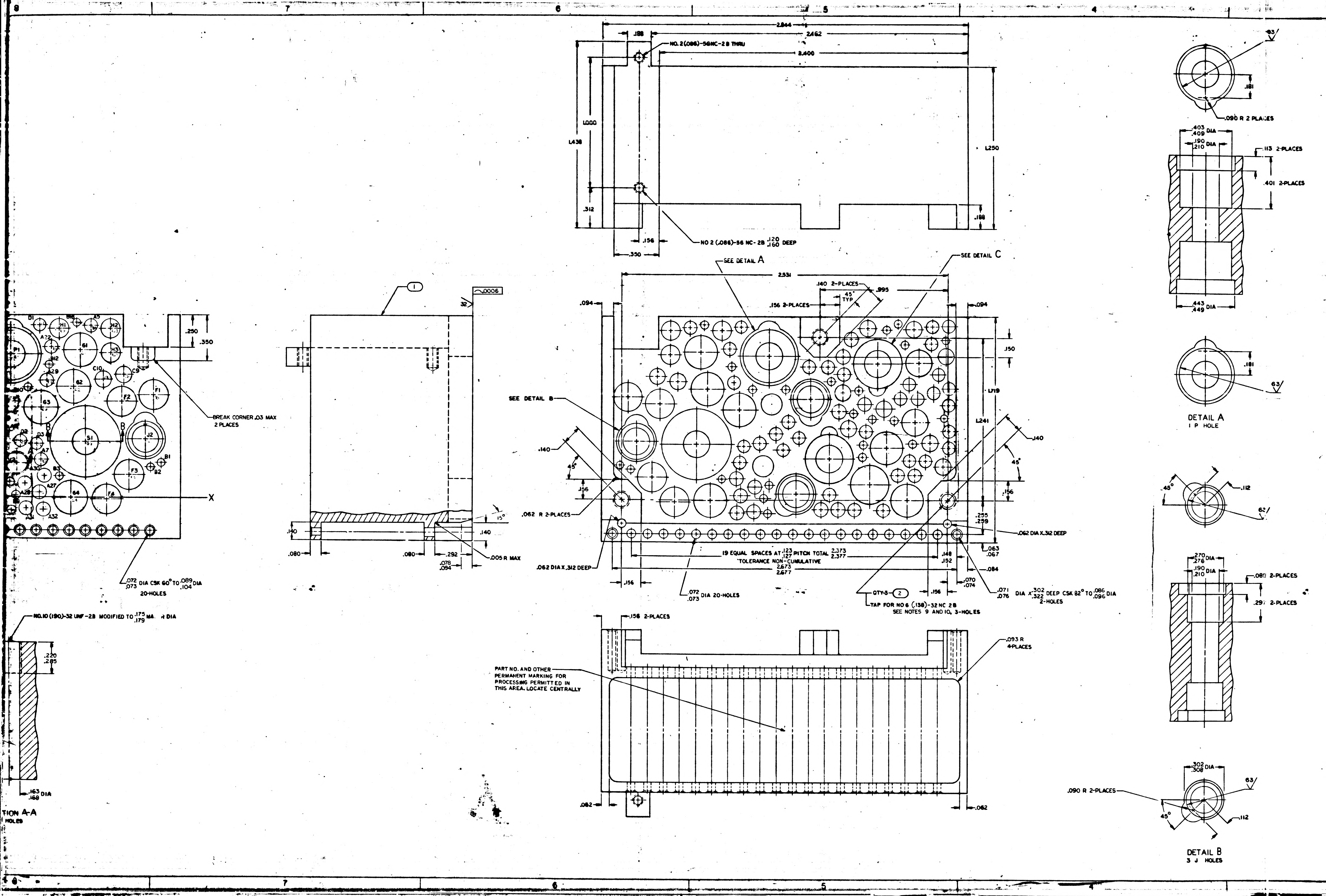
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007035
SCALE 5/1
WT
SHEET 1 OF 1

D 1007035

MASTER

INCHES
PHOTOGRAPHIC SCALE ONLY

F3 1007035


8
7
6
5
4
2.844
2.462
2.400
.188
NO. 2 (.086)-56NC-2B THRU
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120 .160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
45° TYP
.995
.156 2-PLACES
.094
.150
1.719
1.241
SEE DETAIL B
.140
45°
.156
.062 R 2-PLACES
.255 .259
.062 DIA X .312 DEEP
19 EQUAL SPACES AT .123 .127 PITCH TOTAL 2.373 2.377
TOLERANCE NON-CUMULATIVE
2.673 2.677
.148 .152
.063 .067
.084
.070 .074
.072 .073 DIA 20-HOLES
QTY-3-②
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
①
.0006
32
15°
.140
.080
.292
.078 .094
.005 R MAX
.250
.350
BREAK CORNER .03 MAX 2 PLACES
D1 B16 A5 H1 H2 A22 G1 H3 P1 B12 C10 C9 A29 G2 F2 F1 G3 S1 J2 A7 B1 B3 B2 F3 A27 A30 A28 G4 F4 A31 A32 B B
X
.072 .073 DIA CSK 60° TO .089 .104 DIA
20-HOLES
NO.10 (.190)-32 UNF-2B MODIFIED TO .175 .179 MA. R DIA
.220 .285
.163 .168 DIA
TION A-A
HOLES
.156 2-PLACES
.093 R 4-PLACES
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. LOCATE CENTRALLY
.082
.062
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
DETAIL A
1 P HOLE
45°
.112
.270 .276 DIA
.089 2-PLACES
.297 2-PLACES
.302 .308 DIA
.090 R 2-PLACES
DETAIL B
3 J HOLES

INCHES
PHOTOGRAPHIC SCALE ONLY

E2

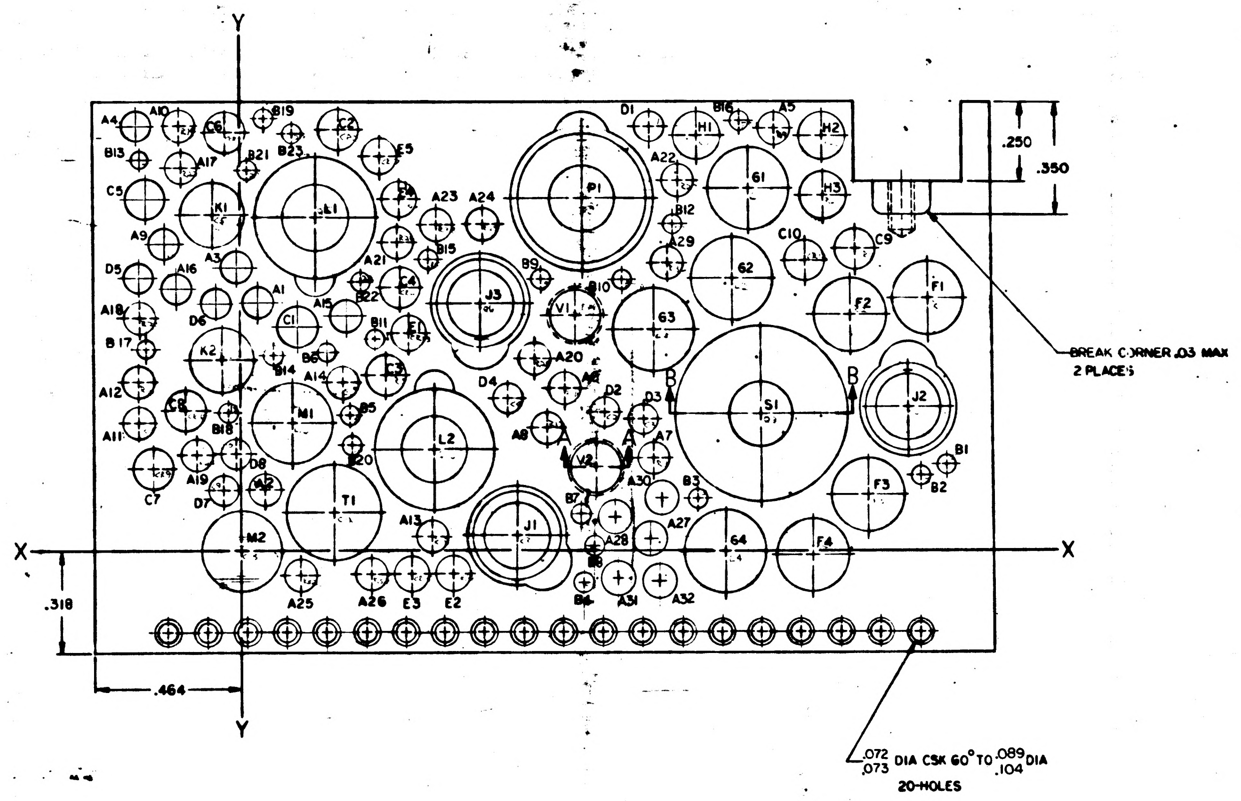
1007035

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.052	.774	.006	.100 .104	32
A2	.073	.191			
A3	-.015	.884			
A4	-.332	1.326			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	-.245	.961			
A10	-.195	1.326			
A11	-.324	.400			
A12	-.322	.428			
A13	.605	.044			
A14	.318	.526			
A15	.331	.735			
A16	-.207	.819			
A17	-.188	1.197			
A18	-.321	.728			
A19	-.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	-.076			
A26	.408	-.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	[illegible]			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268	.006	.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	-0.100			
B5	.340	.422			
B6	.271	.620			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	-.303	1.222			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	-.295	.629			
B18	-.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.180	.700	.006	.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	-.303	1.098			
C6	-.049	1.307			
C7	-.276	.258			
C8	-.176	.438			
C9	1.940	.943			
C10	1.779	.905			

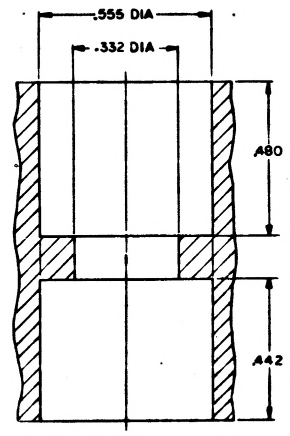
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
D1	1.292	1.324	.006	.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	-.324	.852			
D6	-.080	.774			
D7	-.056	.191			
D8	-.018	.304			
E1	.530	.677	.006	.108 .112	5
E2	.670	-.071			
E3	.538	-.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787	.006	.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	-.012			
G1	1.604	1.132	.006	.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295	.006	.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048	.006	SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	-.090	1.018	.006	.202 .206	2
K2	-.061	.596			
L1	.233	1.040	.006	SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398	.006	.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100	.006	SEE DETAIL A	1
S1	1.641	.428	.006	SEE SECTION B-B	1
T1	.290	.120	.006	.300 .307	1
V1	1.054	.734	.006	SEE SECTION A-A	2
V2	1.120	.260			

NOTES

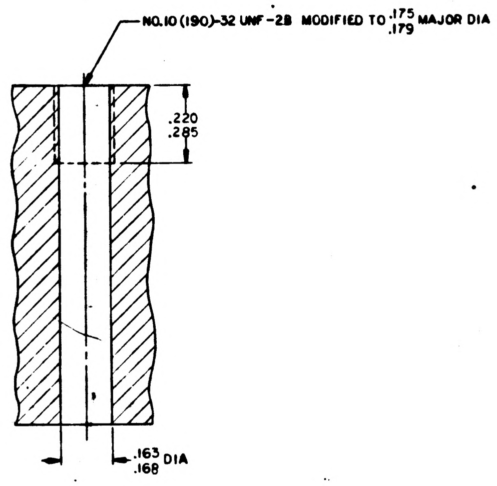
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. TRUE POSITIONING AS SHOWN IN CHART.
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIM F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV



Y
X
.250
.350
BREAK CORNER .03 MAX 2 PLACES
.318
.464
.072/.073 DIA CSK 60° TO .089/.104 DIA 20-HOLES
B
A



SECTION B-B



SECTION A-A
2 V HOLES

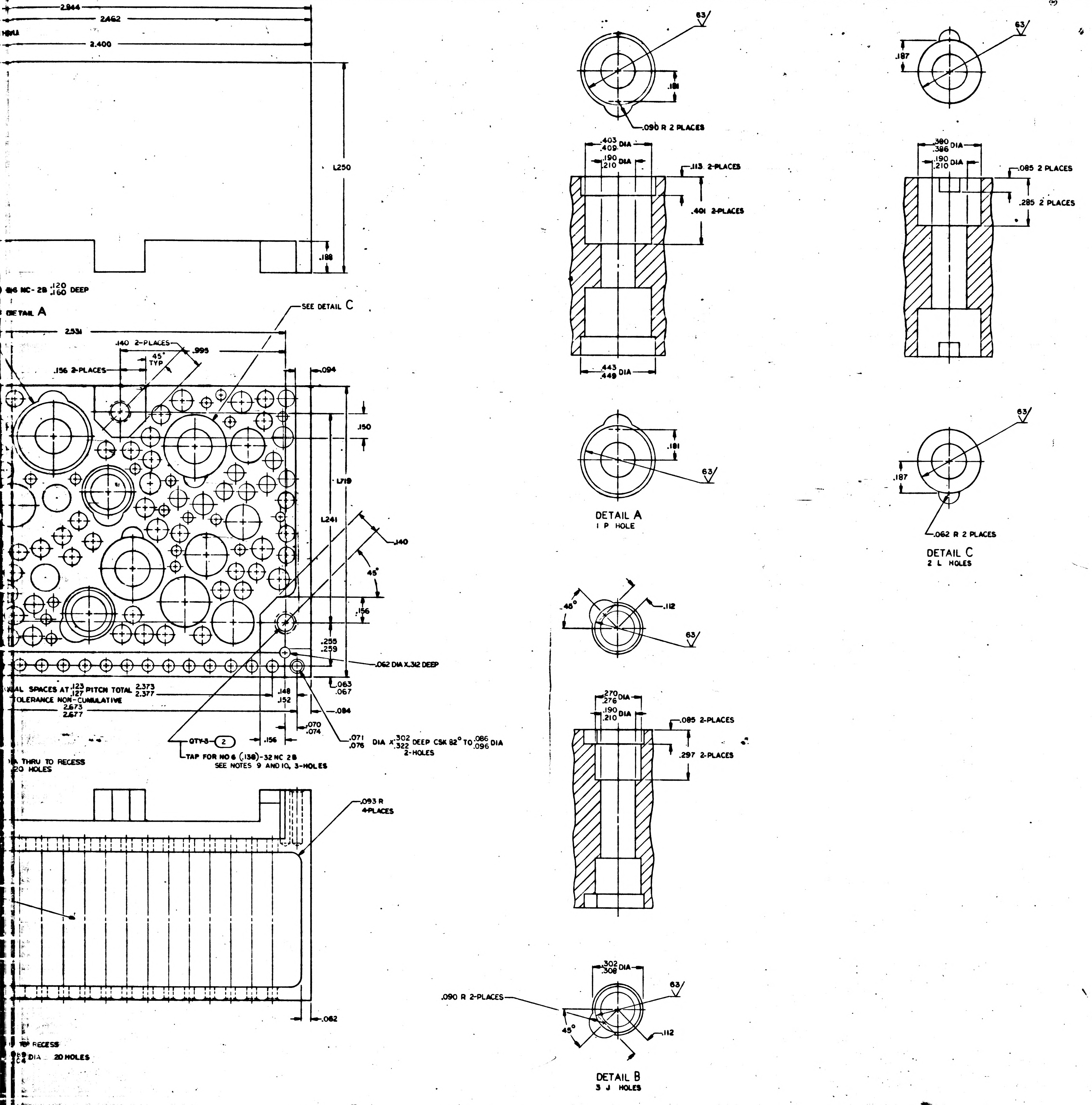
INCHES
PHOTOGRAPHIC SCALE ONLY

F1

1007035

1007035 E

REVISIONS TDRR01857			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01865	9-2-63	J.J.M.
B	REVISED PER TDRR 02535		J.J.M.
C	REVISED PER TDRR 03851	10-14-63	
D	REVISED PER TDRR 03853	10-14-63	
E	REVISED PER TDRR 05484	63	


2.944
2.462
2.400
1.250
.188
16 NC-2B .120/.160 DEEP
DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
.995
45° TYP
.156 2-PLACES
.094
.150
1.719
1.241
.140
45°
.156
.255/.259
.062 DIA X .312 DEEP
.063/.067
SPACES AT .123/.127 PITCH TOTAL 2.373/2.377
TOLERANCE NON-CUMULATIVE
2.673/2.677
.148/.152
.084
.070/.074
QTY-3 (2)
.156
.071/.076 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA 2-HOLES
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
THRU TO RECESS
20 HOLES
.093 R 4-PLACES
.062
RECESS
DIA 20 HOLES
63
.181
.090 R 2 PLACES
.403/.409 DIA
.190/.210 DIA
.113 2-PLACES
.401 2-PLACES
.443/.449 DIA
DETAIL A
1 P HOLE
.187
.380/.386 DIA
.190/.210 DIA
.085 2 PLACES
.285 2 PLACES
.062 R 2 PLACES
DETAIL C
2 L HOLES
45°
.112
.270/.276 DIA
.190/.210 DIA
.085 2-PLACES
.297 2-PLACES
.302/.308 DIA
.090 R 2-PLACES
DETAIL B
3 J HOLES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS21209 C0620	INSERT, SCREW LOCKING	2
1	1007035-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007027	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .02 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN W. Horgan DATE 8 MAY 63
CHECKED
APPROVAL D. R. Tait 5-15-63
APPROVAL
NASA APPROVAL
MIT APPROVAL 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
BINARY CURRENT SWITCH
COMPUTER OUTPUT

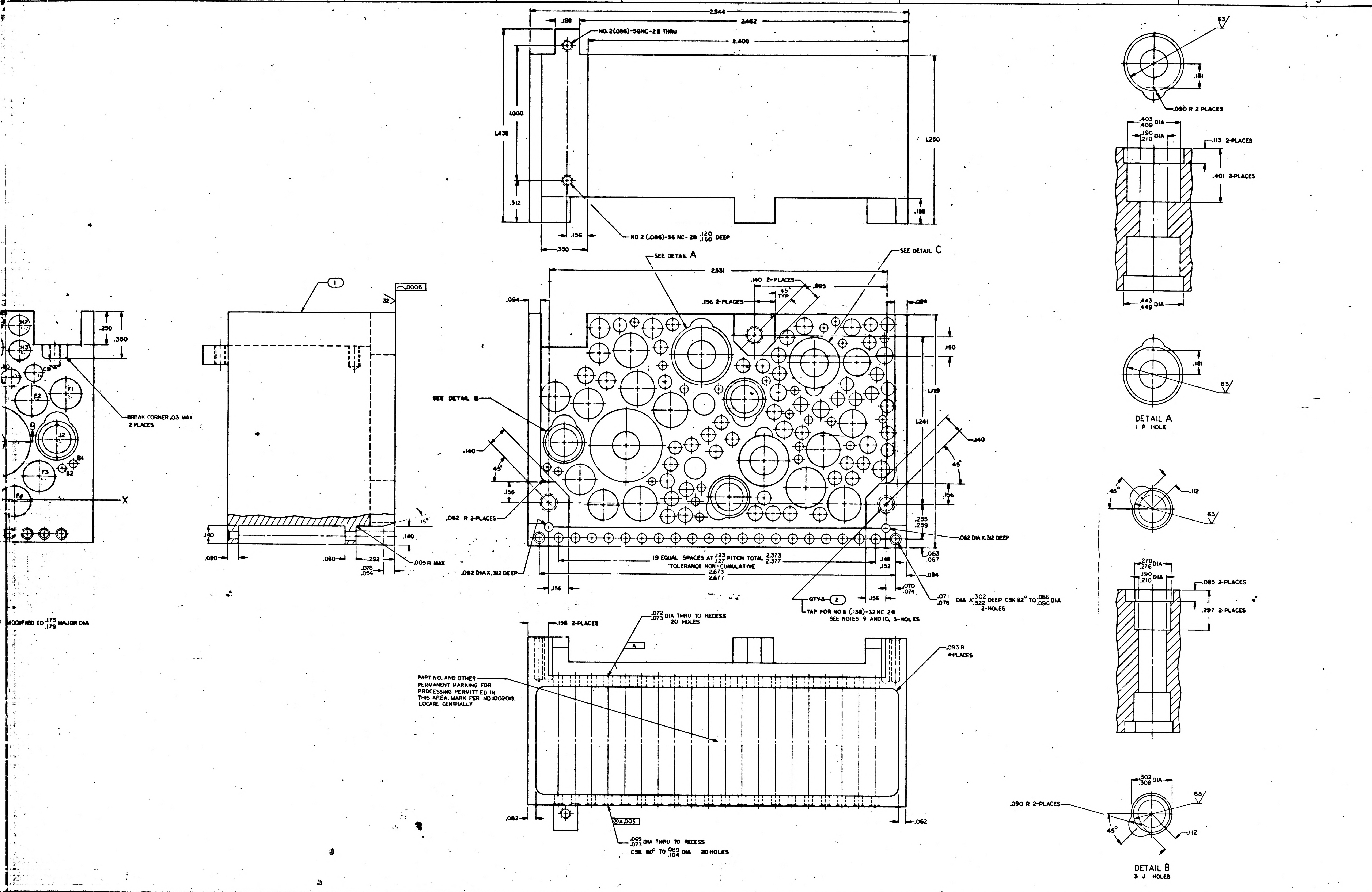
CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007035
SCALE 5/1 | WT | SHEET 1 OF 1

1007035 E

INCHES
PHOTOGRAPHIC SCALE ONLY

1-3

1007035

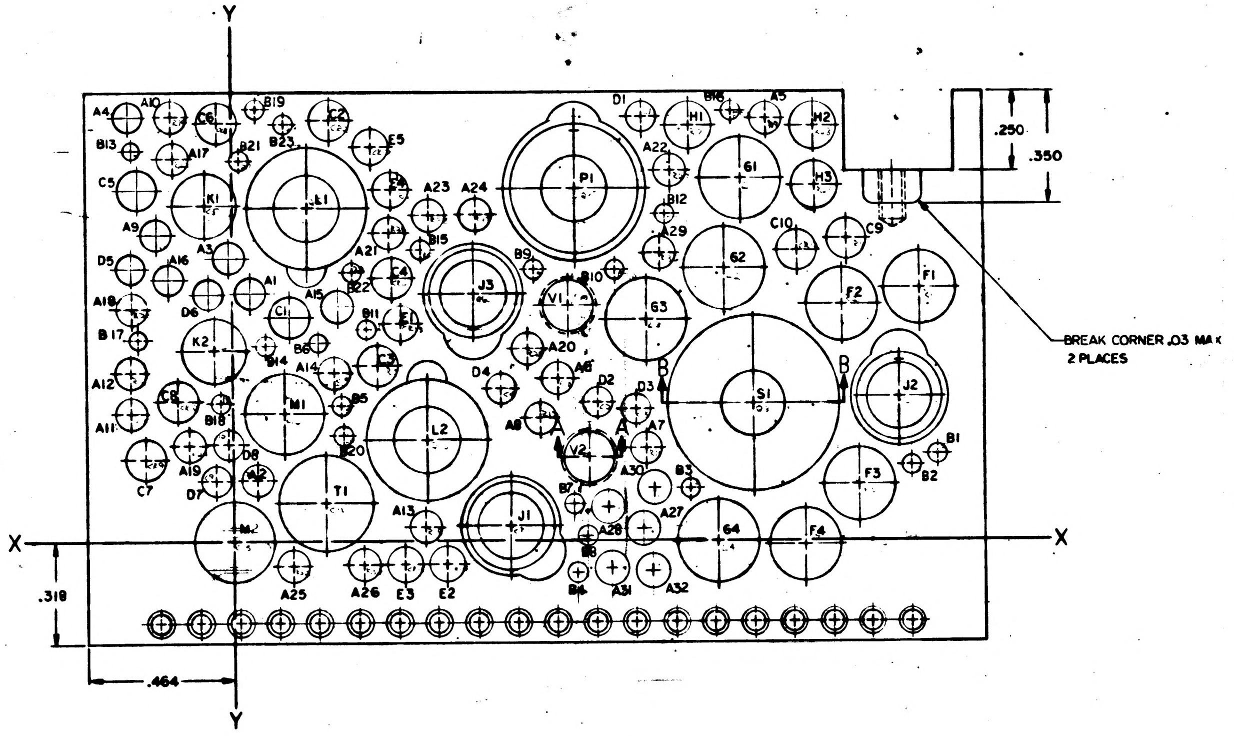

7
6
5
4
3
2.844
2.462
2.400
.188
NO. 2 (.086)-56NC-2B THRU
1.438
1.000
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120 .160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
.995
45° TYP
.156 2-PLACES
.094
.094
.150
1.719
1.241
SEE DETAIL B
.140
.140
45°
45°
.156
.156
.062 R 2-PLACES
.255 .259
.062 DIA X .312 DEEP
.063 .067
19 EQUAL SPACES AT .123 .127 PITCH TOTAL 2.373 2.377
TOLERANCE NON-CUMULATIVE
2.673 2.677
.148 .152
.084
.062 DIA X .312 DEEP
.156
.070 .074
QTY-3 ② TAP FOR NO 6 (.138)-32 NC 2B SEE NOTES 9 AND 10, 3-HOLES
.156
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
①
.0006
32
.140
.140
15°
.080
.080
.292
.078 .094
.005 R MAX
.250
.350
H2
H3
C9
F2
F1
B
J2
B1
B2
F3
F4
X
BREAK CORNER .03 MAX 2 PLACES
MODIFIED TO .175 .179 MAJOR DIA
.156 2-PLACES
.072 .073 DIA THRU TO RECESS 20 HOLES
A
.093 R 4-PLACES
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND 1002019 LOCATE CENTRALLY
.062
.062
A .005
.069 .073 DIA THRU TO RECESS CSK 60° TO .089 .104 DIA 20 HOLES
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
.090 R 2-PLACES
63
45°
.112
DETAIL B
3 J HOLES
INCHES
PHOTOGRAPHIC SCALE ONLY

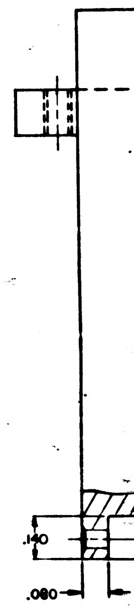
SEE NOTE 12

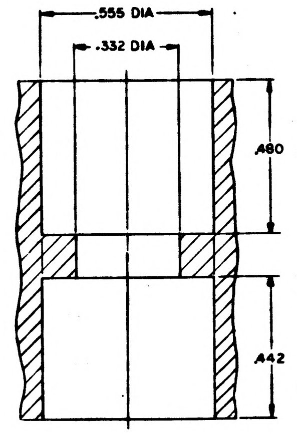
HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
A1	.052	.774		.100 .104	32
A2	.073	.191			
A3	−.015	.884			
A4	−.332	1.326			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	−.245	.961			
A10	−.195	1.326			
A11	−.324	.400			
A12	−.322	.628			
A13	.605	.044			
A14	.318	.526			
A15	.331	.735			
A16	−.207	.819			
A17	−.188	1.197			
A18	−.321	.728			
A19	−.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	[illegible]	[illegible]			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	−.076			
A26	.408	−.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	−0.088			
A32	1.320	−0.096			
B1	2.229	.268		.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	−0.100			
B5	.340	.422			
B6	.271	.620			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	−.303	1.222			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	−.295	.629			
B18	−.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.180	.700		.127 .131	[illegible]
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	−.303	1.098			
C6	−.049	1.307			
C7	−.276	.258			
C8	−.176	.438			
C9	1.940	.943			
C10	1.779	.905			

SEE NOTE 12

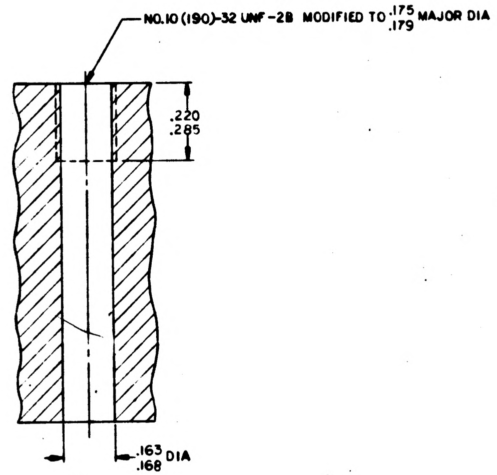
HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
D1	1.292	1.324		.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	−.324	.852			
D6	−.080	.774			
D7	−.056	.191			
D8	−.018	.304			
E1	.530	.677		.108 .112	5
E2	.670	−.071			
E3	.538	−.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787		.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	−.012			
G1	1.604	1.132		.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295		.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048		SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	−.090	1.048		.202 .206	2
K2	−.061	.596			
L1	.233	1.040		SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398		.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100		SEE DETAIL A	1
S1	1.641	.428		SEE SECTION B-B	1
T1	.290	.120		.300 .307	1
V1	1.054	.734		SEE SECTION A-A	2
V2	1.120	.260			


Y
A4
A10
B13
C6
B19
C2
A17
B21
B23
E5
C5
K1
L1
A23
A24
P1
D1
B16
H1
A5
H2
A22
G1
H3
B12
A9
A3
B15
J3
B9
A29
C10
C9
D5
A16
A1
B22
B10
V1
G2
F1
A18
D6
C1
A15
B11
G3
F2
B17
K2
A21
A20
B14
A14
D4
A6
A12
B18
M1
B5
L2
D2
D3
S1
J2
A11
B1
B2
C7
A19
D7
B8
A8
A7
A30
B3
F3
T1
A13
J1
B7
A27
V2
M2
A28
G4
F4
A25
A26
E3
E2
B4
A31
A32
B
A
X
.250
.350
BREAK CORNER .03 MAX
2 PLACES
.318
.464




.555 DIA
.332 DIA
.480
.442

SECTION B-B


NO.10 (190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA
.220
.285
.163
.168 DIA

SECTION A-A
2 V HOLES

NOTES

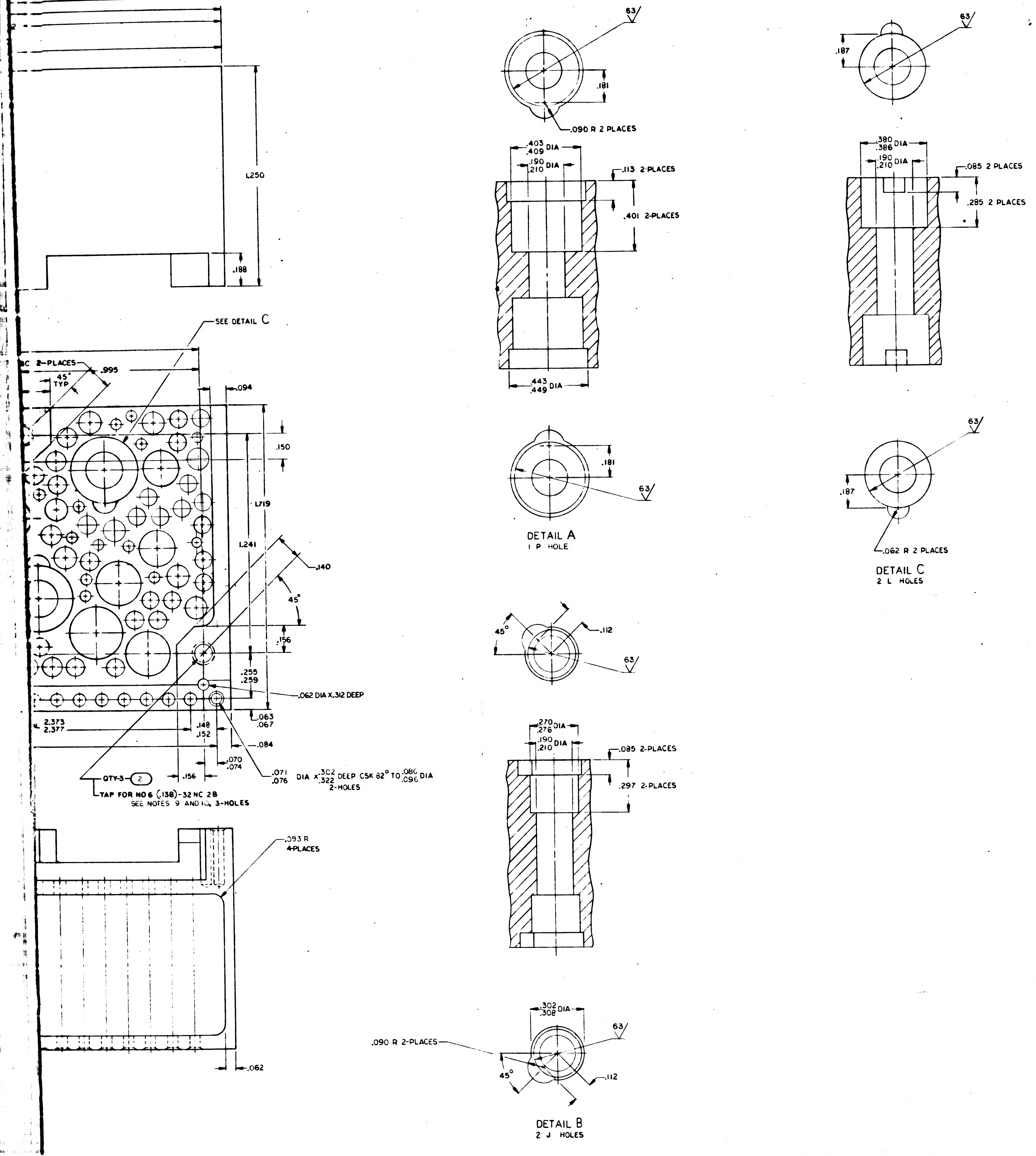
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.

5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO.2 PER MS 33646 BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV
12. THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN AN ADJACENT HOLE OR ON AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

F 1

1007035 F



SEE DETAIL C
C 2-PLACES
45° TYP
.995
.094
.150
1.719
1.241
.140
45°
.156
.255
.259
.062 DIA X .312 DEEP
.063
.067
2.373
2.377
.148
.152
.084
.070
.074
.156
.071
.076
DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA
2-HOLES
QTY-3 (2)
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
1.250
.188
.093 R
4-PLACES
.062
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
DETAIL A
1 P HOLE
.187
.380 .386 DIA
.190 .210 DIA
.085 2 PLACES
.285 2 PLACES
.062 R 2 PLACES
DETAIL C
2 L HOLES
.112
45°
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
.090 R 2-PLACES
DETAIL B
2 J HOLES

REVISIONS FDRR 01257

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01865	[illegible]	[illegible]
B	REVISED PER TDRR 02535	[illegible]	[illegible]
C	REVISED PER TDRR 03651	[illegible]	[illegible]
D	REVISED PER TDRR 03853	[illegible]	[illegible]
E	REVISED PER TDRR 05484	7 DEC 63	[illegible]
F	REVISED PER TDRR 14094	18 NOV. 64	CWP

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS21209 C 0620	INSERT, SCREW LOCKING	2
1	1007035-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007027	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .02 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 11

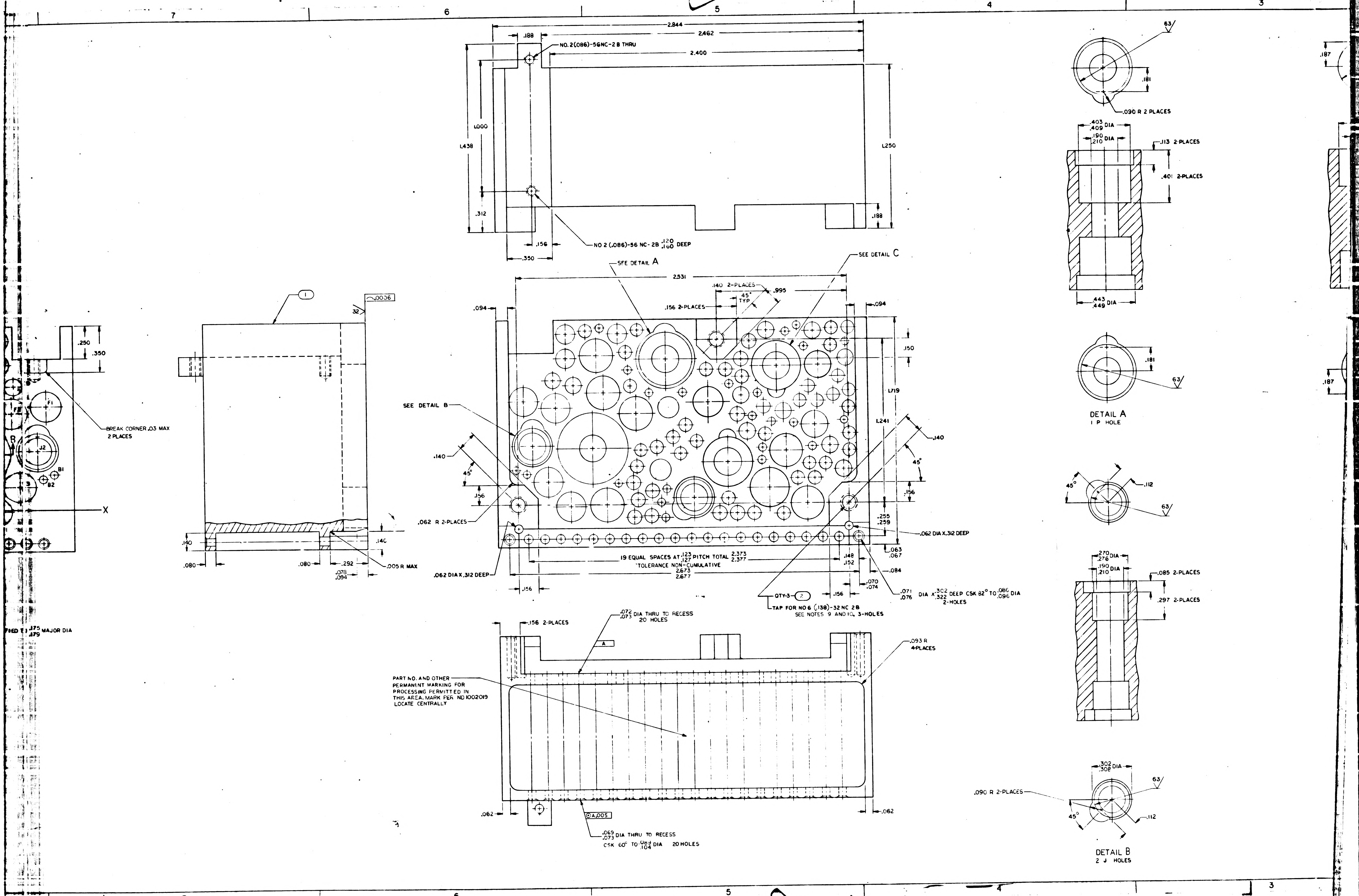
MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN W. Hoiga DATE 4 MAY 63
CHECKED
APPROVAL D. R. Tout 5-15-63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
BINARY CURRENT SWITCH
COMPUTER OUTPUT

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007035
SCALE 5/1
WT
SHEET 1 OF 1

1007035 F

7
6
5
4
3
2.844
2.462
2.400
.188
NO. 2 (.086)-56NC-2 B THRU
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120/.160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
.995
45° TYP
.156 2-PLACES
.094
.150
1.719
1.241
SEE DETAIL B
.140
45°
.156
.062 R 2-PLACES
.255/.259
.062 DIA X .312 DEEP
.063/.067
.084
19 EQUAL SPACES AT .123/.127 PITCH TOTAL 2.373/2.377
TOLERANCE NON-CUMULATIVE
2.673/2.677
.148/.152
.070/.074
.156
.071/.076 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA
2-HOLES
QTY-3
2
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
1
.0006
32
.250
.350
BREAK CORNER .03 MAX
2 PLACES
F1
J2
B1
B2
X
.140
.080
.080
.292
.078/.094
.140
.005 R MAX
.175/.179 MAJOR DIA
.156 2-PLACES
.072/.073 DIA THRU TO RECESS
20 HOLES
A
.093 R
4-PLACES
PART NO. AND OTHER
PERMANENT MARKING FOR
PROCESSING PERMITTED IN
THIS AREA. MARK PER ND 1002019
LOCATE CENTRALLY
.062
.062
A .005
.069/.073 DIA THRU TO RECESS
CSK 60° TO .089/.104 DIA 20 HOLES
63
.181
.090 R 2 PLACES
.403/.409 DIA
.190/.210 DIA
.113 2-PLACES
.401 2-PLACES
.443/.449 DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
.270/.276 DIA
.190/.210 DIA
.085 2-PLACES
.297 2-PLACES
.302/.308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
2 J HOLES
.187
.187

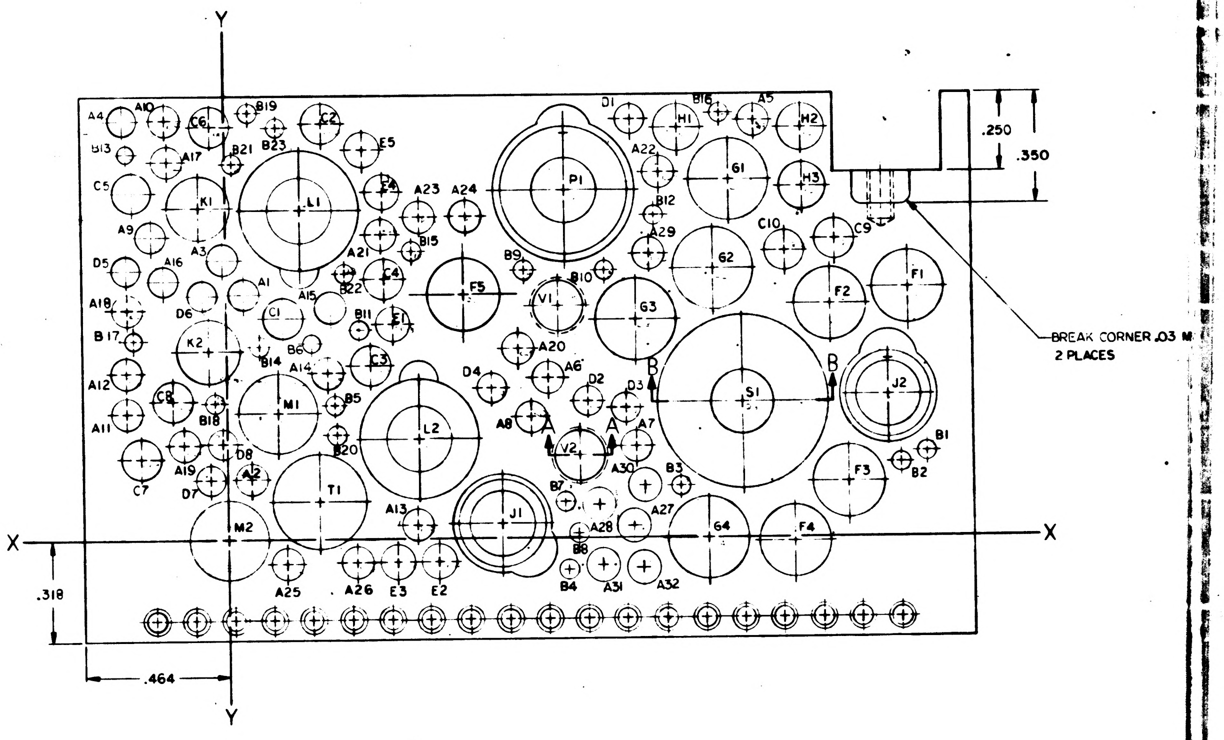
27/1007035

SEE NOTE 12

HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
A1	.052	.774		.100 .104	32
A2	.073	.191			
A3	-.015	.884			
A4	-.332	1.326			
A5	1.664	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	-.245	.961			
A10	-.195	1.326			
A11	-.324	.400			
A12	-.322	.628			
A13	.605	.044			
A14	.318	.526			
A15	.331	.735			
A16	-.207	.819			
A17	-.188	1.197			
A18	-.321	.728			
A19	-.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	-.076			
A26	.408	-.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268		.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	-0.100			
B5	.340	.422			
B6	.271	.620			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	-.303	1.222			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	-.295	.629			
B18	-.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.180	.700		.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	-.303	1.098			
C6	-.049	1.307			
C7	-.276	.258			
C8	-.176	.438			
C9	1.940	.943			
C10	1.779	.905			

SEE NOTE 12

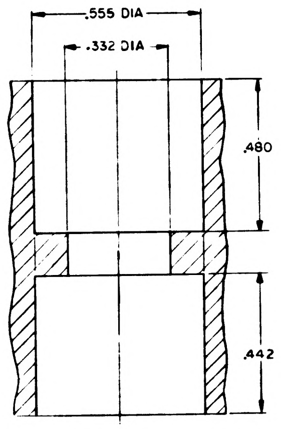
HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
D1	1.292	1.324		.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	-.324	.852			
D6	-.080	.774			
D7	-.056	.191			
D8	-.018	.304			
E1	.530	.677		.108 .112	5
E2	.670	-.071			
E3	.538	-.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787		.227 .231	5
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	-.012			
F5	.755	.772			
G1	1.604	1.132		.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295		.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048		SEE DETAIL B	2
J2	2.106	.450			
~~J3~~	~~.758~~	~~.772~~			
K1	-.090	1.048		.202 .206	2
K2	-.061	.596			
L1	.233	1.040		SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398		.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100		SEE DETAIL A	1
S1	1.641	.428		SEE SECTION B-B	1
T1	.290	.120		.300 .307	1
V1	1.054	.734		SEE SECTION A-A	2
V2	1.120	.260			


Y
X
A4 A10 C6 B19 C2 E5 D1 B16 A5 H2
B13 A17 B21 B23
C5 K1 L1 A23 A24 P1 A22 G1 H1 H3
A9 A3 B15 B12 A29 C10 C9
D5 A16 A21 C4 F5 B9 B10 G2 F2 F1
A18 D6 A1 A15 B22 V1 G3
B17 K2 B11 E1 C3 A20 A6
A12 C8 B6 A14 D4 D2 D3 S1 J2
A11 B18 M1 B5 L2 A8 V2 A7 B1
C7 A19 D8 A2 B20 A30 B3 F3 B2
D7 T1 A13 J1 B7 A27
M2 A28 G4 F4
B8
A25 A26 E3 E2 B4 A31 A32
A A B B
.250
.350
BREAK CORNER .03 M
2 PLACES
.318
.464

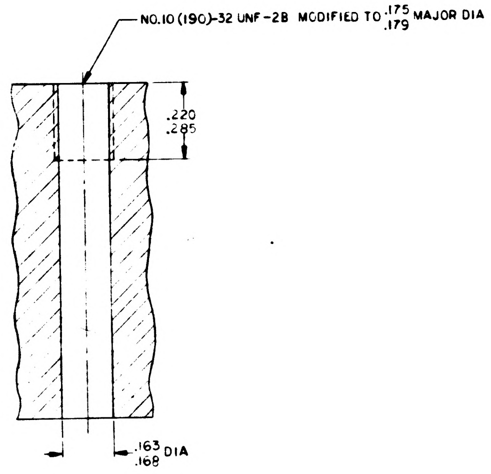
NOTES

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.

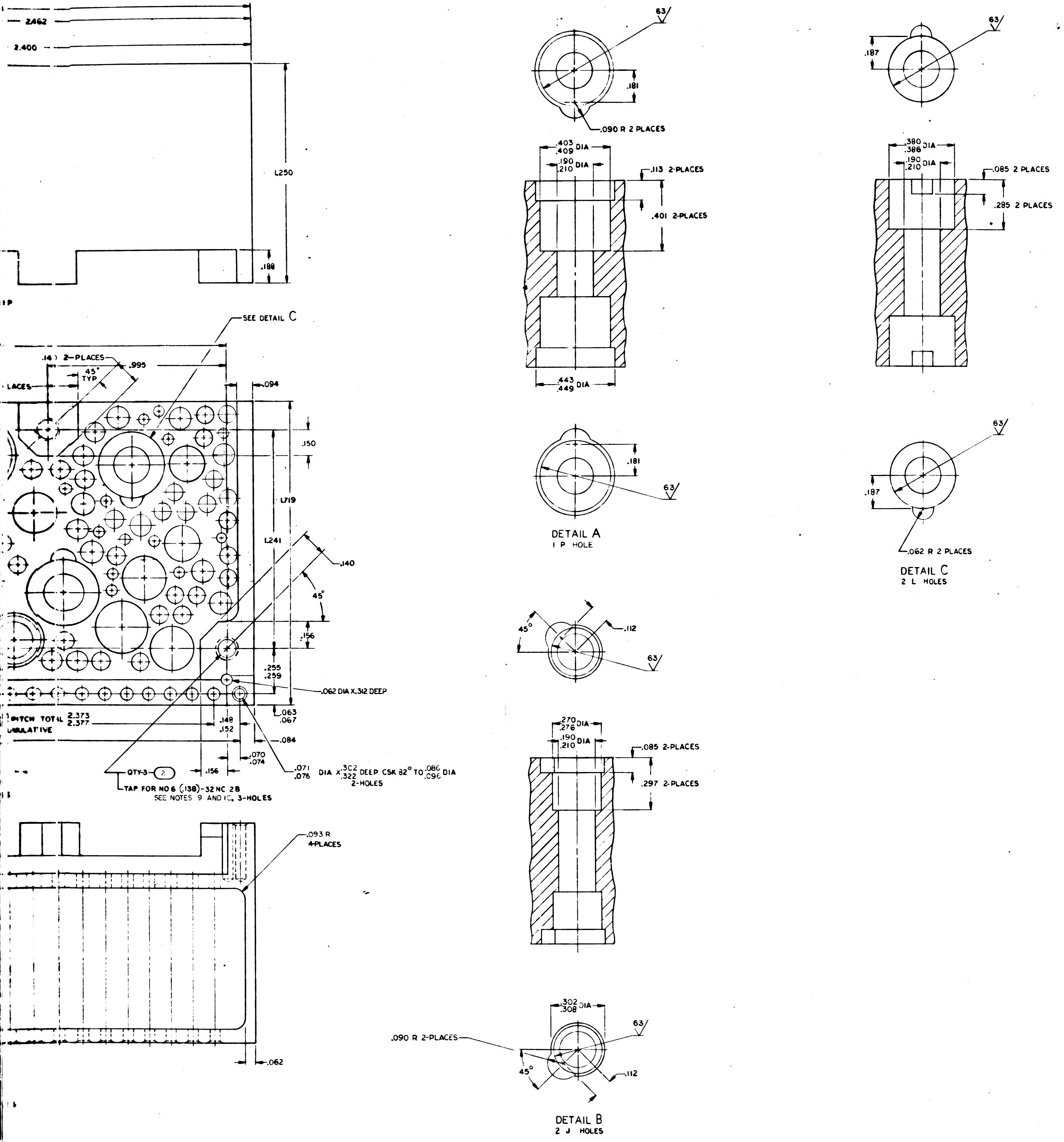
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO.2 PER MS 33646 BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV
12. THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN AN ADJACENT HOLE OR ON AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART


.555 DIA
.332 DIA
.480
.442

SECTION B-B


NO.10 (190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA
.220
.285
.163
.168 DIA

SECTION A-A
2 V HOLES


2.462
2.400
1.250
.188
SEE DETAIL C
.141 2-PLACES
45° TYP
.995
LACES
.094
.150
1.719
1.241
.140
45°
.156
.255
.259
.062 DIA X .312 DEEP
PITCH TOTAL 2.373 2.377
CUMULATIVE
.063 .067
.148 .152
.084
.070 .074
QTY-3 2
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
.156
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
.093 R 4-PLACES
.062
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
DETAIL A
1 P HOLE
45°
.112
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
.090 R 2-PLACES
DETAIL B
2 J HOLES
.187
.380 .386 DIA
.190 .210 DIA
.085 2 PLACES
.285 2 PLACES
.062 R 2 PLACES
DETAIL C
2 L HOLES
4
3
2
1
D
C
B
A

1007035 G

REVISIONS *DRR 01257			
SYM	DESCRIPTION	DATE	APPROVAL
A	[illegible]	[illegible] 63	[illegible]
B	REVISED PER TDRR 02535	[illegible]	[illegible]
C	REVISED PER TDRR 03651	[illegible]	[illegible]
D	REVISED PER TDRR 03853	[illegible]	[illegible]
E	REVISED PER TDRR 05484	17 DEC 63	[illegible]
F	REVISED PER TDRR 14094	18 NOV. 64	JWP EF
G	REVISED PER TDRR 19330	JUN 65	[illegible]

1007035 G

3	MS21209 C0620	INSERT, SCREW LOCKING	2
1	1007035-1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
1007027	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .01 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT
—

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG NO. CONTRACT

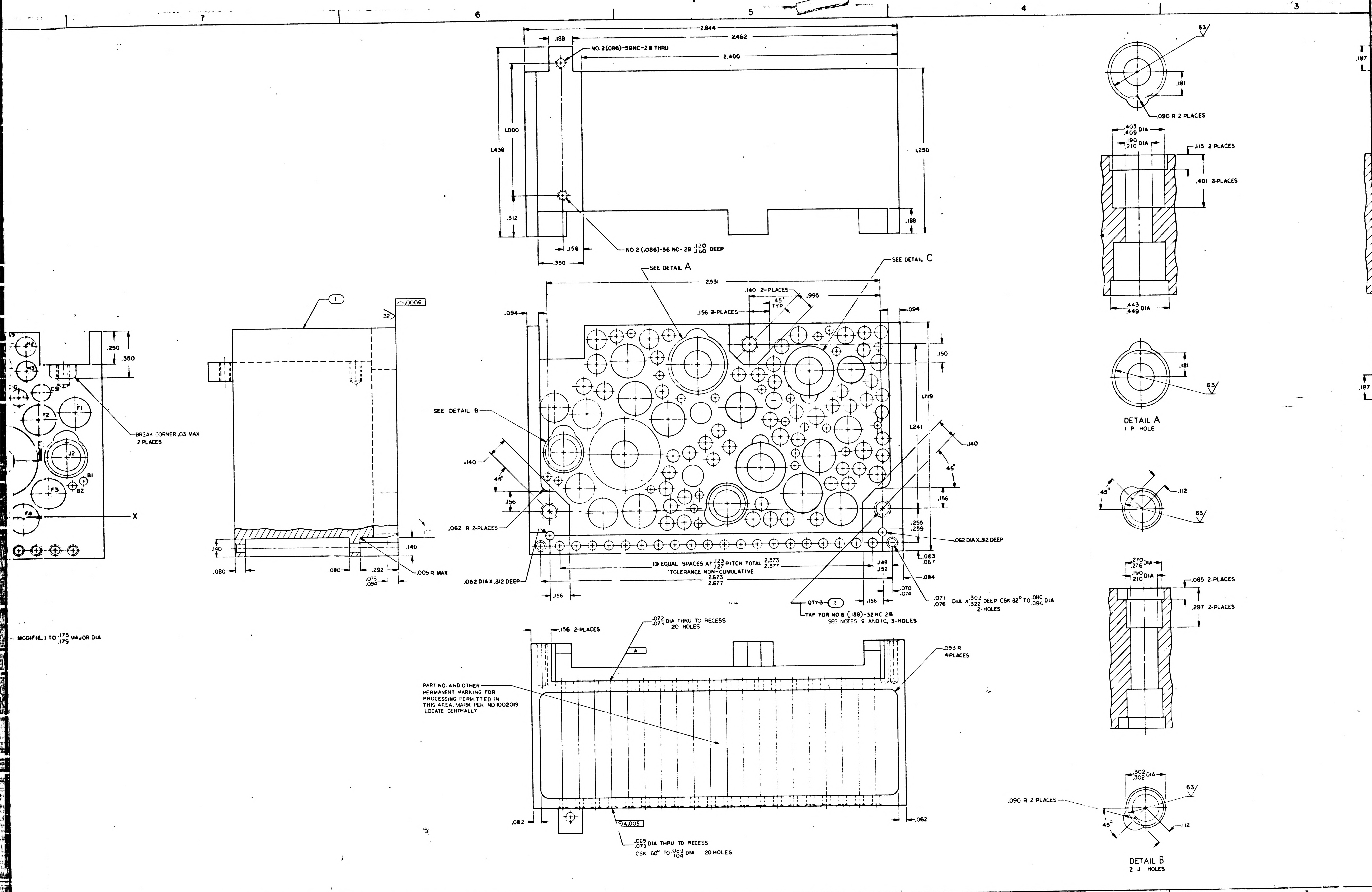
DRAWN W. Horgan DATE MAY 63
CHECKED
APPROVAL D. R. 5-15-63
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
BINARY CURRENT SWITCH
COMPUTER OUTPUT

CODE IDENT NO. 80230
SIZE J
NASA DRAWING NO. 1007035
SCALE 5/1
WT
SHEET 1 OF 1

31/1007035


7
6
5
4
3
2.844
2.462
.188
NO. 2(.086)-56NC-2 B THRU
2.400
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120 .160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
.995
45° TYP
.156 2-PLACES
.094
.094
.150
1.719
1.241
SEE DETAIL B
.140
45°
.140
45°
.156
.156
.062 R 2-PLACES
.255 .259
.062 DIA X.312 DEEP
.063 .067
19 EQUAL SPACES AT .123 .127 PITCH TOTAL 2.373 2.377
TOLERANCE NON-CUMULATIVE
2.673 2.677
.148 .152
.084
.062 DIA X.312 DEEP
.156
.070 .074
.156
QTY-3 ②
TAP FOR NO 6 (.138)-32 NC 2B
SEE NOTES 9 AND 10, 3-HOLES
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA
2-HOLES
①
.0006
32
.250
.350
BREAK CORNER .03 MAX
2 PLACES
M2
M3
C9
F1
J2
B1
B2
F3
F4
X
.140
.140
.080
.080
.292
.076 .094
.005 R MAX
MODIFIED TO .175 .179 MAJOR DIA
.072 .073 DIA THRU TO RECESS
20 HOLES
.156 2-PLACES
A
.093 R
4-PLACES
PART NO. AND OTHER
PERMANENT MARKING FOR
PROCESSING PERMITTED IN
THIS AREA. MARK PER ND 1002019
LOCATE CENTRALLY
.062
.062
A .005
.069 .073 DIA THRU TO RECESS
CSK 60° TO .089 .104 DIA 20 HOLES
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
.181
63
DETAIL A
1 P HOLE
.187
.187
45°
.112
63
.270 .276 DIA
.190 .210 DIA
.085 2-PLACES
.297 2-PLACES
.302 .308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
2 J HOLES

2/1007035

SEE NOTE 12

HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
A1	.052	.774		.100 .104	32
A2	.073	.191			
A3	-.015	.884			
A4	-.332	1.326			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	-.245	.961			
A10	-.195	1.326			
A11	-.324	.400			
A12	-.322	.628			
A13	.605	.044			
A14	.318	.526			
A15	.331	.735			
A16	-.207	.819			
A17	-.188	1.197			
A18	-.321	.728			
A19	-.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	-.076			
A26	.408	-.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268		.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	-0.100			
B5	.340	.422			
B6	.271	.620			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	-.303	1.222			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	-.295	.629			
B18	-.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.180	.700		.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	-.303	1.098			
C6	-.049	1.307			
C7	-.276	.258			
C8	-.176	.438			
C9	1.940	.943			
C10	1.779	.905			

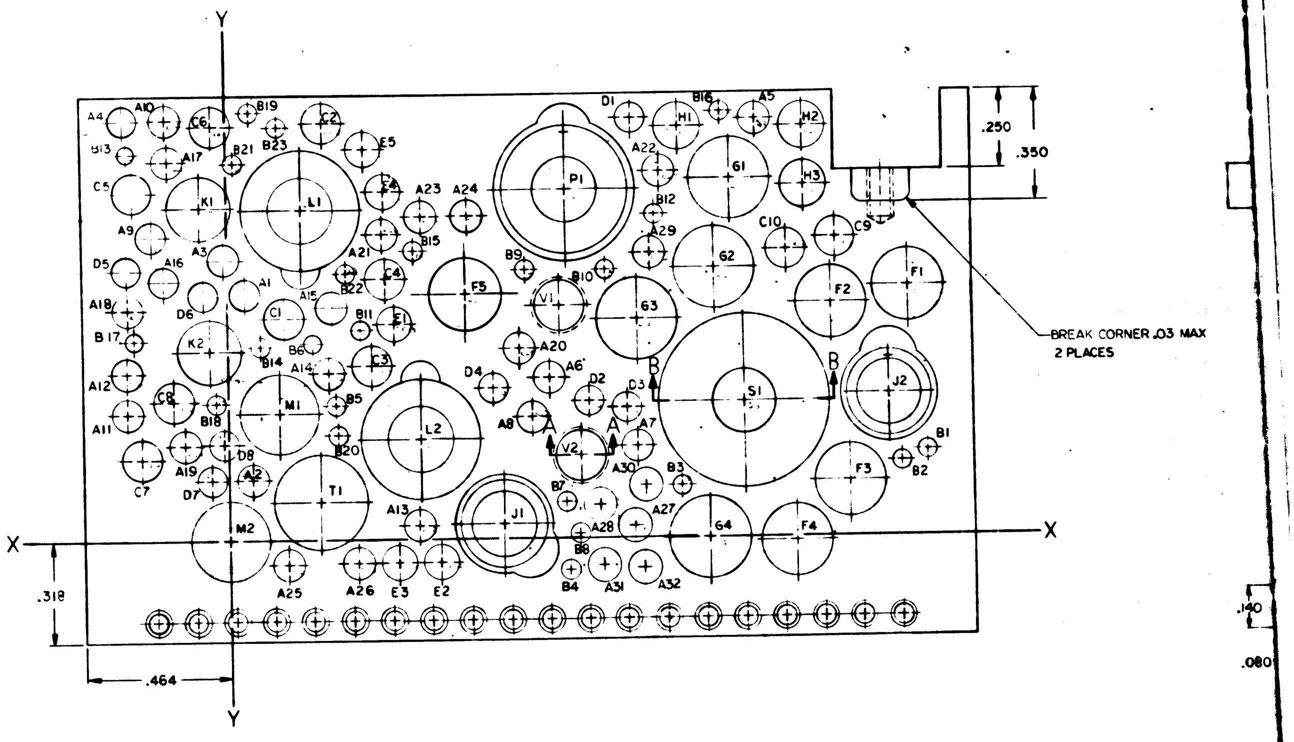
SEE NOTE 12

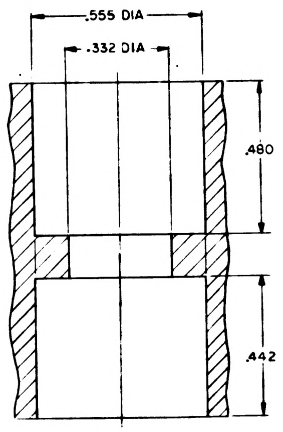
HOLE IDENT	X DIM.	Y DIM.		HOLE DIA	QTY
D1	1.292	1.324		.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	-.324	.852			
D6	-.080	.774			
D7	-.056	.191			
D8	-.018	.304			
E1	.530	.677		.108 .112	5
E2	.670	-.071			
E3	.538	-.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.787		.227 .231	5
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	-.012			
F5	.755	.772			
G1	1.604	1.132		.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295		.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048		SEE DETAIL B	2
J2	2.106	.450			
~~J3~~	~~.758~~	~~.772~~			
K1	-.090	1.048		.202 .206	2
K2	-.061	.596			
L1	.233	1.040		SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398		.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100		SEE DETAIL A	1
S1	1.641	.428		SEE SECTION B-B	1
T1	.290	.120		.300 .307	1
V1	1.054	.734		SEE SECTION A-A	2
V2	1.120	.260			

NOTES

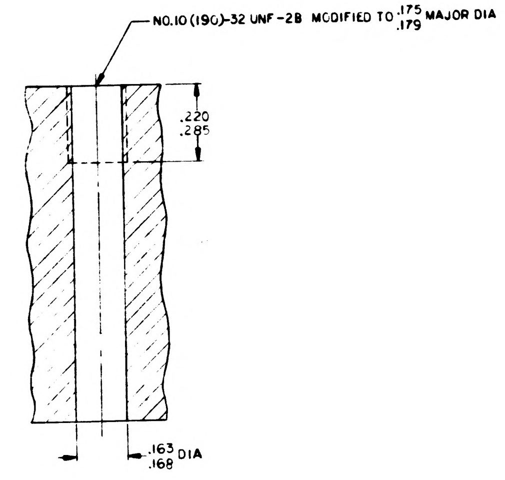
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.

5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO.2 PER MS 33646 BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-45202 TYPE I, CLASS C.
12. THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN AN ADJACENT HOLE OR ON AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART
13. APPLY A .31 MIN WIDTH PERIMETER OF ADHESIVE AND COATING MATERIAL PER ND 1002187 TYPE II TO THE TWO SURFACES WITH COMPONENT HOLES WHICH ARE .188 AND 1.25 FROM THE HELICOIL MOUNTING SURFACE.


Y
X
.250
.350
BREAK CORNER .03 MAX
2 PLACES
.318
.464
.140
.080
B
A
A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20 A21 A22 A23 A24 A25 A26 A27 A28 A29 A30 A31 A32
B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16 B17 B18 B19 B20 B21 B22 B23
C1 C3 C4 C5 C6 C7 C8 C9 C10
D1 D2 D3 D4 D5 D6 D7 D8
E1 E2 E3 E4 E5
F1 F2 F3 F4 F5
G1 G2 G3 G4
H1 H2 H3
J1 J2
K1 K2
L1 L2
M1 M2
P1
S1
T1
V1 V2


.555 DIA
.332 DIA
.480
.442

SECTION B-B

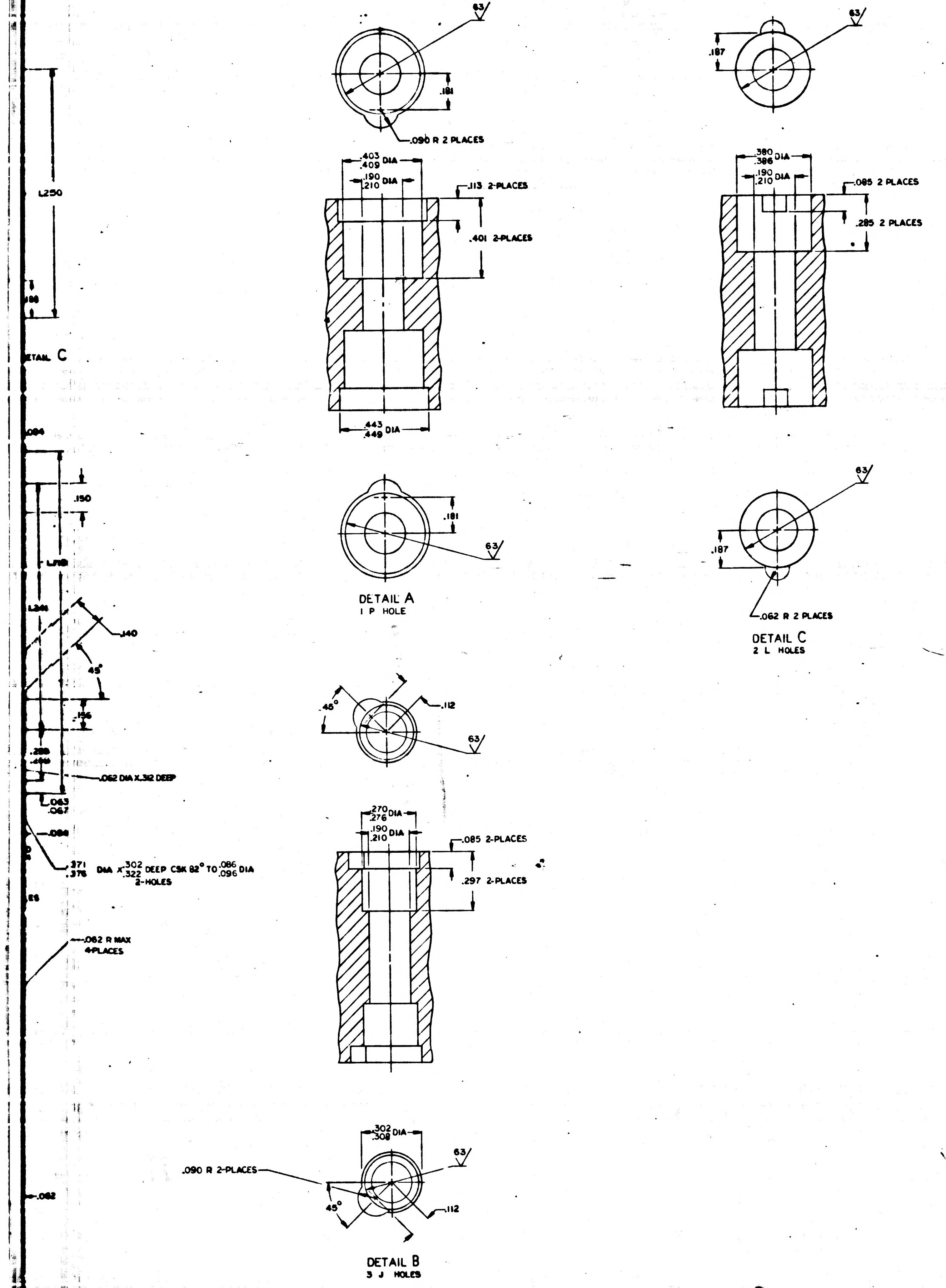

NO.10 (190)-32 UNF-2B MODIFIED TO .175/.179 MAJOR DIA
.220
.285
.163
.168 DIA

SECTION A-A
2 V HOLES

1007035

REVISIONS FDRR01257

SYM	DESCRIPTION	DATE	APPROVAL



63
.181
.090 R 2 PLACES
.403/.409 DIA
.190/.210 DIA
.113 2-PLACES
.401 2-PLACES
.443/.449 DIA
.181
63
DETAIL A
1 P HOLE
63
.187
.380/.386 DIA
.190/.210 DIA
.085 2 PLACES
.285 2 PLACES
63
.187
.062 R 2 PLACES
DETAIL C
2 L HOLES
45°
.112
63
.270/.276 DIA
.190/.210 DIA
.085 2-PLACES
.297 2-PLACES
.302/.308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
3 J HOLES
1.250
.188
DETAIL C
.094
.150
1.718
1.241
.140
45°
.156
.288/.406
.062 DIA X .312 DEEP
.063/.067
.084
.371/.376 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA
2-HOLES
.062 R MAX
4-PLACES
.062
4
3
2
D
C
B
A

1007035

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS 1222-06E	INSERT, SCREW LOCKING	2
1	1007035-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007027	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± .005 ANGLES ± 1/2°
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTE 2
HEAT TREATMENT
—
FINAL FINISH
SEE NOTE 11

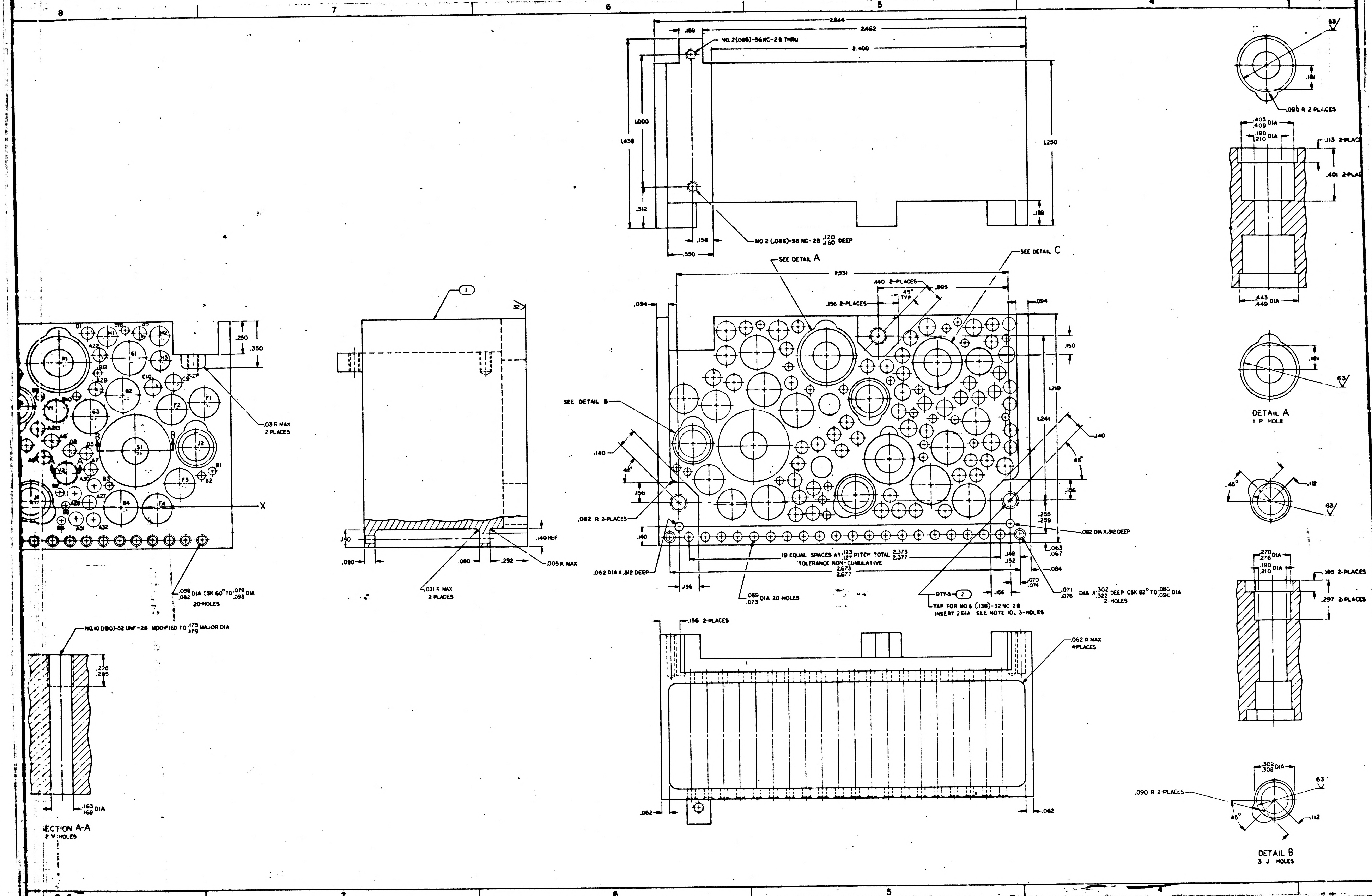
MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN W. Horgan DATE 8 May 63
CHECKED
APPROVAL D. R. Tott 5-15-63
APPROVAL
NASA APPROVAL
MIT APPROVAL W Kupfer 15 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
BINARY CURRENT SWITCH
COMPUTER OUTPUT

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007035
SCALE 5/1
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY



8
7
6
5
4
2.844
2.462
.188
NO. 2 (.086)-56NC-2 B THRU
2.400
1.000
1.438
1.250
.312
.188
.156
.350
NO 2 (.086)-56 NC-2B .120 .160 DEEP
SEE DETAIL A
SEE DETAIL C
2.531
.140 2-PLACES
45° TYP
.995
.156 2-PLACES
.094
.094
.150
1.719
1.241
SEE DETAIL B
.140
.140
45°
45°
.156
.156
.062 R 2-PLACES
.255 .259
.062 DIA X .312 DEEP
.140
.063 .067
19 EQUAL SPACES AT .123 .127 PITCH TOTAL 2.373 2.377
TOLERANCE NON-CUMULATIVE
2.673 2.677
.148 .152
.084
.062 DIA X .312 DEEP
.070 .074
.156
.156
.069 .073 DIA 20-HOLES
QTY-3 2
TAP FOR NO 6 (.138)-32 NC 2B
INSERT 2 DIA SEE NOTE 10, 3-HOLES
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
1
32
.140
.140 REF
.080
.080
.292
.005 R MAX
.031 R MAX 2 PLACES
D1 B16 A5 H1 H2 A22 B12 P1 G1 H3 A29 C10 C9 B8 B10 G2 F1 V1 G3 F2 A20 A6 D2 D3 B S1 B J2 A A7 B1 V2 B3 F3 B2 A30 J1 A28 A27 G4 F4 B6 A31 A32
X
.250
.350
.03 R MAX 2 PLACES
.058 .062 DIA CSK 60° TO .078 .093 DIA 20-HOLES
.156 2-PLACES
.062 R MAX 4-PLACES
.082
.062
NO.10 (190)-32 UNF-2B MODIFIED TO .175 .179 MAJOR DIA
.220 .285
.163 .168 DIA
SECTION A-A
2 V HOLES
63
.181
.090 R 2 PLACES
.403 .409 DIA
.190 .210 DIA
.113 2-PLACES
.401 2-PLACES
.443 .449 DIA
.181
63
DETAIL A
1 P HOLE
45°
.112
63
.270 .276 DIA
.190 .210 DIA
.185 2-PLACES
.297 2-PLACES
.302 .308 DIA
63
.090 R 2-PLACES
45°
.112
DETAIL B
3 J HOLES

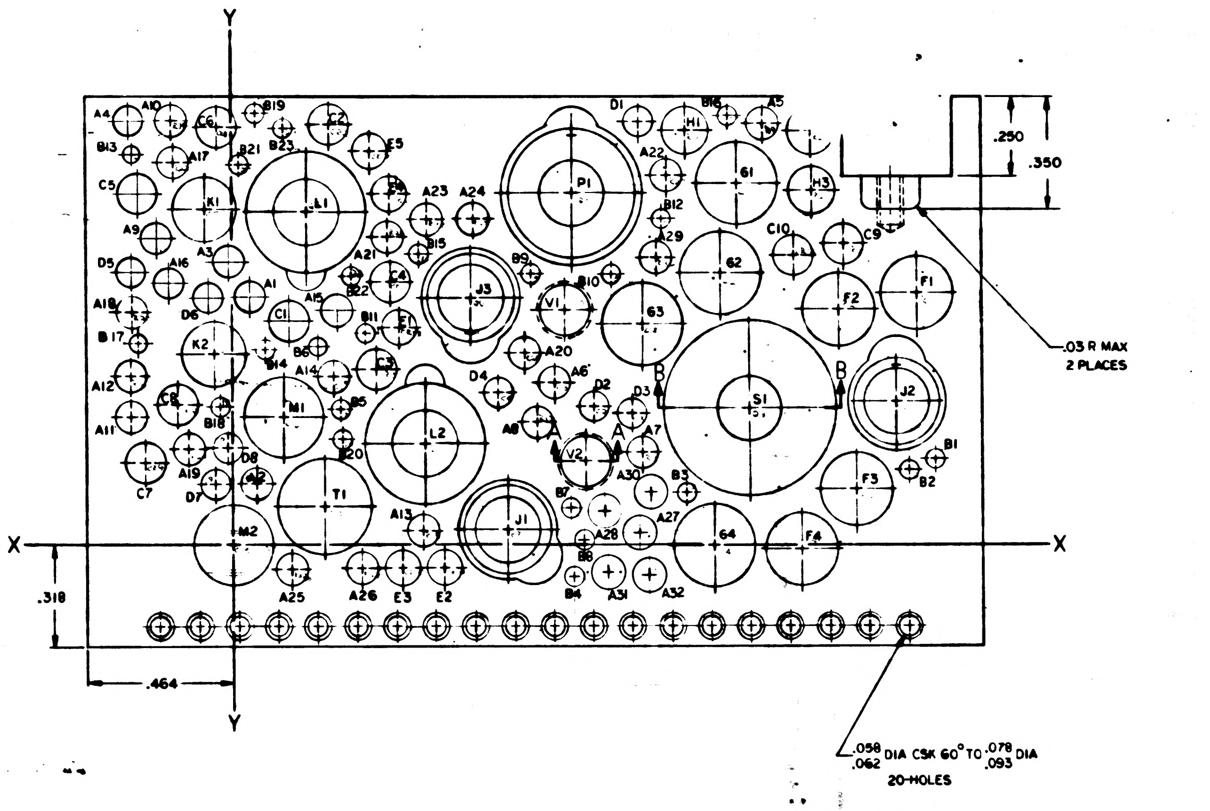
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

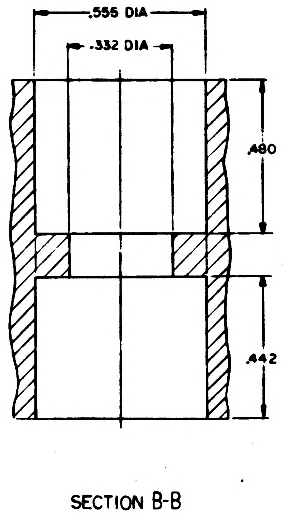
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.052	.774	.006	.100 .104	32
A2	.073	.191			
A3	-.015	.884			
A4	-.332	1.326			
A5	1.684	1.318			
A6	1.020	.507			
A7	1.299	.291			
A8	.965	.385			
A9	-.245	.961			
A10	-.195	1.326			
A11	-.324	.400			
A12	-.322	.428			
A13	.605	.044			
A14	.318	.526			
A15	.331	.735			
A16	-.207	.819			
A17	-.188	1.197			
A18	-.321	.728			
A19	-.143	.299			
A20	.927	.601			
A21	.494	.963			
A22	1.380	1.155			
A23	.619	1.015			
A24	.765	1.018			
A25	.184	-.076			
A26	.408	-.074			
A27	1.292	0.036			
A28	1.180	0.102			
A29	1.346	.900			
A30	1.326	0.162			
A31	1.190	-0.088			
A32	1.320	-0.096			
B1	2.229	.268	.006	.058 .062	23
B2	2.144	.232			
B3	1.440	.165			
B4	1.082	-0.100			
B5	.340	.422			
B6	.271	.620			
B7	1.072	0.113			
B8	1.115	0.014			
B9	.947	.846			
B10	1.200	.846			
B11	.419	.663			
B12	1.365	1.020			
B13	-.303	1.222			
B14	.099	.611			
B15	.590	.908			
B16	1.577	1.343			
B17	-.295	.629			
B18	-.040	.430			
B19	.073	1.348			
B20	.346	.329			
B21	.020	1.186			
B22	.377	.840			
B23	.160	1.300			
C1	.210	.684	.006	.127 .131	10
C2	.306	1.313			
C3	.456	.548			
C4	.501	.822			
C5	-.303	1.098			
C6	-.049	1.307			
C7	-.276	.258			
C8	-.176	.438			
C9	1.940	.943			
C10	1.779	.905			

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
D1	1.292	1.324	.006	.092 .096	8
D2	1.146	.433			
D3	1.267	.411			
D4	.840	.476			
D5	-.324	.852			
D6	-.080	.774			
D7	-.056	.191			
D8	-.018	.304			
E1	.530	.677	.006	.108 .112	5
E2	.670	-.071			
E3	.538	-.071			
E4	.499	1.098			
E5	.438	1.230			
F1	2.173	.767	.006	.227 .231	4
F2	1.924	.736			
F3	1.978	.176			
F4	1.806	-.012			
G1	1.604	1.132	.006	.251 .258	4
G2	1.552	.851			
G3	1.302	.692			
G4	1.531	0.000			
H1	1.442	1.295	.006	.146 .150	3
H2	1.838	1.294			
H3	1.840	1.108			
J1	.873	.048	.006	SEE DETAIL B	3
J2	2.106	.450			
J3	.755	.772			
K1	-.090	1.048	.006	.202 .206	2
K2	-.061	.596			
L1	.233	1.040	.006	SEE DETAIL C	2
L2	.610	.315			
M1	.158	.398	.006	.241 .245	2
M2	0.000	0.000			
P1	1.078	1.100	.006	SEE DETAIL A	1
S1	1.641	.428	.006	SEE SECTION B-B	1
T1	.290	.120	.006	.300 .307	1
V1	1.054	.734	.006	SEE SECTION A-A	2
V2	1.120	.260			

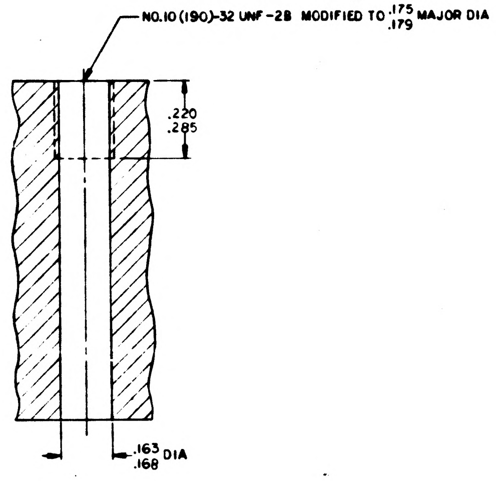
NOTES

1. INTERPRET DRAWINGS IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
2. MATERIAL MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX.
4. TRUE POSITIONING AS SHOWN IN CHART.
5. FLATNESS TO BE WITHIN .010.
6. UNLESS OTHERWISE SPECIFIED 125/ ALL OVER.
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO. 1 WITH MIL P-8585 WET ZINC CHROMATE PRIMER.
10. INSTALL FIND NO. 2 PER MS 33537 EXCEPT DIM F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: ANODIZE PER MIL-M-3171A TYPE IV





SECTION B-B



SECTION A-A
2 V HOLES

INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1007036 (A)

REVISIONS TDRR 01353

SYM	DESCRIPTION	DATE	APPROVAL
A	SUPERSEDED PER TDRR02070	7-17-63	

PICTURE INCOMPLETE

REV A REPLACED BY REV B

DRAWING FOR REFERENCE
1014623 SCHEM DIAG-RELAY & DIODE MODULE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
1	1010353-5	RELAY	
2		CONNECTOR	
13	1010362-3	DIODE	
13	1010392	DIODE	
12	1010353-4	RELAY	

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± # ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN R. LaDue DATE 16 MAY 63
CHECKED F J Boehme 5/21/63
APPROVAL J J Kiein Jr
APPROVAL
NASA APPROVAL W J Rhine 5-22-63
MIT APPROVAL 22 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

RELAY & DIODE MODULE

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007036
SCALE #
WT
SHEET OF

MASTER

1007036

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

APOLLO G&N Specification
PS-1007036 A
21 January 1964
Class A Release
TDRR 05904

PROCUREMENT SPECIFICATION
FOR
RELAY AND DIODE MODULE ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA
12/15/64	A	14814	1 and 2	WK	WJR

This specification consists of page i to iii and 1 to 7 inclusive.

PROCUREMENT SPECIFICATION

FOR

RELAY AND DIODE MODULE ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Relay and Diode Module Assembly, hereafter called the assembly.

1.2 CLASSIFICATION. Unless otherwise specified, all types shall meet the requirements specified herein. Special requirements for the equipment covered by this specification shall be classified as follows:

a. Type I: The special requirements for Part No. 1007036 shall be designated as Type I.

b. Type II: The special requirements for Part No. 1015036-011 shall be designated as Type II."

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007036	Final Test Method for Relay and Diode Module Assembly

STANDARDS

Military

MIL-STD-202	Test Methods for Electronic and Electrical Component Parts

DRAWINGS

APOLLO G&N

1007036	Relay and Diode Module Assembly
1014623	Relay and Diode Module Schematic Diagram
1015036	Relay and Diode Module Assembly

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly shall function in a manner that will enable the Inertial Measurement Unit control panel or computer to command the mode of the IMU and Coupling Display Unit.

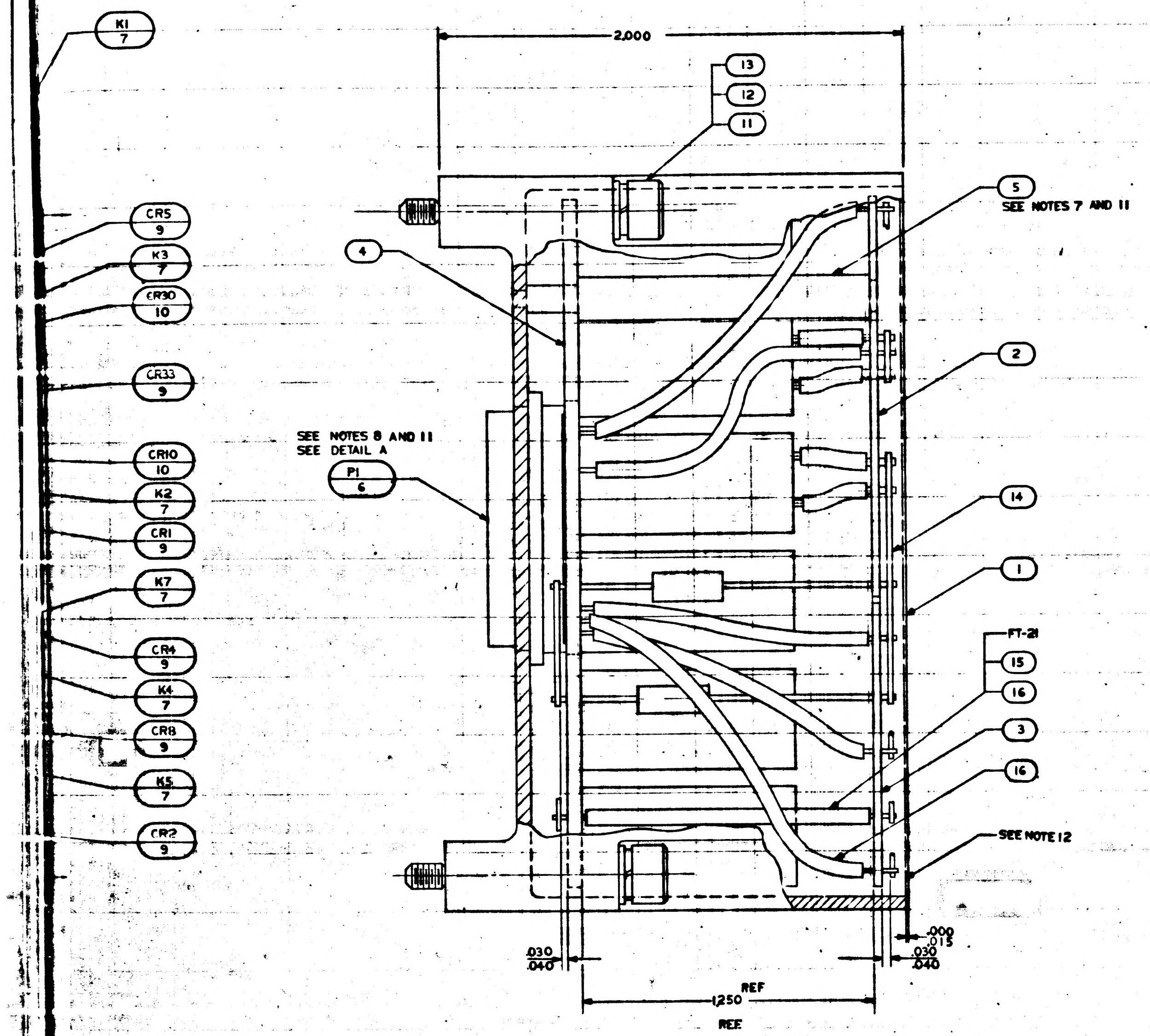
3.3 FUNCTIONAL REQUIREMENTS

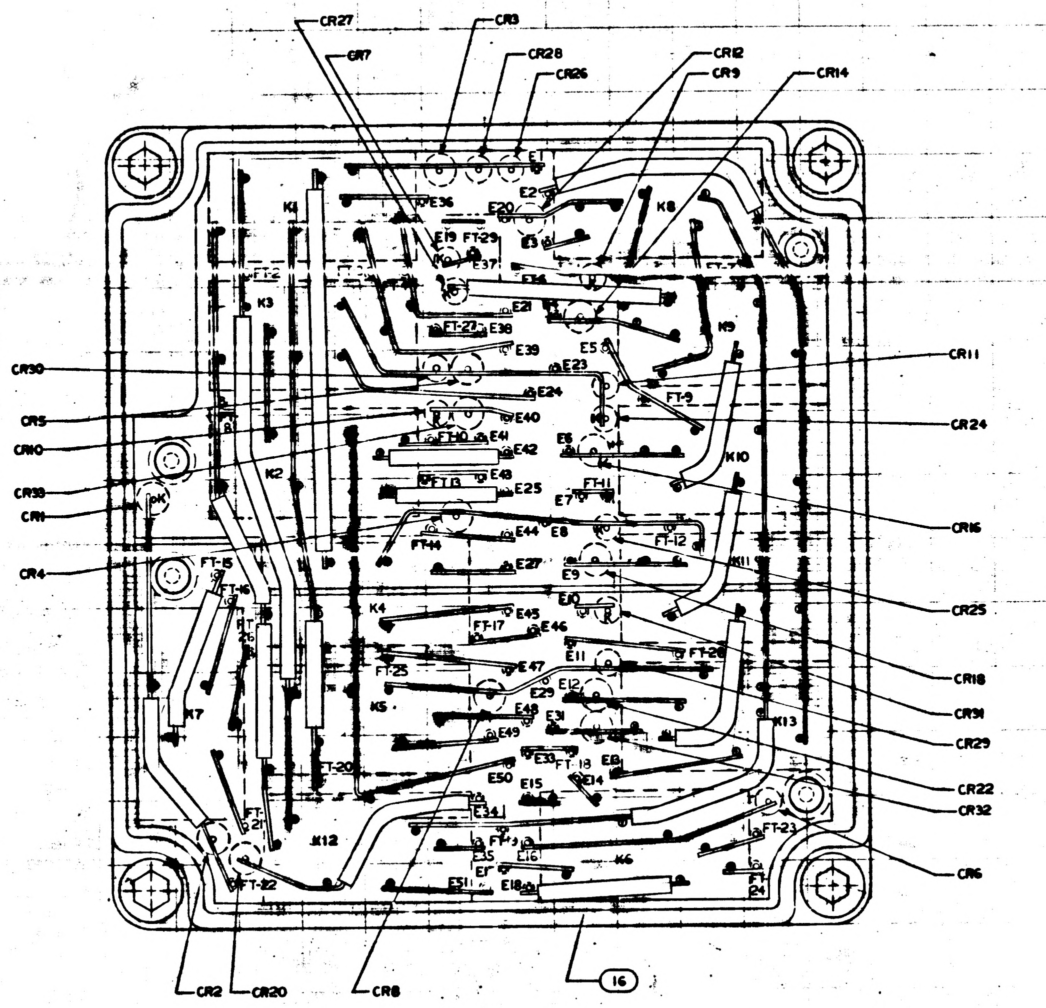
3.3.1 Electrical Input. The assembly shall perform as specified herein with an input of 24 vdc to 31 vdc.

3.3.2 Continuity and DC Resistance. Continuity and dc resistance of the assembly shall be as specified in Tables I and II using Method 303 of Standard MIL-STD-202. (Reference Drawing 1014623).

3.3.3 Continuity and Relay Operation. With 24 vdc max applied to pin 46 (+), pin 13 (-), and other pins continuously or momentarily 0 vdc (-) as specified in Table II, the electrical switching of connector pins of the assembly in terms of resistance readings shall be as specified in Table II using Method 303 of Standard MIL-STD-202.

REVISIONS TDRR 01892			
SYM	DESCRIPTION	DATE	APPROVAL
B	REVISED PER TDRR 02070	9 Aug 65	


K1 7
CR5 9
K3 7
CR30 10
CR33 9
CR10 10
K2 7
CR1 9
K7 7
CR4 9
K4 7
CR8 9
K5 7
CR2 9
2,000
13
12
11
4
SEE NOTES 8 AND 11
SEE DETAIL A
P1 6
5
SEE NOTES 7 AND 11
2
14
1
FT-21
15
16
3
16
SEE NOTE 12
.030
.040
.000
.015
.030
.040
REF
1,250
REF


CR27
CR7
CR3
CR28
CR26
CR12
CR9
CR14
E1
E2
E36
E20
K8
E19
FT-29
E3
E37
K1
FT-2
FT-6
K3
E21
FT-27
E38
K9
E39
E5
CR11
CR30
E23
CR5
E24
FT-9
CR10
E40
CR24
FT-10
E41
E42
E6
CR33
K2
E43
K10
CR1
FT-13
E25
FT-11
E7
E44
E8
CR16
CR4
FT-14
FT-12
E27
E9
K11
FT-15
FT-16
E10
CR25
FT-26
K4
E45
FT-17
E46
E11
FT-28
CR18
FT-25
E47
E29
E12
CR31
K7
K5
E48
E31
K13
CR29
E49
E33
FT-18
E13
CR22
FT-20
E50
E14
E15
CR32
E34
FT-21
K12
FT-23
CR6
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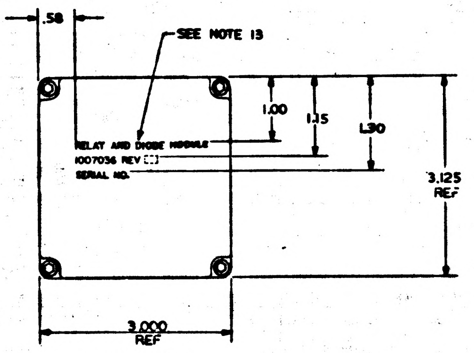
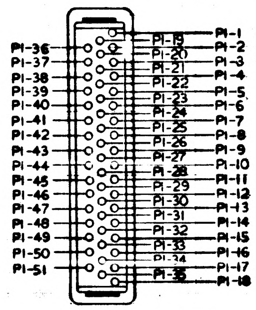
FT-24
CR2
CR20
CR8
16


.58
SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV [ ]
SERIAL NO.
1.00
1.15
1.30
3.125
REF
3.000
REF

MARKING VIEW
SCALE 1:1


P1-1
P1-2
P1-3
P1-4
P1-5
P1-6
P1-7
P1-8
P1-9
P1-10
P1-11
P1-12
P1-13
P1-14
P1-15
P1-16
P1-17
P1-18
P1-19
P1-20
P1-21
P1-22
P1-23
P1-24
P1-25
P1-26
P1-27
P1-28
P1-29
P1-30
P1-31
P1-32
P1-33
P1-34
P1-35
P1-36
P1-37
P1-38
P1-39
P1-40
P1-41
P1-42
P1-43
P1-44
P1-45
P1-46
P1-47
P1-48
P1-49
P1-50
P1-51

DETAIL A

CONNECTOR TERMINAL IDENTIFICATION VIEW

WIRING DATA		
FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT (AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-7	E7	DAC INHIBIT (PSA)
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK (IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND (AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VAR ILLUM & IND LAMP PWR 400 (IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT (IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA		
		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE (IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT (IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND (AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND (AGC)
P1-39	E39	MODE LAMP TEST (GEN PANEL)
P1-40	E40	BACK-UP ELECTRONICS RELAY (PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+ 28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL (IMU CONT)

REV B REPLACES REV A

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-6	WIRE, ELECTRICAL	15
AR	1006787-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC HD, EXT RELIEVED BODY	11
13	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1010436-1	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1

LIST OF MATERIALS

1007059		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ±# DECIMALS ±.05 ANGLES ±# DO NOT SCALE THIS DRAWING	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. REQ. NO. CONTRACT	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
NEXT ASSY	USED ON	MATERIAL # HEAT TREATMENT # FINAL FINISH #	DRAWN L. J. REYKRELLY DATE CHECKED E. P. Rungburg APPROVAL 7-1-65 APPROVAL 7-2-65	RELAY AND DIODE MODULE ASSEMBLY
APPLICATION			NASA APPROVAL 7/2/65 MIT APPROVAL W Kupfer 2 July 63	CODE IDENT NO. SIZE J NASA DRAWING NO. 1007036 SCALE 4/1 WT SHEET 1 OF 1

INCHES
PHOTOGRAPHIC SCALE ONLY

B	1007036	REVISIONS TORR 46-2		
SYM	DESCRIPTION	DATE	APPROVAL	
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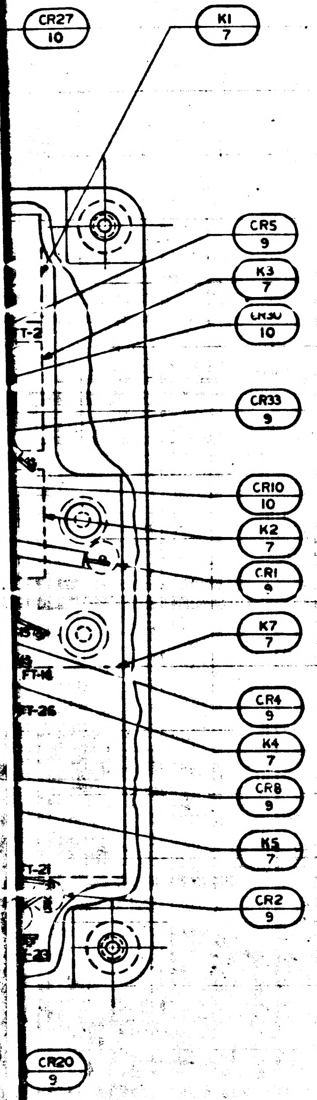
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CR4
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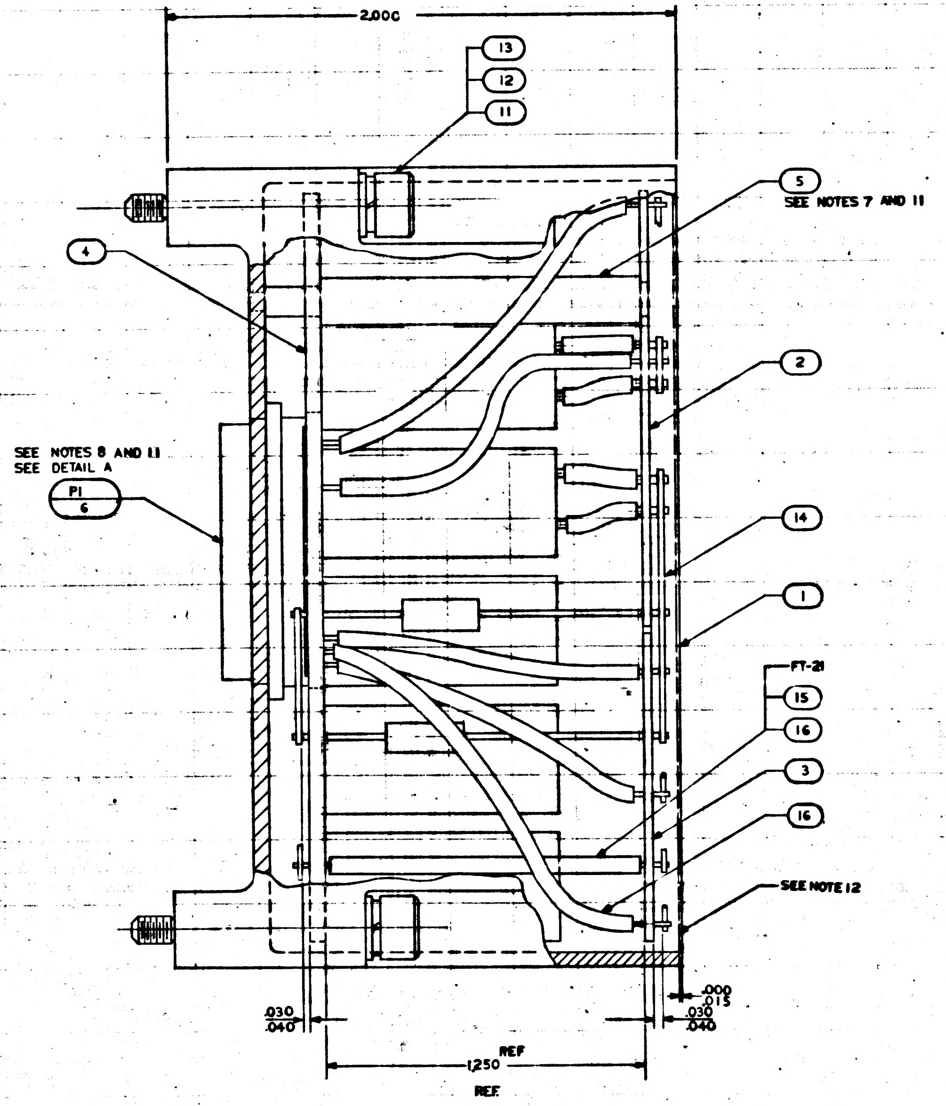
FT-23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SEE NOTES 7 AND 11
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SEE NOTES 8 AND 11
SEE DETAIL A
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SEE NOTE 12
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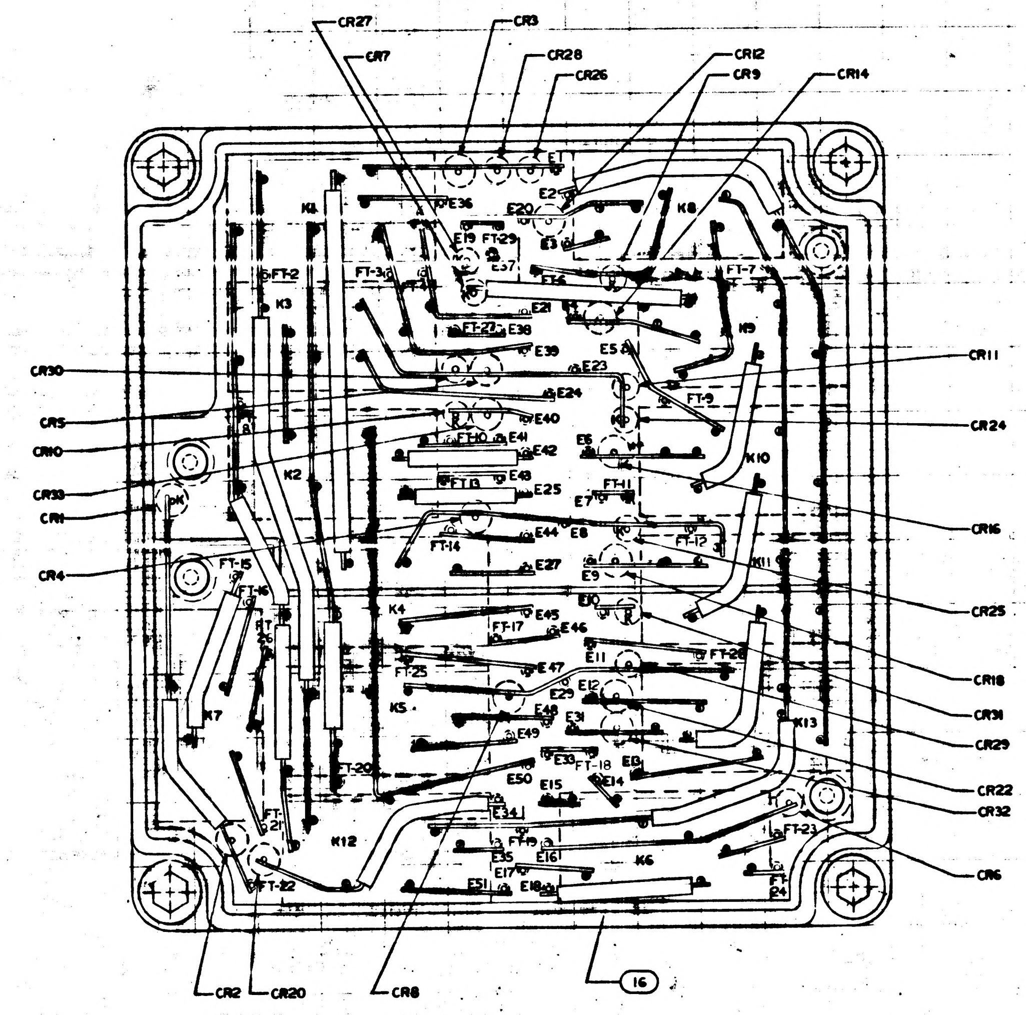
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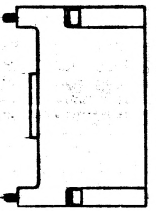

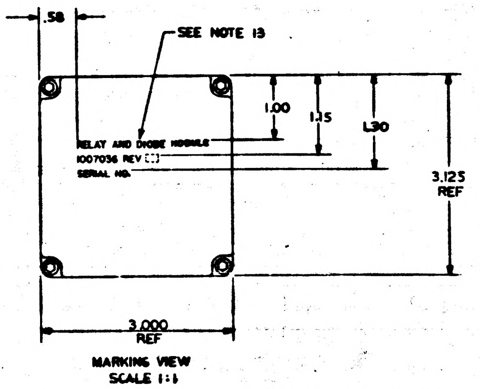
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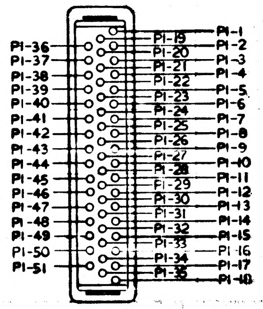
SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV [ ]
SERIAL NO.
1.00
1.15
1.30
3.125
REF
3.000
REF

MARKING VIEW
SCALE 1:1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P1-17
P1-18

DETAIL A

CONNECTOR TERMINAL IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT (AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-7	E7	DAC INHIBIT (PSA)
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK (IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND (AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VAR ILLUM & IND LAMP PWR 400 (IMU)
P1-22	SPARE	
P1-23	E28	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT (IMU CONT PNL.)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE (IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT (IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND (AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND (AGC)
P1-39	E39	MODE LAMP TEST (GEN PANEL)
P1-40	E40	BACK-UP ELECTRONICS RELAY (PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGN [illegible] (IMU CONT)

REV B REPLACES REV A

☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-6	WIRE, ELECTRICAL	15
AR	1006787-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC HD, EXT RELIEVED BODY	11
13	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1010436-1	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007059	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±# DECIMALS ±.03 ANGLES ±#
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN L. J. BERKELEY / C. BASSO DATE
CHECKED R. P. Kingsbury
APPROVAL 7-1-65
APPROVAL 7-2-65
NASA APPROVAL 7/2/65
MIT APPROVAL W. [illegible] 2 Jul 65

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

RELAY AND DIODE MODULE ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007036
SCALE 4/1 | WT | SHEET 1 OF 1

1007036 B

1007036

E-2

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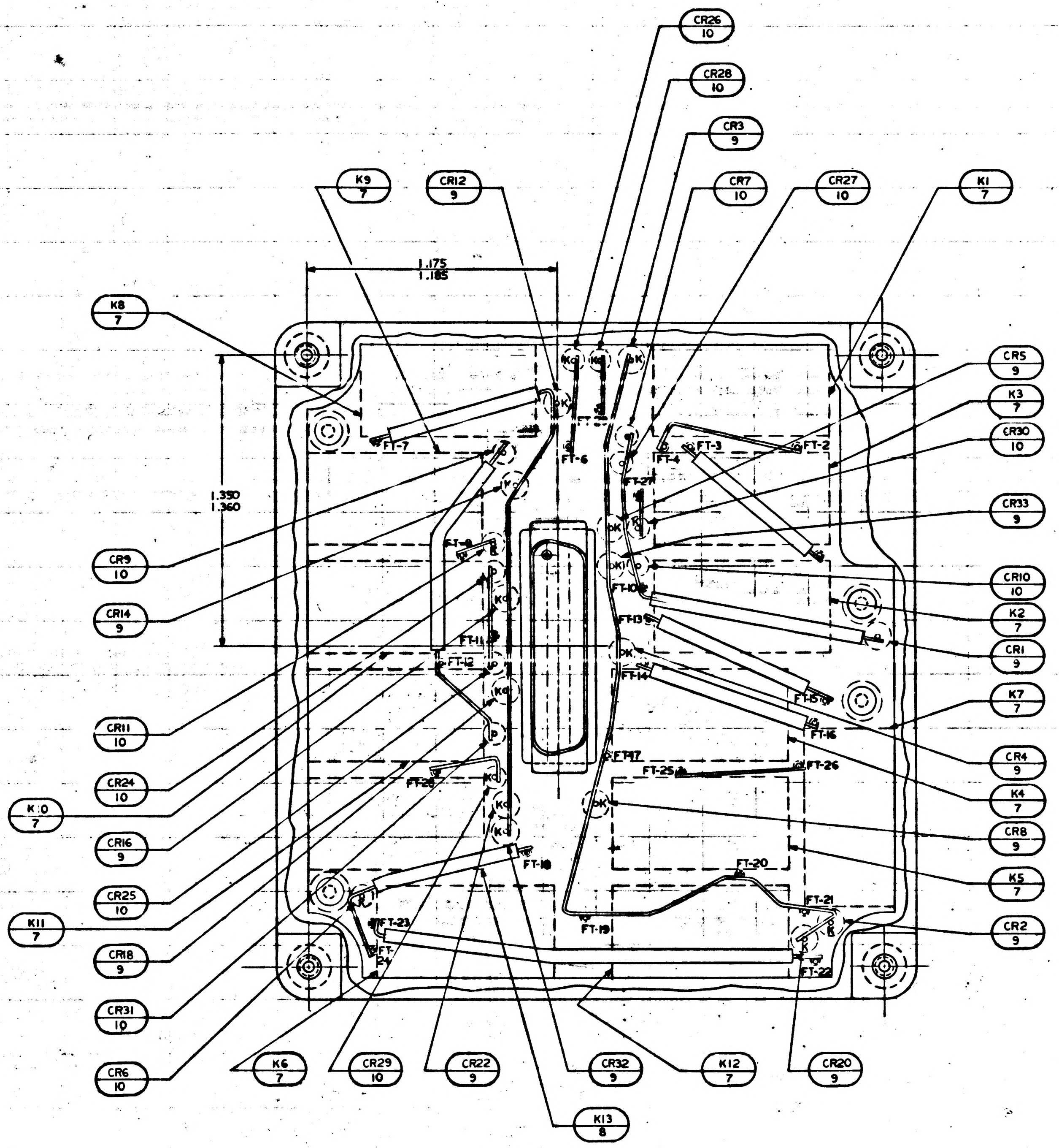
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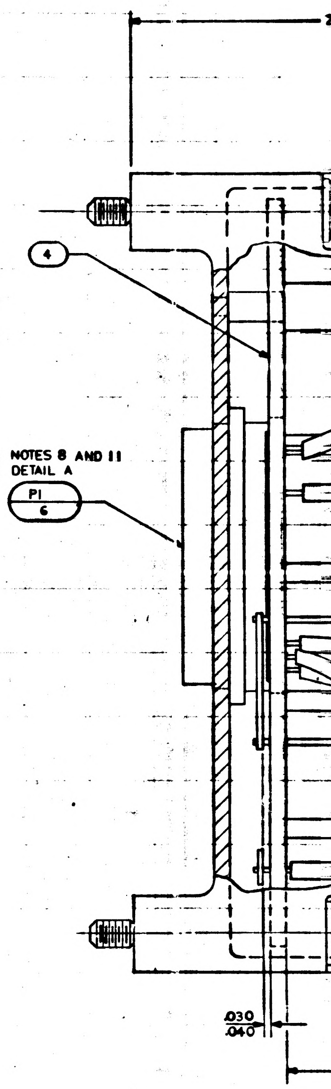
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SEE DETAIL A
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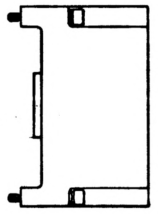

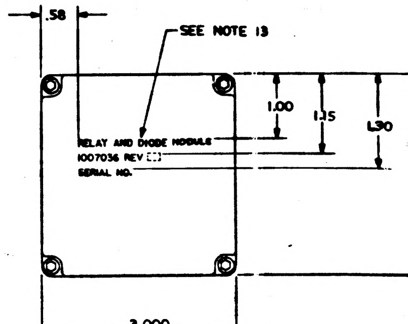
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SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV [ ]
SERIAL NO.
1.00
1.15
1.30
3.000
REF

MARKING VIEW
SCALE 1:1

NOTES.

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FT DENOTES FEED THRU
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. AR DENOTES AS REQUIRED
6. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 4 PER ND1002004
7. BOND FIND NO. 5 TO FIND NO. 4 PER PER ND1002004
8. SPARE LEADS ON FIND NO. 6 TO BE CUT TO .030 TO .090 LENGTH
9. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
10. DIFCOAT PER ND1002068 PRIOR TO ENCAPSULATION
11. BOND FIND NUMBERS 5 AND 6 TO FIND NO. 1 PER ND1002004
12. ENCAPSULATE MODULE PER ND1002106
13. MARK .060 TO .100 HIGH BLACK PER ND1002019
14. LEAD NO 6 ON K2 K4 AND K7 LEAD NO 2 ON K8 THRU K13 LEAD NO 7 ON K13 AND K17 AND LEAD NO 6 ON K7 TO BE CUT .030/.060 ABOVE RELAY CASE

1007036

INCHES
PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL
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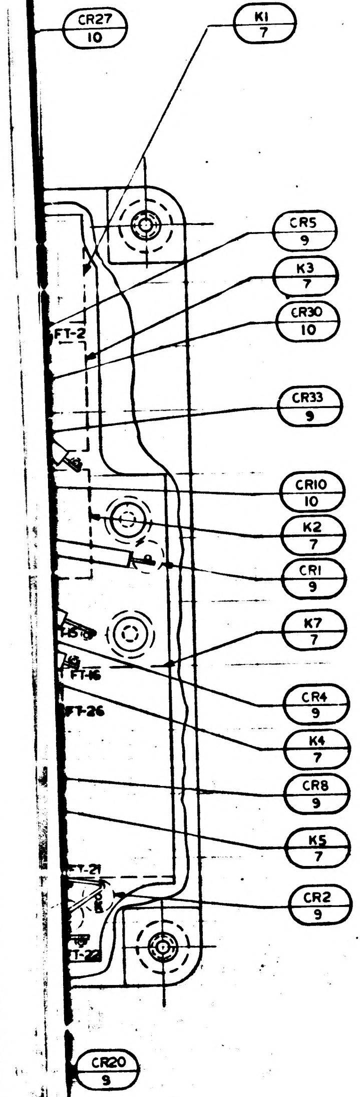
C	REVISED PER TDRR 02159	7-3	

REVISIONS TDRR 02602

1007036 C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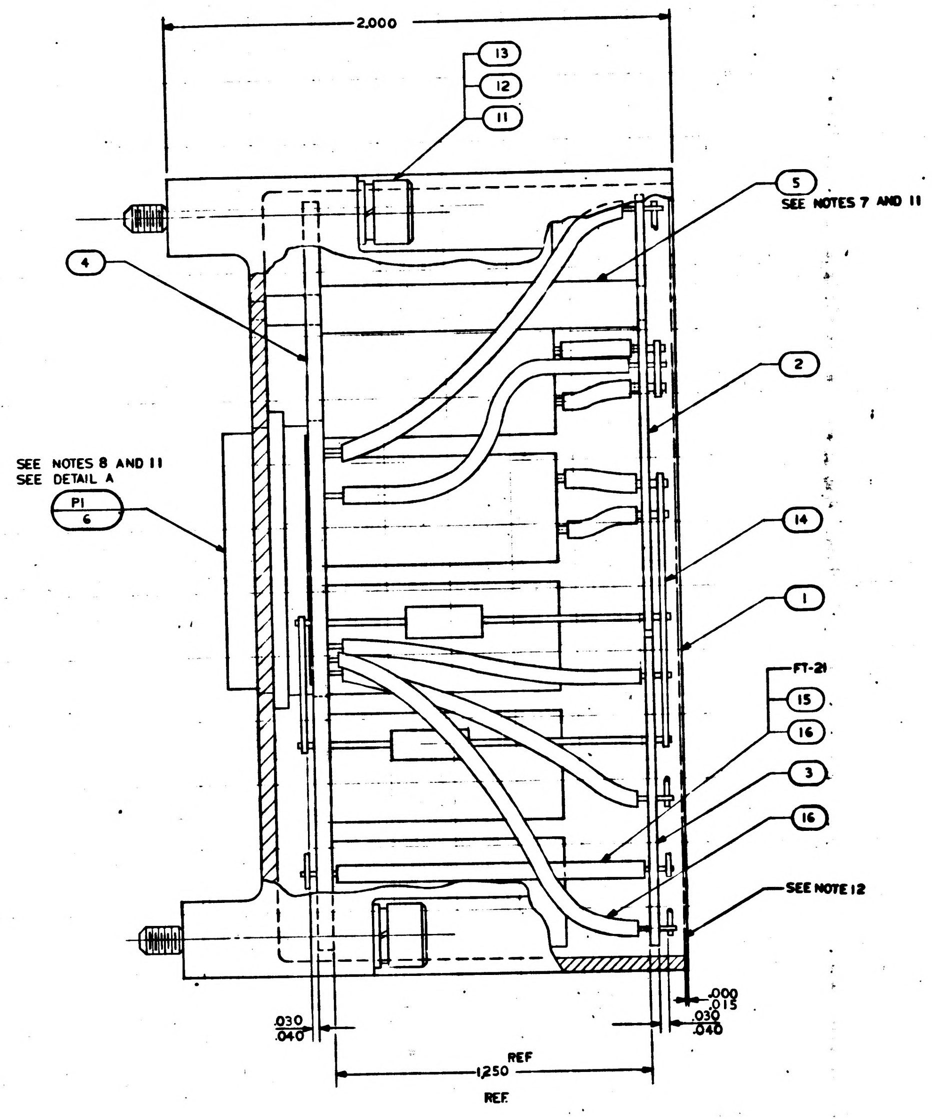
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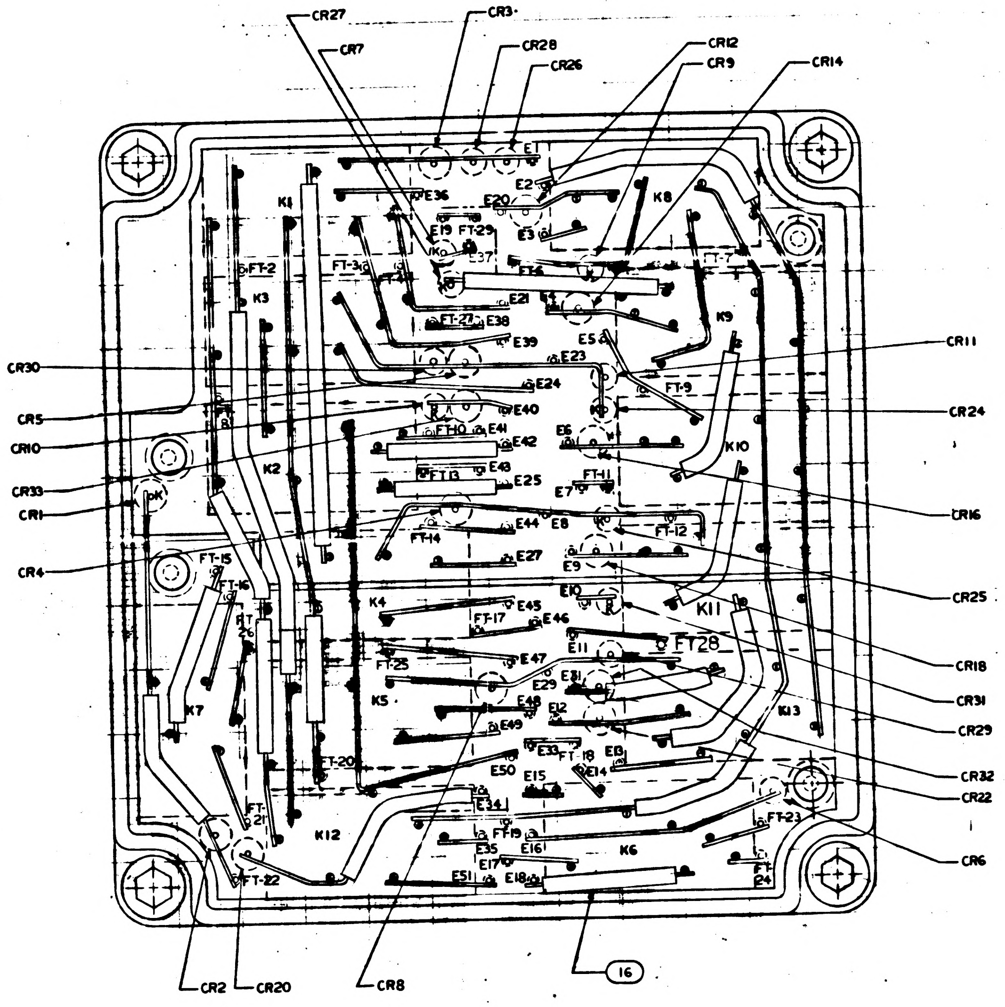
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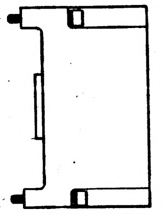

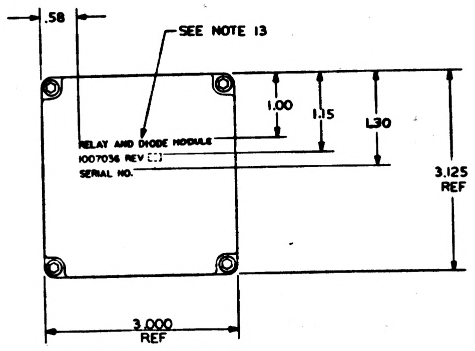
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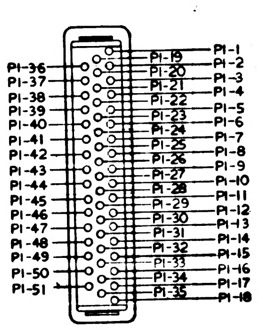
SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV [ ]
SERIAL NO.
1.00
1.15
1.30
3.125
REF
3.000
REF

MARKING VIEW
SCALE 1:1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P1-17
P1-18

DETAIL A

CONNECTOR TERMINAL
IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT (AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU)
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-7	E7	DAC INHIBIT (PSA)
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK (IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND (AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VAR ILLUM & IND LAMP PWR 400 (IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT (IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE (IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT (IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND (AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND (AGC)
P1-39	E39	MODE LAMP TEST (G&N PANEL)
P1-40	E40	BACK-UP ELECTRONICS RELAY (PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL (IMU CONT)

REV B REPLACES REV A

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-6	WIRE, ELECTRICAL	15
AR	1006787-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC. HD, EXT RELIEVED BODY	11
13	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1010436-1	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007059	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± .03 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN L.J. BERKELEY DATE
CHECKED R.P. Kingsbury
APPROVAL 7-1-63
APPROVAL A. C. Smith 7-2-63
NASA APPROVAL 7/2/63
MIT APPROVAL W. Kupfer 2 July 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

RELAY AND DIODE MODULE
ASSEMBLY

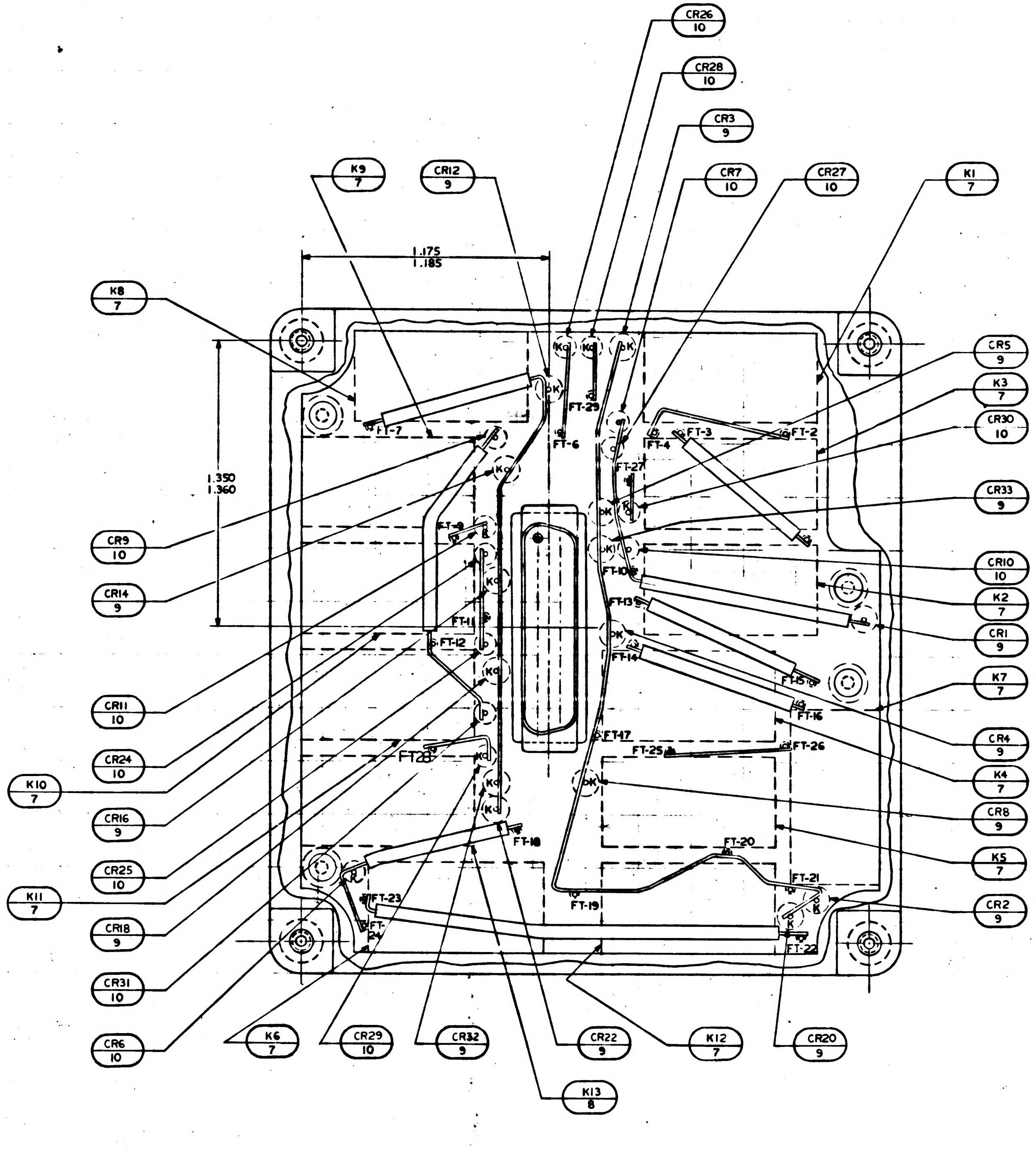
CODE IDENT NO.
SIZE J
NASA DRAWING NO 1007036
SCALE 4/1
WT
SHEET 1 OF 1

1007036

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

F-2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.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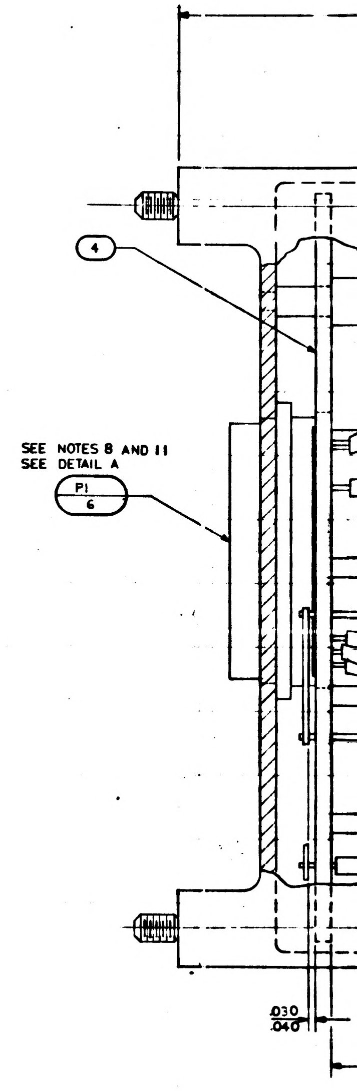
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SEE DETAIL A
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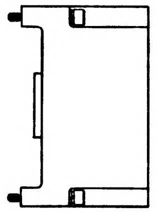

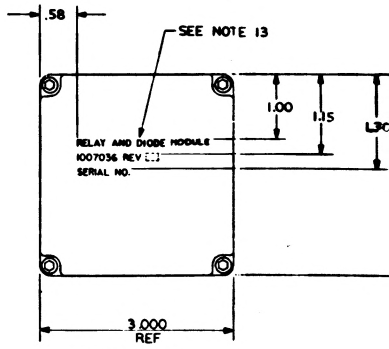
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SEE NOTE 13
1.00
1.15
1.30
RELAY AND DIODE MODULE
1007036 REV
SERIAL NO.
3.000
REF

MARKING VIEW
SCALE 1:1

NOTE_

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FT DENOTES FEED THRU
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. AR DENOTES AS REQUIRED
6. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 4 PER ND1002004
7. BOND FIND NO. 5 TO FIND NO. 4 PER PER ND1002004
8. SPARE LEADS ON FIND NO. 6 TO BE CUT TO .030 TO .090 LENGTH
9. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
10. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
11. BOND FIND NUMBERS 5 AND 6 TO FIND NO. 1 PER ND1002004
12. ENCAPSULATE MODULE PER ND1002106
13. MARK .060 TO .100 HIGH BLACK PER ND1002019
14. LEAD NO 6 ON K2 K4 AND K7 LEAD NO 2 ON K8 THRU K13 LEAD NO 7 ON K13 AND K17 AND LEAD NO 6 ON K7 TO BE CUT .030/.060 ABOVE RELAY CASE

INCHES
PHOTOGRAPHIC SCALE ONLY

1007036 D

SYM	DESCRIPTION	DATE
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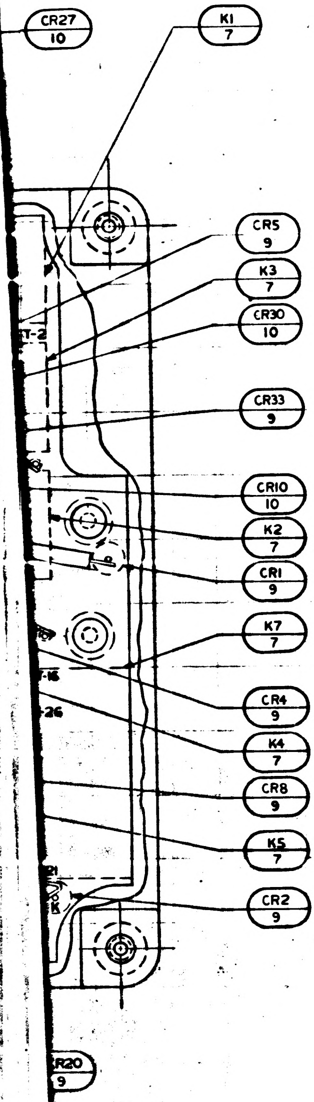
C	REVISED PER TDRR 02159	
D	REVISED PER TDRR 02541	



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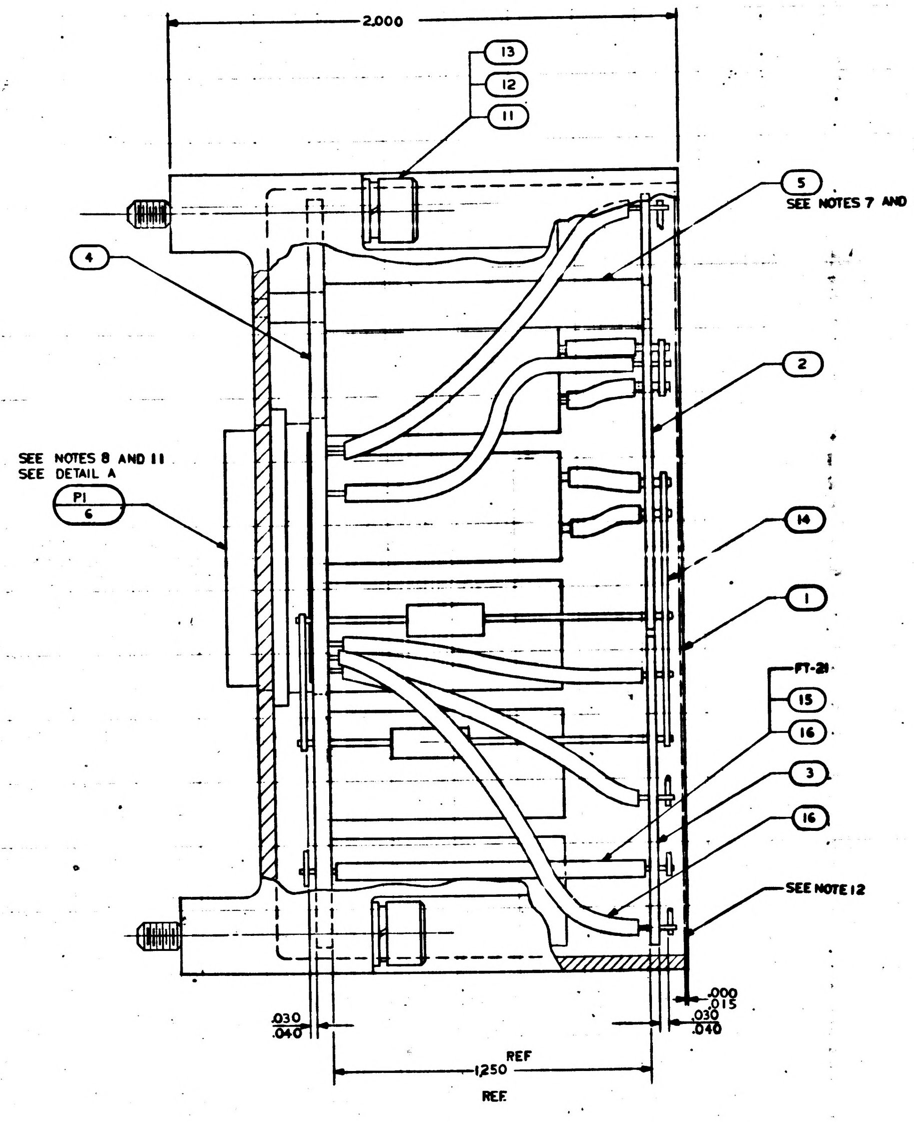

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SEE NOTES 7 AND 11
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SEE NOTES 8 AND 11
SEE DETAIL A
P1
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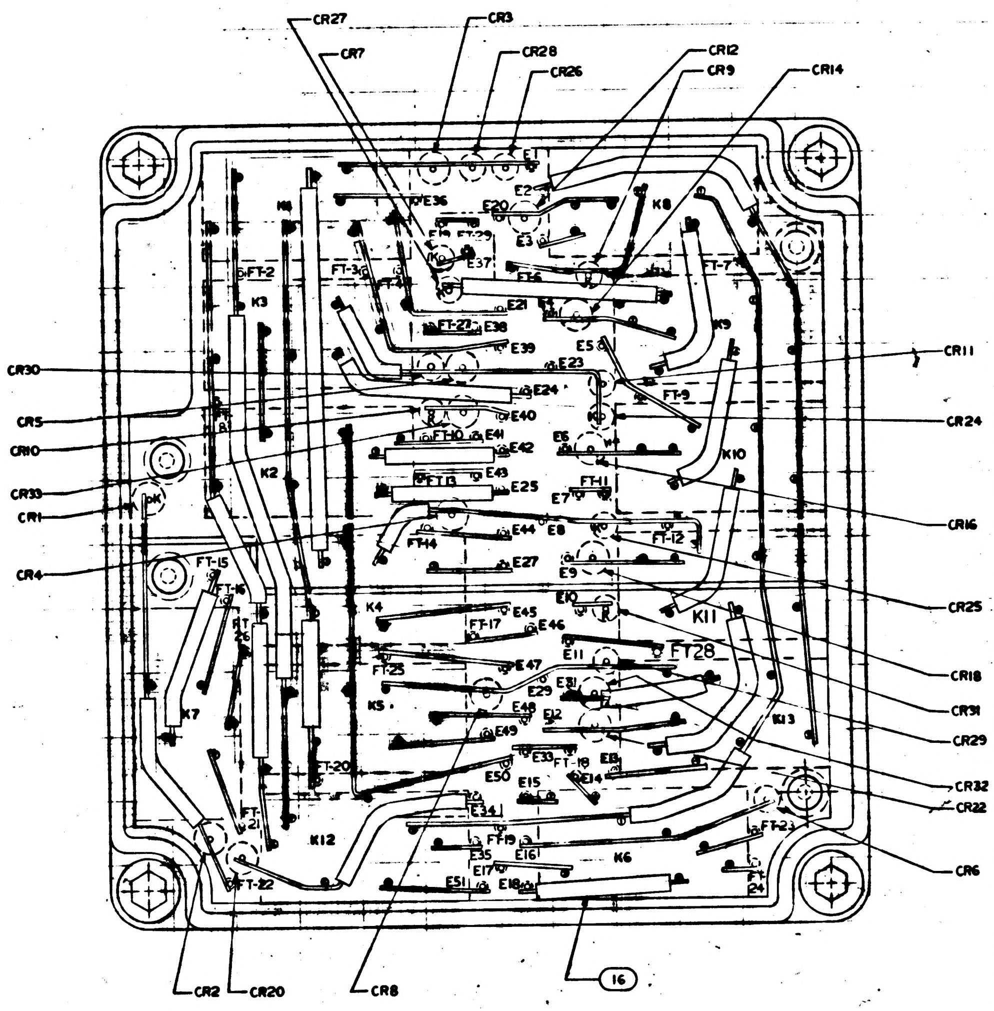

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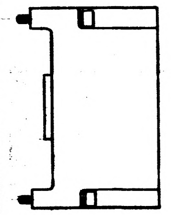

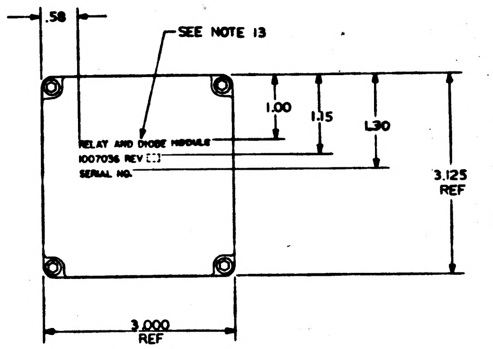

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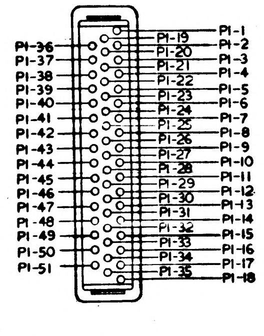
SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV
SERIAL NO.
1.00
1.15
1.30
3.125
REF
3.000
REF

MARKING VIEW
SCALE 1:1



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P1-17
P1-18

DETAIL A

CONNECTOR TERMINAL IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT (AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU)
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-7	E7	DAC INHIBIT (PSA)
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK (IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND (AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VAR ILLUM & IND LAMP PWR 400 (IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT (IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE (IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT (IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND (AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND (AGC)
P1-39	E39	MODE LAMP TEST (GEN PANEL)
P1-40	E40	BACK-UP ELECTRONICS RELAY (PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL (IMU CONT)

REV B REPLACES REV A

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
☒	1014623	SCHEMATIC
AR	1006776-21	INSULATION, SLEEVING, ELEC
AR	1006787-6	WIRE, ELECTRICAL
AR	1006787-1	WIRE, ELECTRICAL
4	MS35338-78	WASHER, LOCK
4	MS15795-303	WASHER, FLAT
4	1008069-2	SCREW, SOC. HD, EXT RELIEVED BODY
13	1010392	DIODE
14	1010362-3	DIODE
1	1010436-1	RELAY
12	1010353-4	RELAY
1	1010615-2	CONNECTOR
4	1008112	SPACER, INSULATED
1	1008091	WIRING BOARD, BOTTOM
1	1008111-2	WIRING BOARD, TOP
1	1008111-1	WIRING BOARD, TOP
1	1008082	HOUSING

LIST OF MATERIALS

NEXT ASSY	USED ON
1007059	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±# DECIMALS ±.03 ANGLES ±#
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN L. J. BERKELEY DATE
CHECKED E. P. Kingsbury
APPROVAL 7-1-63
APPROVAL 7-2-63
NASA APPROVAL 7/2/63
MIT APPROVAL W Kupfer 2 July 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

RELAY AND DIODE MODULE
ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007036
SCALE 4/1 | WT | SHEET 1 OF 1

1007036 D

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

F-2

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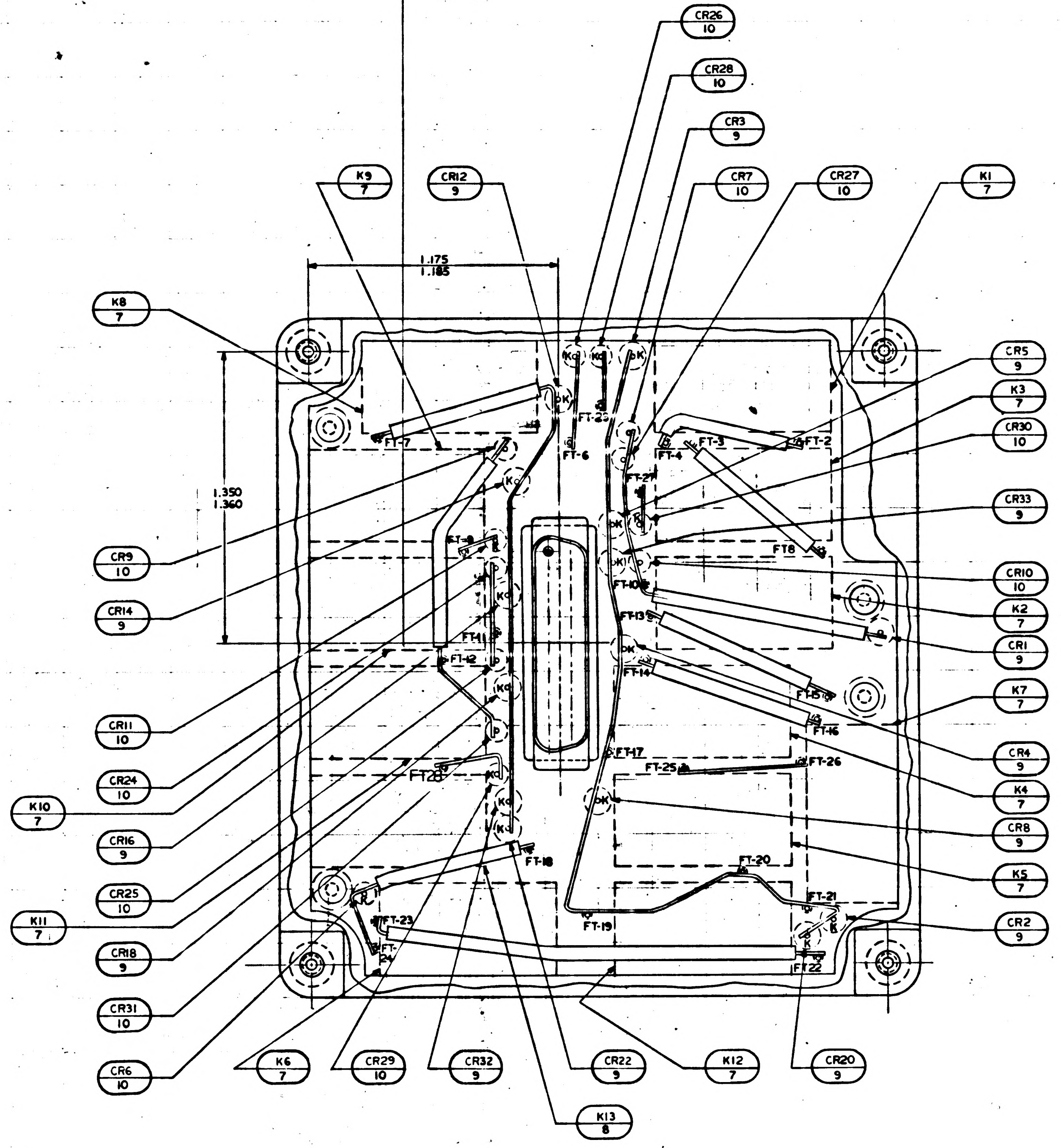
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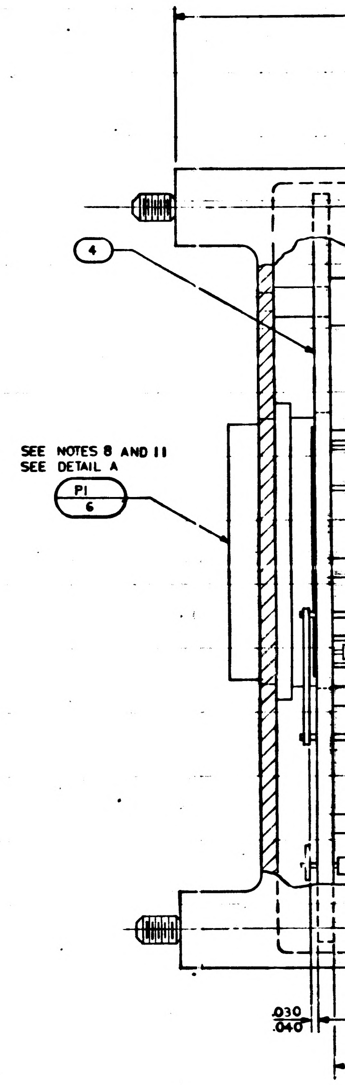
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SEE NOTES 8 AND 11
SEE DETAIL A
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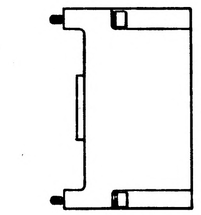

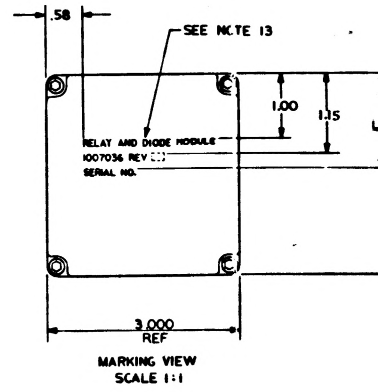
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SEE NOTE 13
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1.15
RELAY AND DIODE MODULE
1007036 REV ( )
SERIAL NO.
3.000
REF

MARKING VIEW
SCALE 1:1

NOTES.

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FT DENOTES FEED THRU
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. AR DENOTES AS REQUIRED
6. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 4 PER ND1002004
7. BOND FIND NO. 5 TO FIND NO. 4 PER PER ND1002004
8. SPARE LEADS ON FIND NO. 6 TO BE CUT TO .030 TO .090 LENGTH
9. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
10. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
11. BOND FIND NUMBERS 5 AND 6 TO FIND NO. 1 PER ND1002023
12. ENCAPSULATE MODULE PER ND1002106
13. MARK .060 TO .100 HIGH BLACK PER ND1002019
14. ALL RELAY LEADS NOT BEING USED TO BE CUT .030/.090

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL
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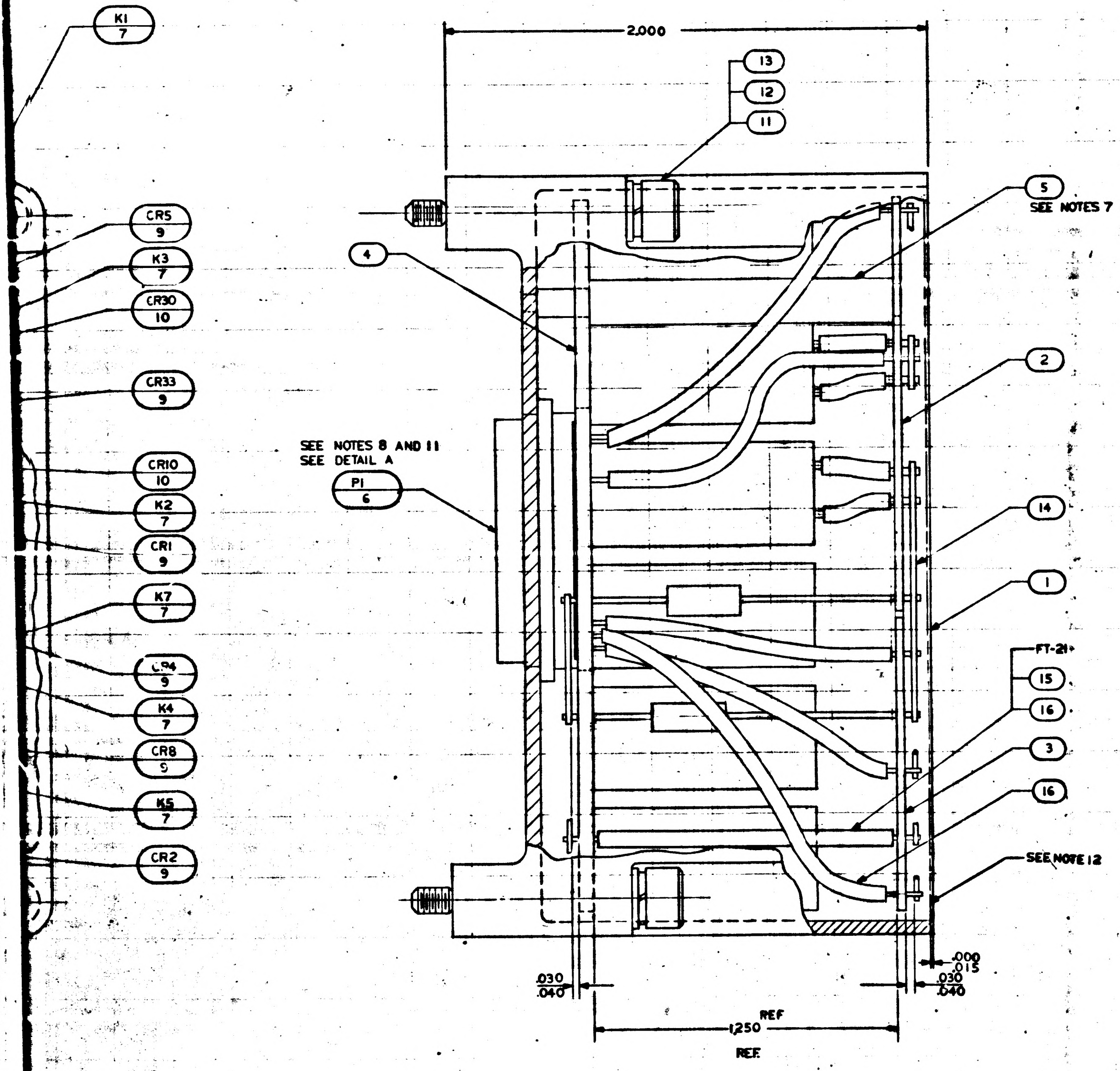
C	REVISED PER TDRR 02159	7-23-[illegible]	[illegible]
D	REVISED PER TDRR 02541	[illegible]	[illegible]
E	SUPERSEDED PER TDRR 03[illegible]	[illegible]	[illegible]

REVISIONS TDRR 01802

1007036 E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SEE NOTES 7 AND 11
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SEE NOTE 12
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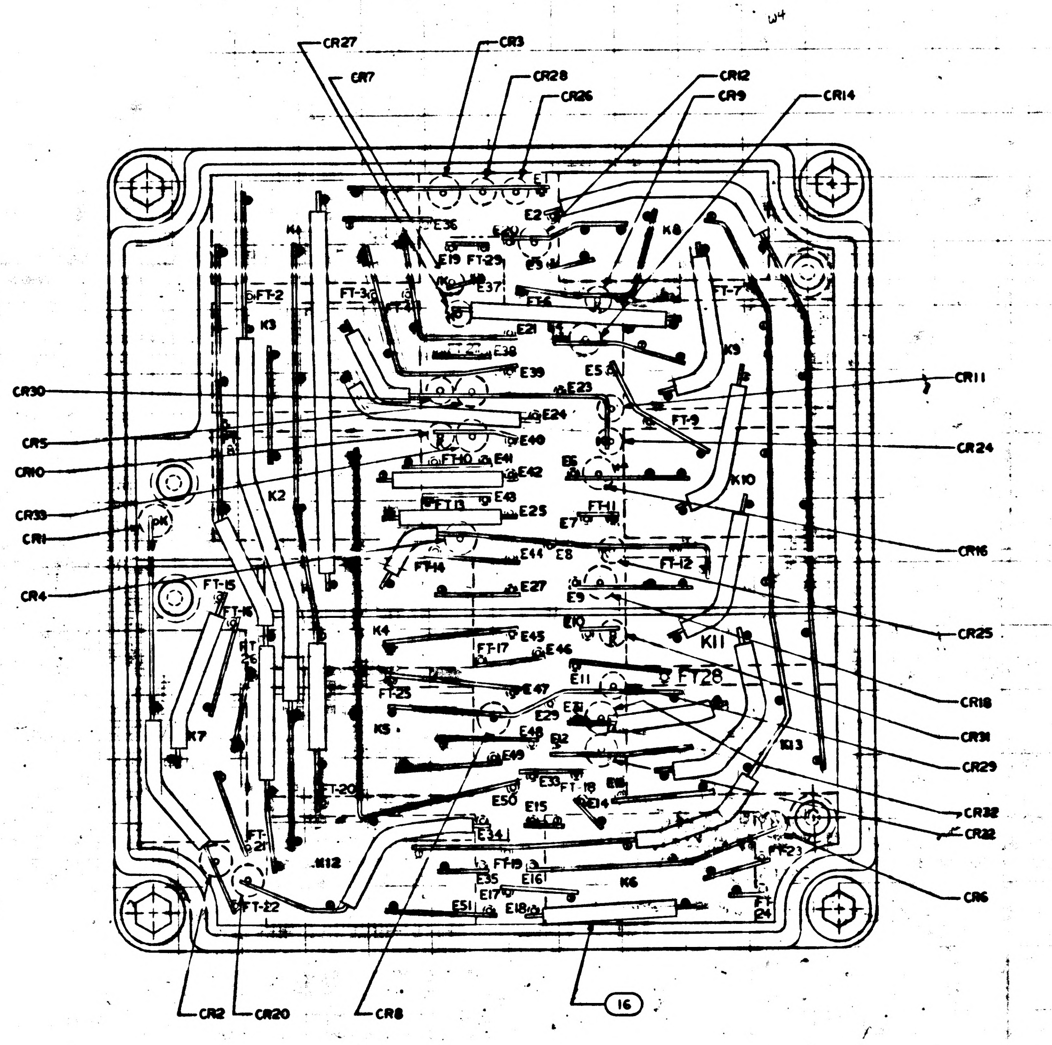
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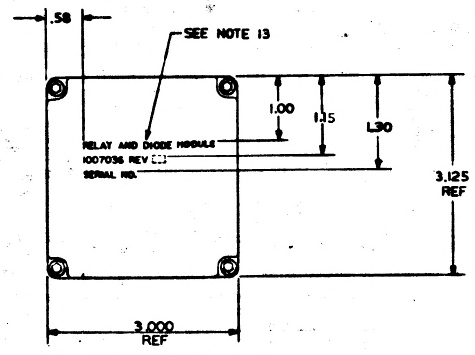
SUPERSEDED BY 1007036 Rev F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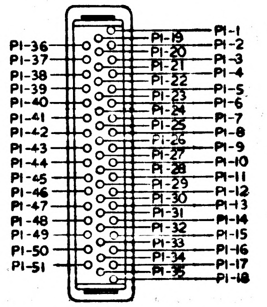
SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV
SERIAL NO.
1.00
1.15
1.30
3.125 REF
3.000 REF

MARKING VIEW
SCALE 1:1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P1-48
P1-49
P1-50
P1-51

DETAIL A

CONNECTOR TERMINAL IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT (AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-7	E7	DAC INHIBIT (PSA)
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK (IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND (AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VAR ILLUM & IND LAMP PWR 400 (IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT (IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE (IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT (IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND (AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND (AGC)
P1-39	E39	MODE LAMP TEST (GEN PANEL)
P1-40	E40	BACK-UP ELECTRONICS RELAY (PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+ 28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL (IMU CONT)

REV E REPLACED BY REV F

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-6	WIRE, ELECTRICAL	15
AR	1006787-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC HD, EXT RELIEVED BODY	11
13	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1010436-1	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007059	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±## DECIMALS ±.03 ANGLES ±##
DO NOT SCALE THIS DRAWING
MATERIAL ##
HEAT TREATMENT ##
FINAL FINISH ##

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN [illegible] DATE
CHECKED R. P. Kingsbury
APPROVAL [illegible] 7-1-65
APPROVAL [illegible] 7-2-65
NASA APPROVAL [illegible]
MIT APPROVAL W. Kupfer 2 July 65

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

RELAY AND DIODE MODULE ASSEMBLY

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007036
SCALE 4/1 | WT | SHEET 1 OF 1

1007036 E

INCHES
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PHOTOGRAPHIC SCALE ONLY

E-2

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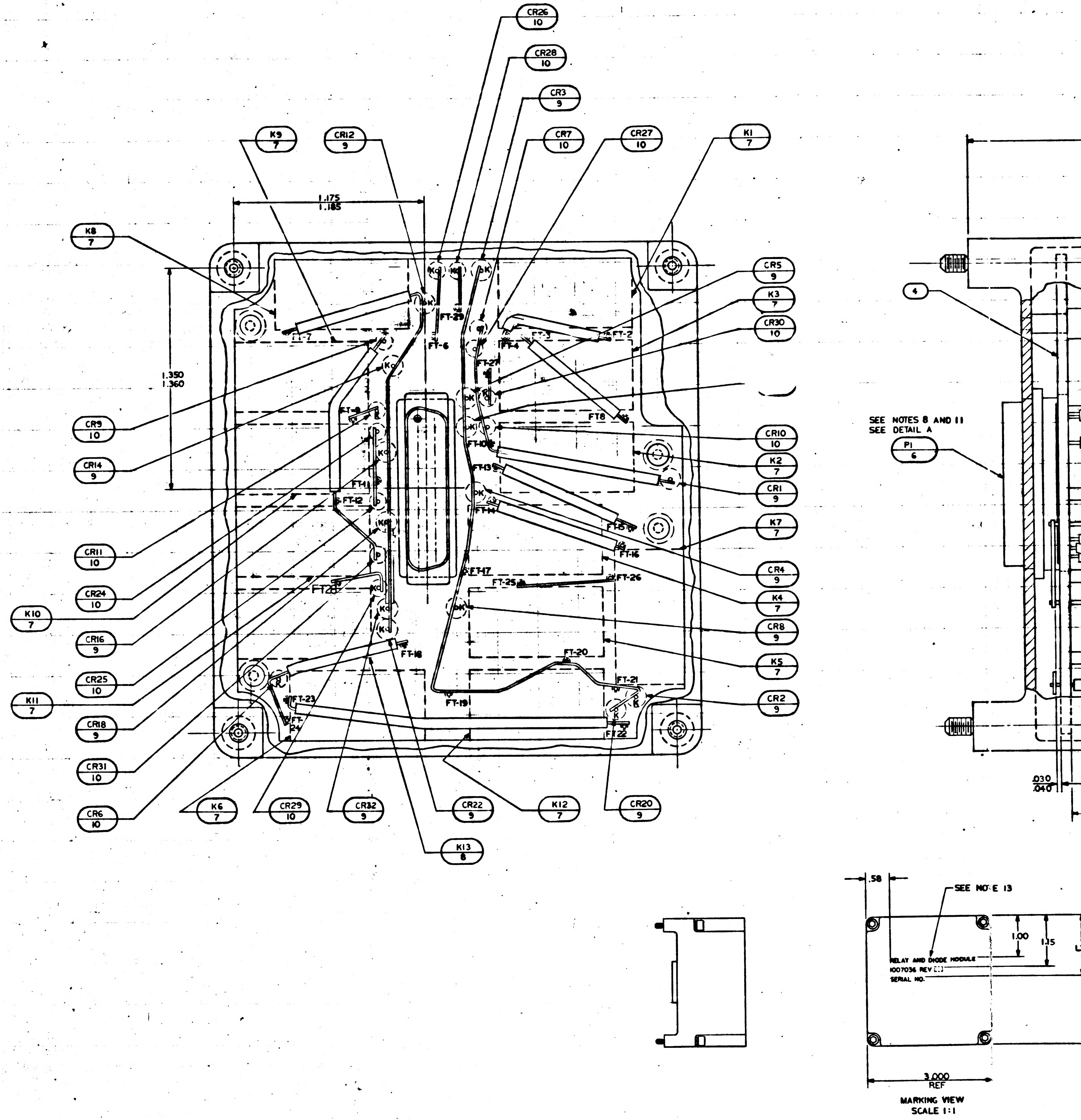
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SEE NOTES 8 AND 11
SEE DETAIL A
P1 6
.030
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.58
SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV
SERIAL NO.
1.00
1.15
3.000
REF

MARKING VIEW
SCALE 1:1

NOTES.

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FT DENOTES FEED THRU
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. AR DENOTES AS REQUIRED
6. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 4 PER ND1002004
7. BOND FIND NO. 5 TO FIND NO. 4 PER PER ND1002004
8. SPARE LEADS ON FIND NO. 6 TO BE CUT TO .030 TO .090 LENGTH
9. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
10. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
11. BOND FIND NUMBERS 5 AND 6 TO FIND NO. 1 PER ND1002023
12. ENCAPSULATE MODULE PER ND1002106
13. MARK .060 TO .100 HIGH BLACK PER ND1002019
14. ALL UNUSED RELAY LEADS TO BE CUT .030/.090 ABOVE RELAY CASE
15. INSULATION SLEEVING TO BE USED ON DIODE LEADS
16. INSULATION SLEEVING TO BE USED ON RELAY LEADS
17. INSULATION SLEEVING TO BE USED ON FT POINTS

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INCHES
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PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL
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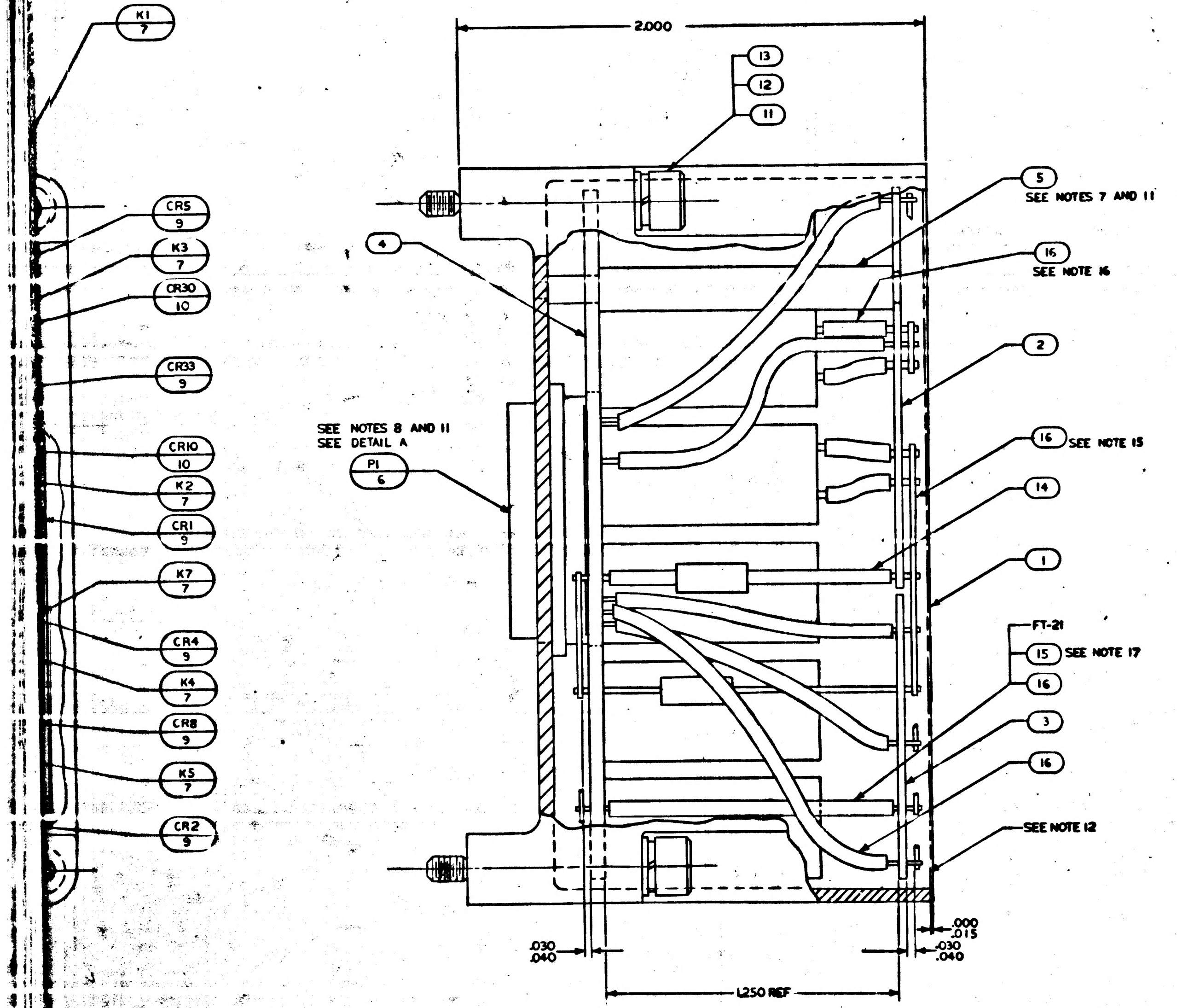
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SEE NOTES 8 AND 11
SEE DETAIL A
P1 6
5 SEE NOTES 7 AND 11
16 SEE NOTE 16
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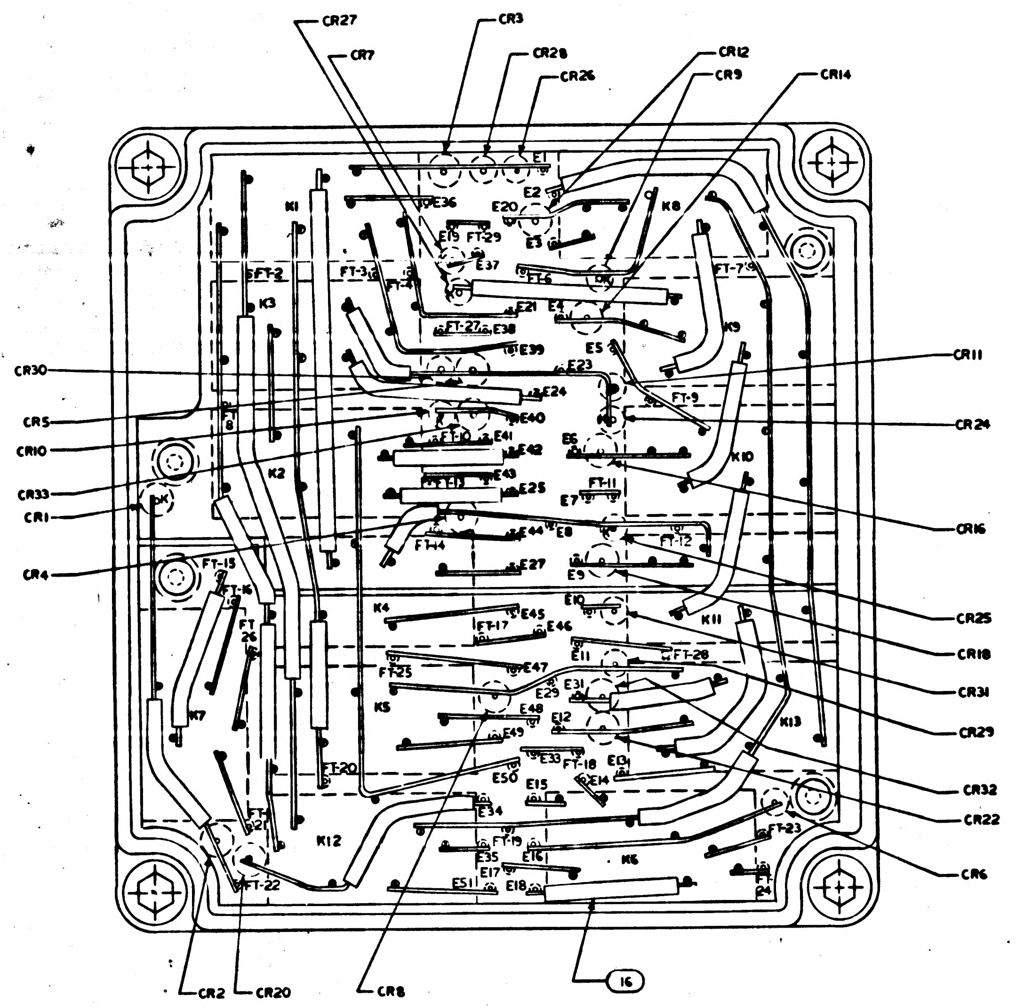
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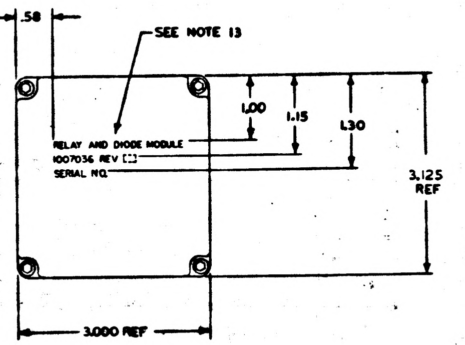
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SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV [ ]
SERIAL NO.
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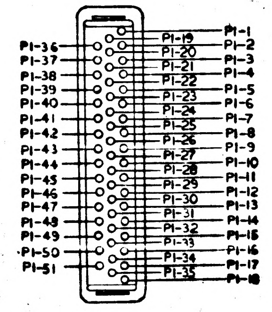
1.15
1.30
3.125 REF
3.000 REF

MARKING VIEW
SCALE 1:1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P1-48
P1-49
P1-50
P1-51

DETAIL A

CONNECTOR TERMINAL
IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT(AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU)
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-7	E7	DAC INHIBIT(PSA)
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK(IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND(AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VARILLUM / IND LAMP PWR 400(IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT(IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE(IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT(IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND(AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND(AGC)
P1-39	E39	MODE LAMP TEST (G & N PANEL)
P1-40	E40	BACK UP ELECTRONICS RELAY(PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL(IMU CONT)

REV F REPLACES REV E

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-2	WIRE, ELECTRICAL	15
AR	1006757-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC HD, EXT RELIEVED BODY	11
13	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1006772-3	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007059	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±# DECIMALS ±.03 ANGLES ±#
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

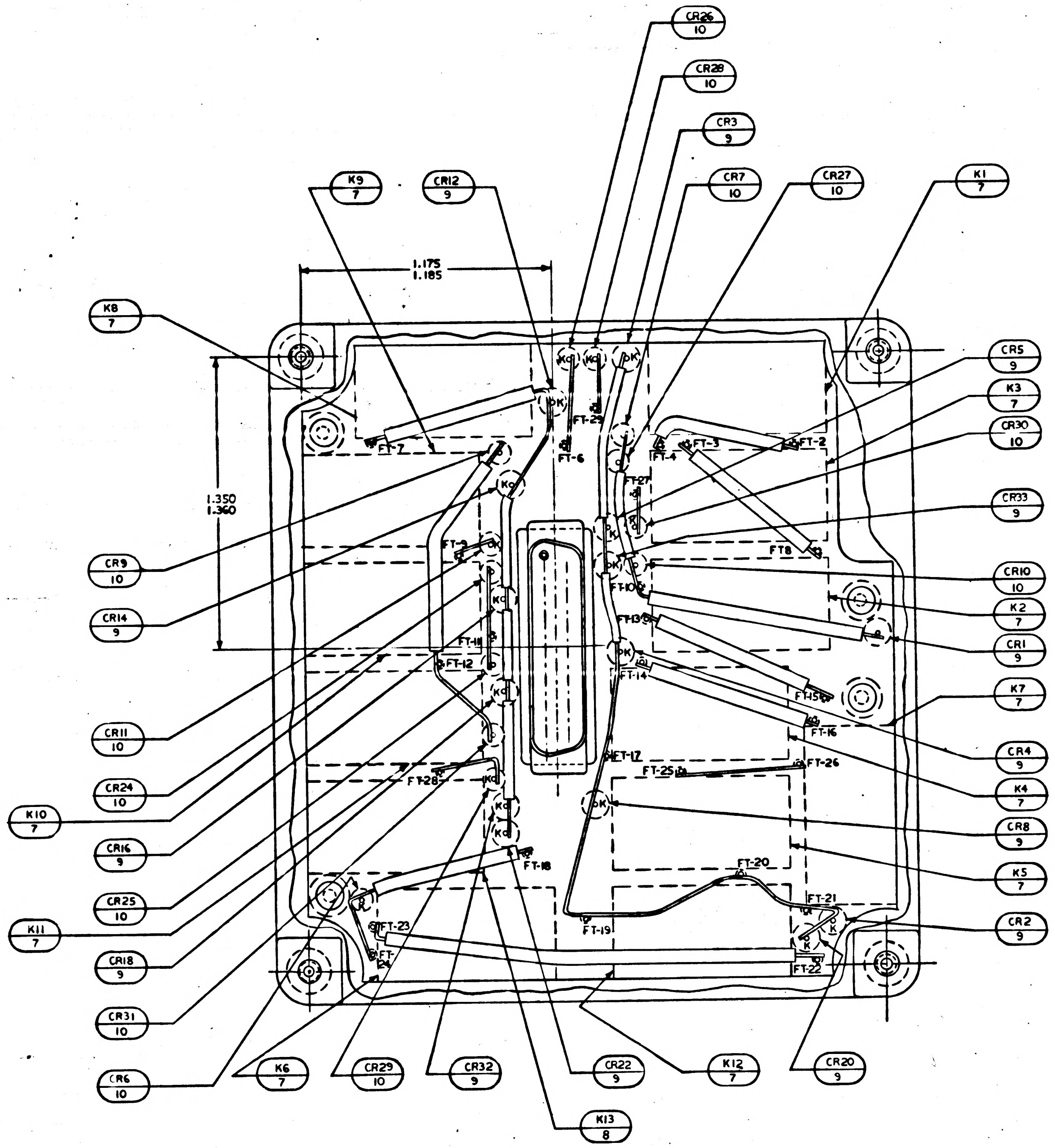
DRAWN J.F. [illegible] DATE 9/16/63
CHECKED R.P. Kingsbury
APPROVAL [illegible] 9-16-63
APPROVAL L.C. Smith 9-17-63
NASA APPROVAL
MIT APPROVAL [illegible] 9/17/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

RELAY AND DIODE MODULE ASSEMBLY

CODE IDENT NO | SIZE J | NASA DRAWING NO. 1007036
SCALE 4/1 | WT | SHEET 1 OF 1

F-2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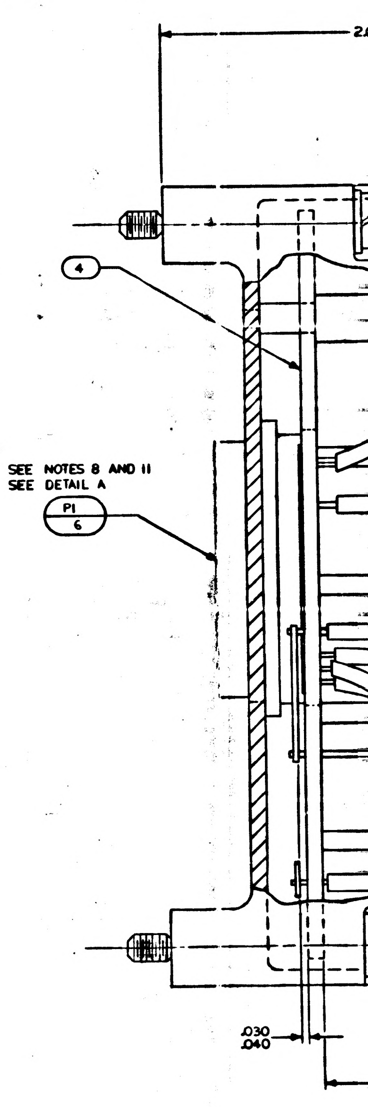
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SEE NOTES 8 AND 11
SEE DETAIL A
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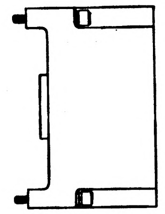

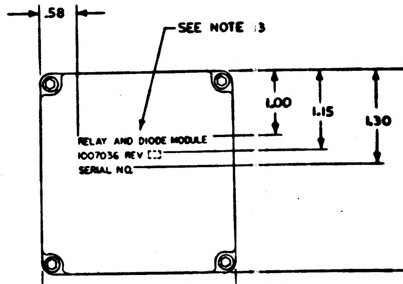
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SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV [ ]
SERIAL NO.
1.00
1.15
1.30
3.000 REF

MARKING VIEW
SCALE 1:1

NOTES:

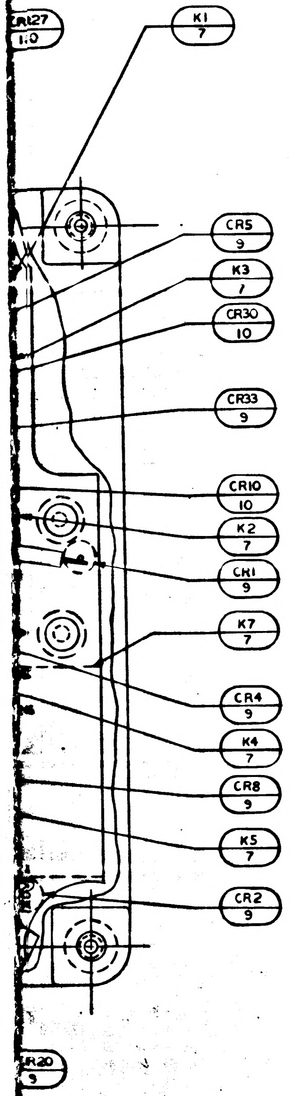
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FT DENOTES FEED THRU
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. AR DENOTES AS REQUIRED
6. BOND FIND NO 7 AND FIND NO 8 TO FIND NO 4 PER ND1002004
7. BOND FIND NO 5 TO FIND NO 4 PER ND 1002004
8. SPARE LEADS ON FIND NO 6 TO BE CUT .030 TO .090 LENGTH
9. AFTER WELDING TRIM ALL LEADS .005 TO .090 BEYOND RIBBON
10. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
11. BOND FIND NO 5 AND FIND NO 6 TO FIND NO 1 PER ND1002004
12. ENCAPSULATE MODULE PER ND1002106
13. SERIALIZE AND MARK .060 TO .100 HIGH BLACK PER ND 1002023
14. ALL UNUSED RELAY LEADS TO BE CUT 030/090 ABOVE RELAY CASE
15. INSULATION SLEEVING TO BE USED ON DIODE LEADS
16. INSULATION SLEEVING TO BE USED ON RELAY LEADS
17. INSULATION SLEEVING TO BE USED ON FT POINTS

INCHES
PHOTOGRAPHIC SCALE ONLY

1007036 | G

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
F	REVISED PER TORR 03199		
G	REVISED PER TORR 03765		



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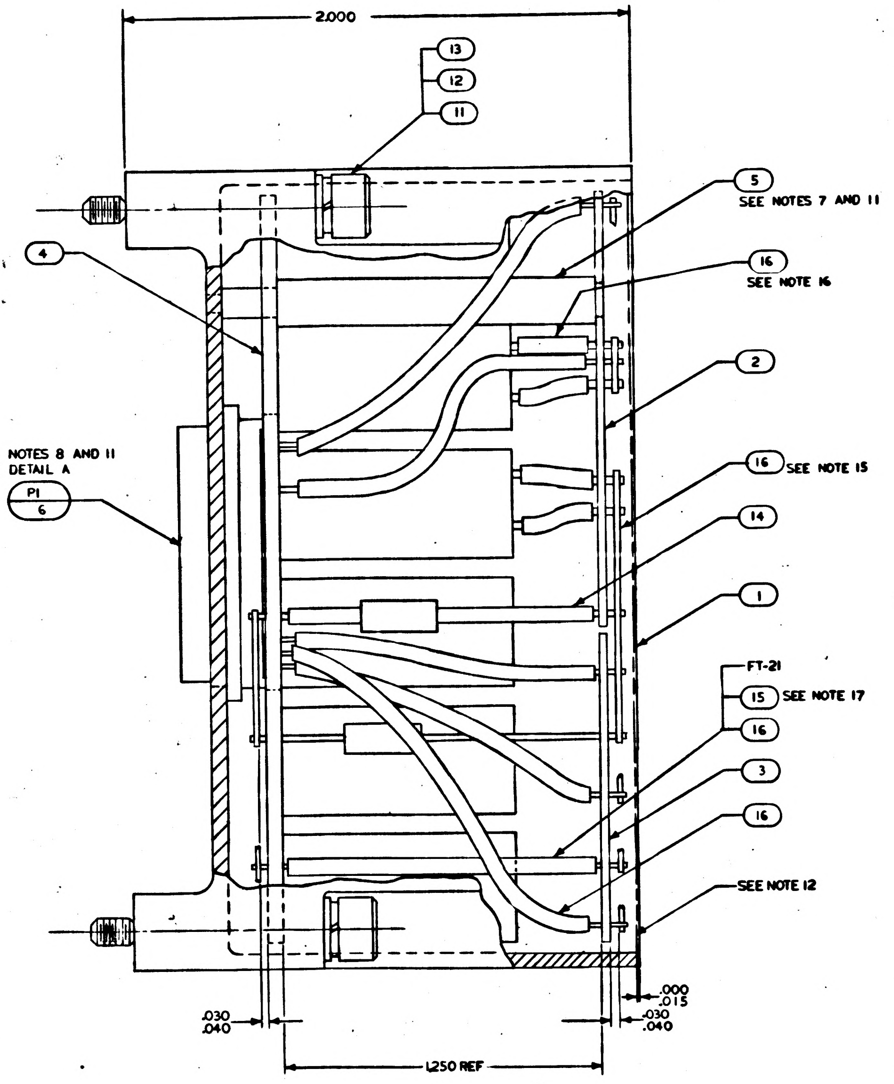

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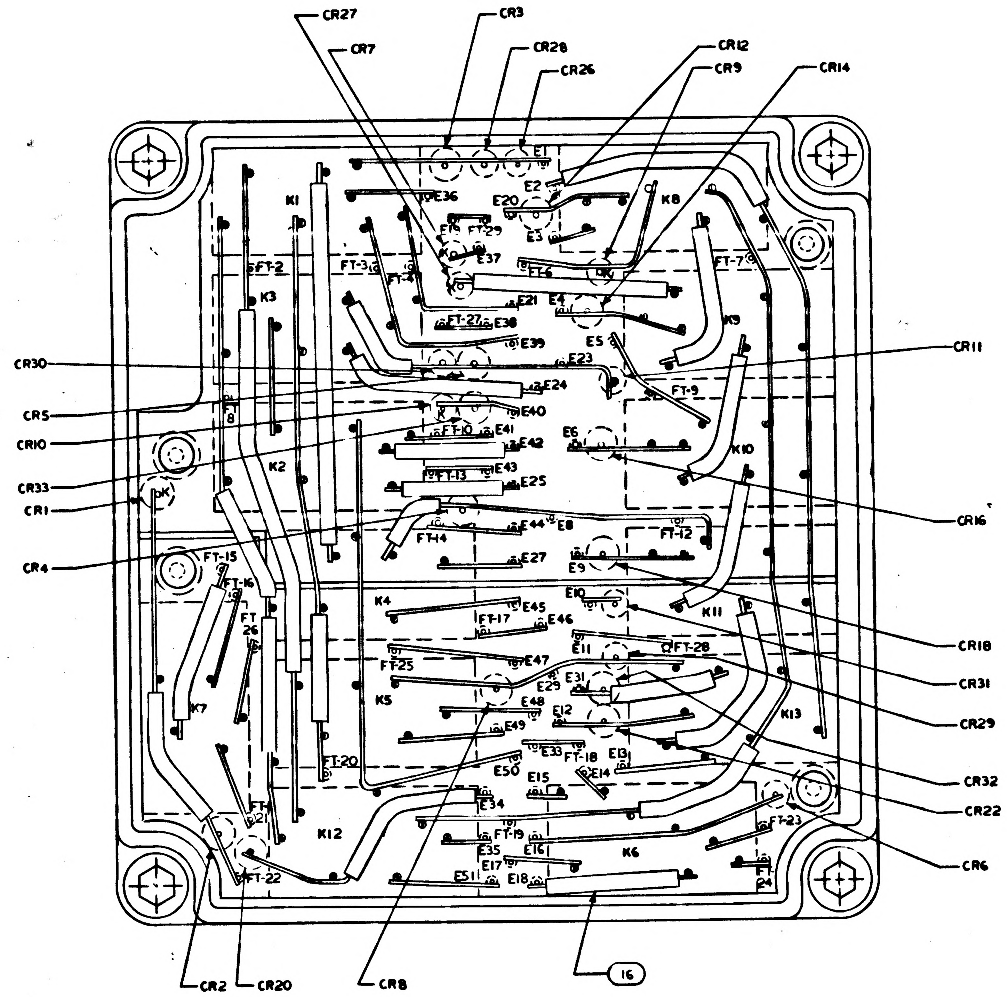

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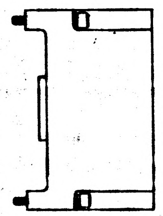

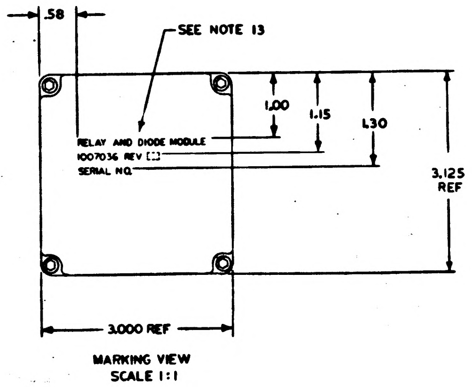

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SEE NOTE 13
RELAY AND DIODE MODULE
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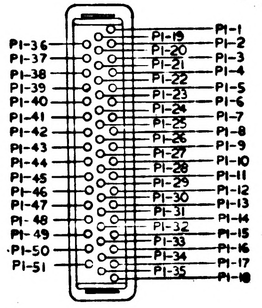
1.30
3.125 REF
3.000 REF

MARKING VIEW
SCALE 1:1



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P1-16
P1-17
P1-18

DETAIL A
CONNECTOR TERMINAL IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT(AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU)
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK(IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND (AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VARILLUM ∅ IND LAMP PWR 400 (IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT(IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE(IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT(IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND(AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND(AGC)
P1-39	E39	MODE LAMP TEST (G & N PANEL)
P1-40	E40	BACK UP ELECTRONICS RELAY (PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+ 28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL (IMU CONT)

REV F REPLACES REV E

MASTER

CTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-2	WIRE, ELECTRICAL	15
AR	1006757-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC HD, EXT RELIEVED BODY	11
11	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1006772-3	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007059	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± # DECIMALS ± .03 ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN J.F. [illegible] DATE 9/16/63
CHECKED R.P. Kingsbury
APPROVAL N. Sears 9-16-63
APPROVAL L.C. Smith 9-17-63
NASA APPROVAL
MIT APPROVAL [illegible] 9/17/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

RELAY AND DIODE MODULE
ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO. 1007036
SCALE 4/1
WT
SHEET 1 OF 1

1007036 | F

MASTER

INCHES
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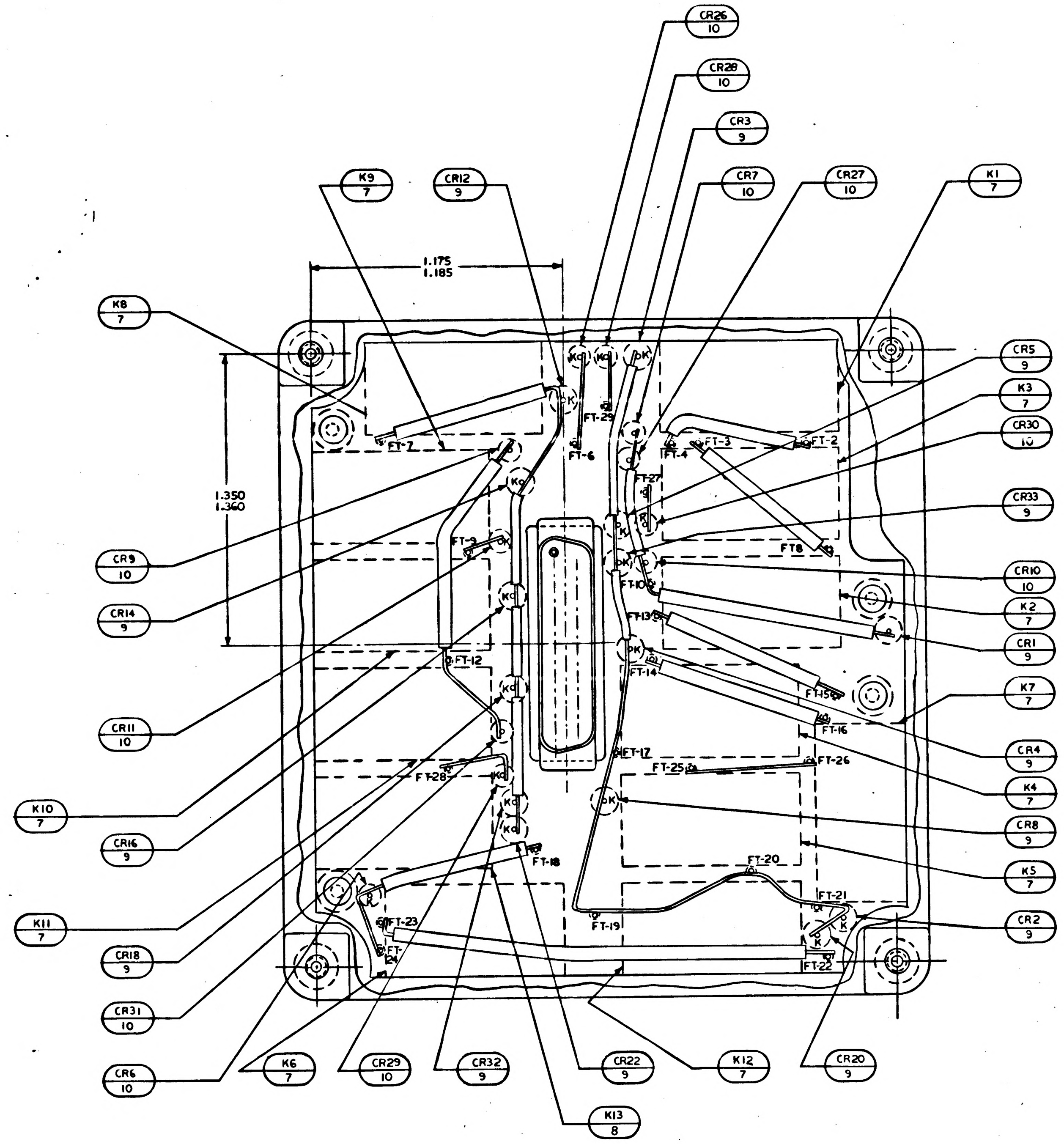
PHOTOGRAPHIC SCALE ONLY

F-2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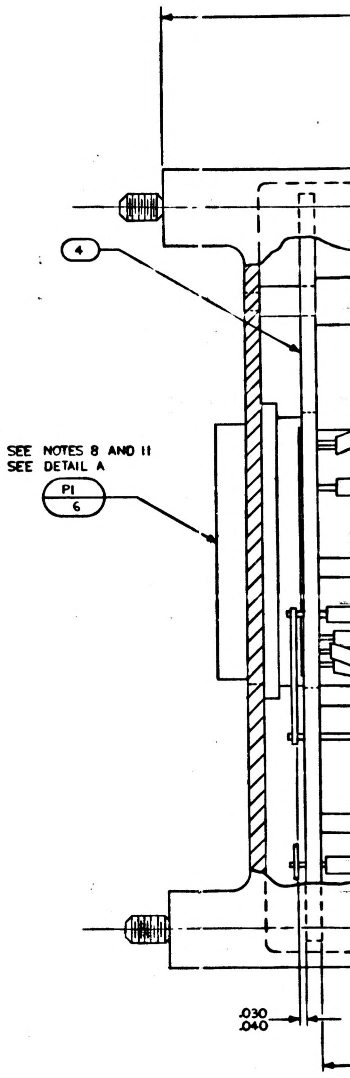
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SEE DETAIL A
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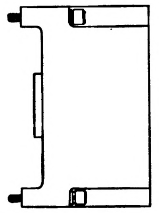

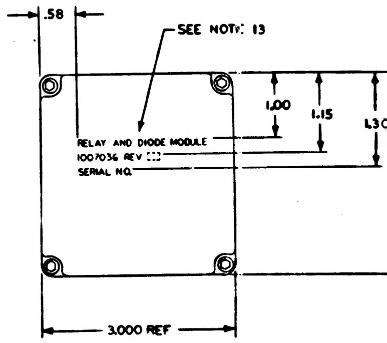
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SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV
SERIAL NO.
1.00
1.15
1.30
3.000 REF

MARKING VIEW
SCALE 1:1

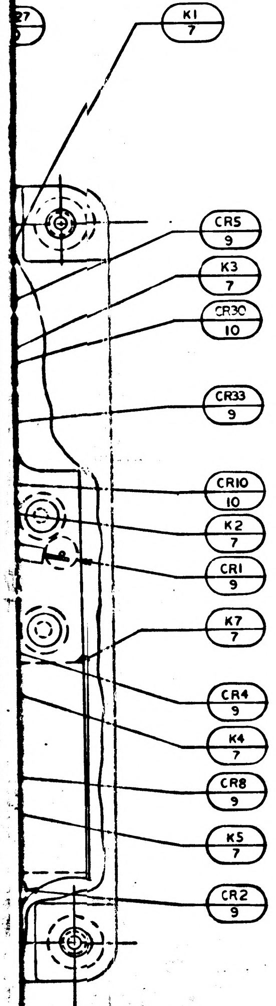
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FT DENOTES FEED THRU
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. AR DENOTES AS REQUIRED
6. BOND FIND NO 7 AND FIND NO 8 TO FIND NO 4 PER ND1002004
7. BOND FIND NO 5 TO FIND NO 4 PER ND 1002004
8. SPARE LEADS ON FIND NO 6 TO BE CUT .030 TO .090 LENGTH
9. AFTER WELDING TRIM ALL LEADS .005 TO .090 BEYOND RIBBON
10. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
11. BOND FIND NO5 AND FIND NO6 TO FIND NO1 PER ND1002004
12. ENCAPSULATE MODULE PER ND1002106
13. SERIALIZE AND MARK .060 TO .100 HIGH BLACK PER ND 1002023
14. ALL UNUSED RELAY LEADS TO BE CUT 030/090 ABOVE RELAY CASE
15. INSULATION SLEEVING TO BE USED ON DIODE LEADS
16. INSULATION SLEEVING TO BE USED ON RELAY LEADS
17. INSULATION SLEEVING TO BE USED ON FT POINTS

1007036 | F

INCHES
PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL
F	REVISED PER TDRR 03199	[illegible]	[illegible]
G	REVISED PER TDRR 03765	[illegible]	[illegible]
H	REVISED PER TDRR 05098	11-22-[illegible]	[illegible]



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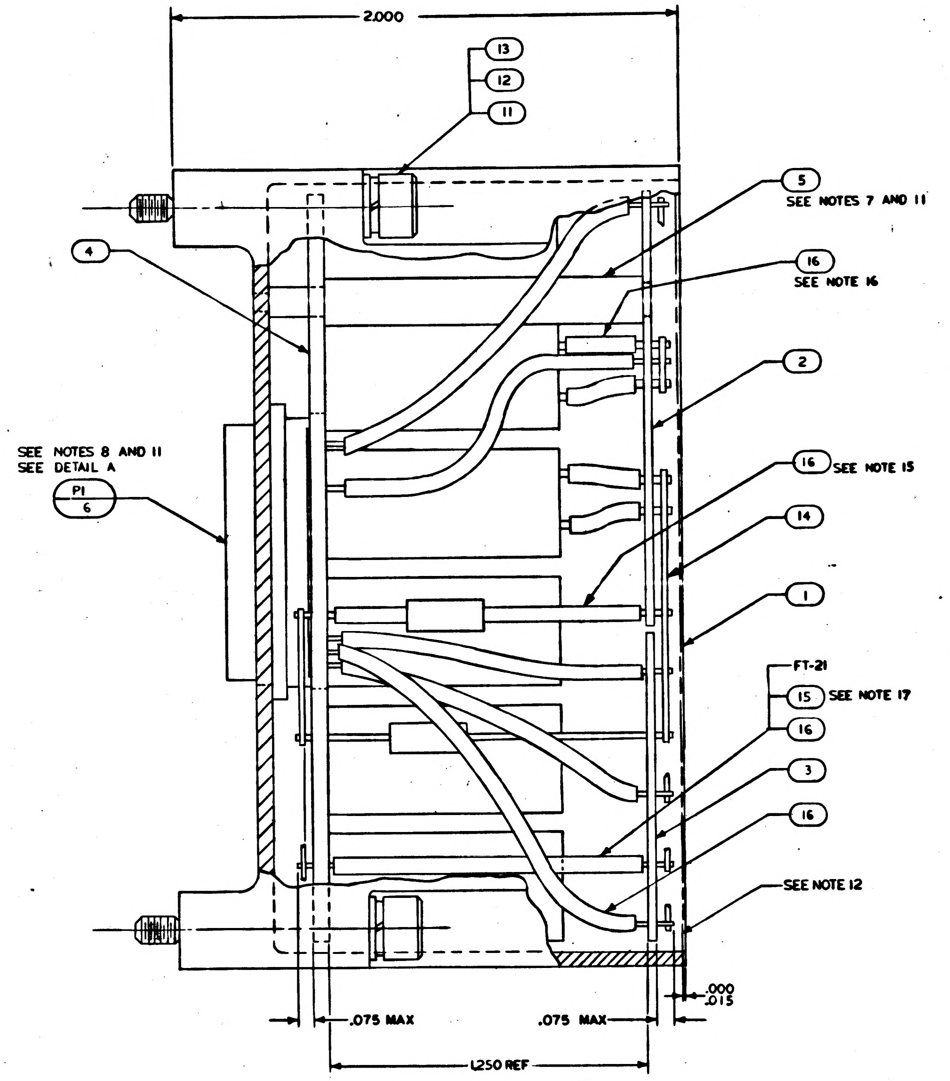

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SEE NOTES 7 AND 11
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SEE NOTE 16
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SEE NOTES 8 AND 11
SEE DETAIL A
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SEE NOTE 15
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SEE NOTE 17
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SEE NOTE 12
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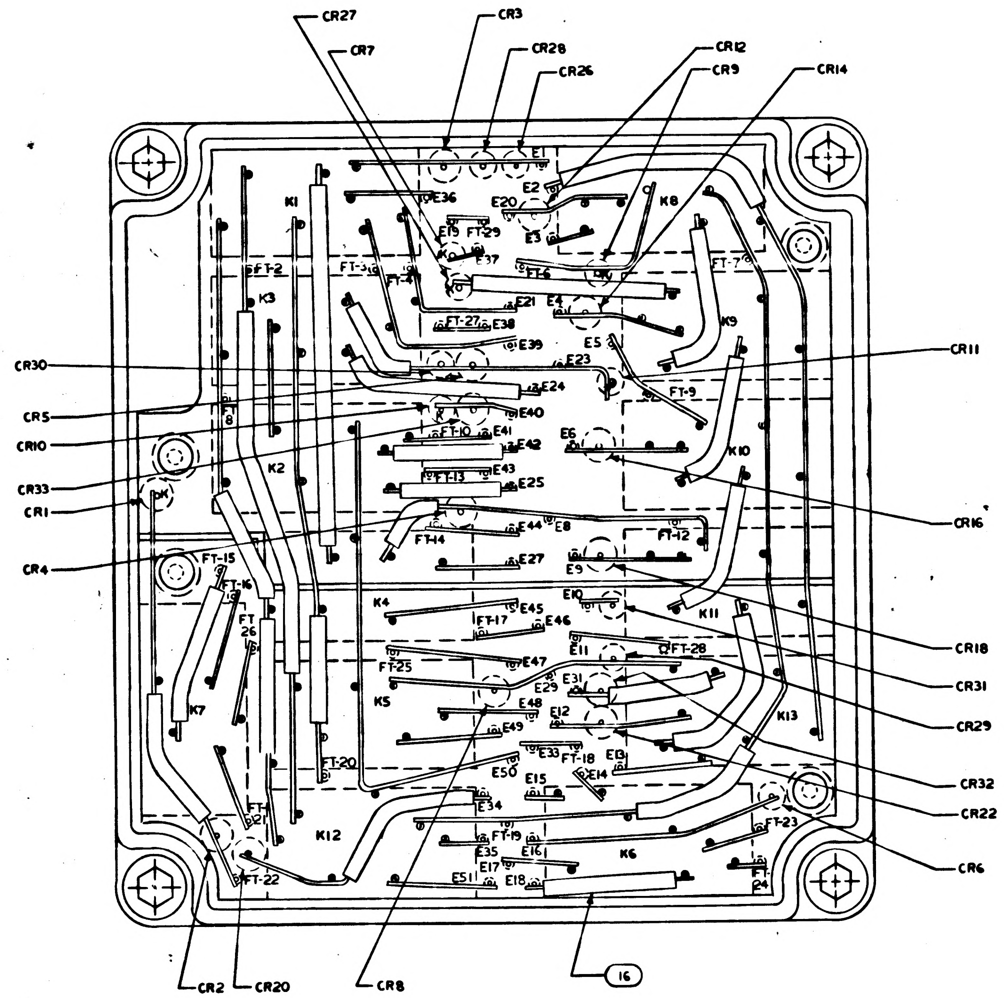

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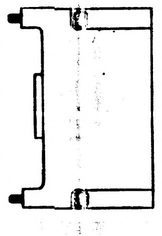
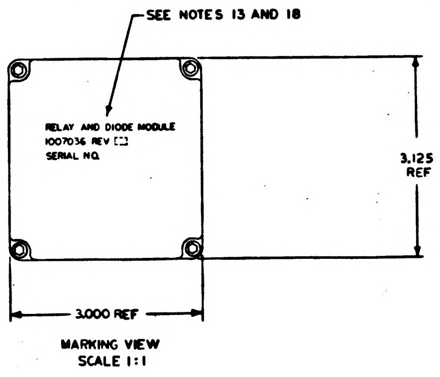
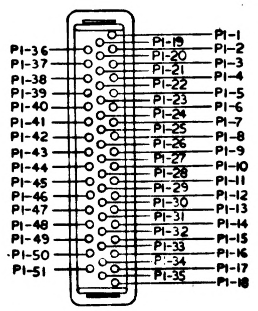




SEE NOTES 13 AND 18
RELAY AND DIODE MODULE
1007036 REV
SERIAL NO.
3.125 REF
3.000 REF

MARKING VIEW
SCALE 1:1



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P1-16
P1-17
P1-18

DETAIL A

CONNECTOR TERMINAL
IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT(AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU)
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK(IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND (AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VARILLUM & IND LAMP PWR 400 (IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT(IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE(IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT(IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND (AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND (AGC)
P1-39	E39	MODE LAMP TEST (G & N PANEL)
P1-40	E40	BACK UP ELECTRONICS RELAY (PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL (IMU CONT)

REV F REPLACES REV E

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-2	WIRE, ELECTRICAL	15
AR	1006757-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC HD, EXT RELIEVED BODY	11
11	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1006772-3	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007059	

APPLICATION

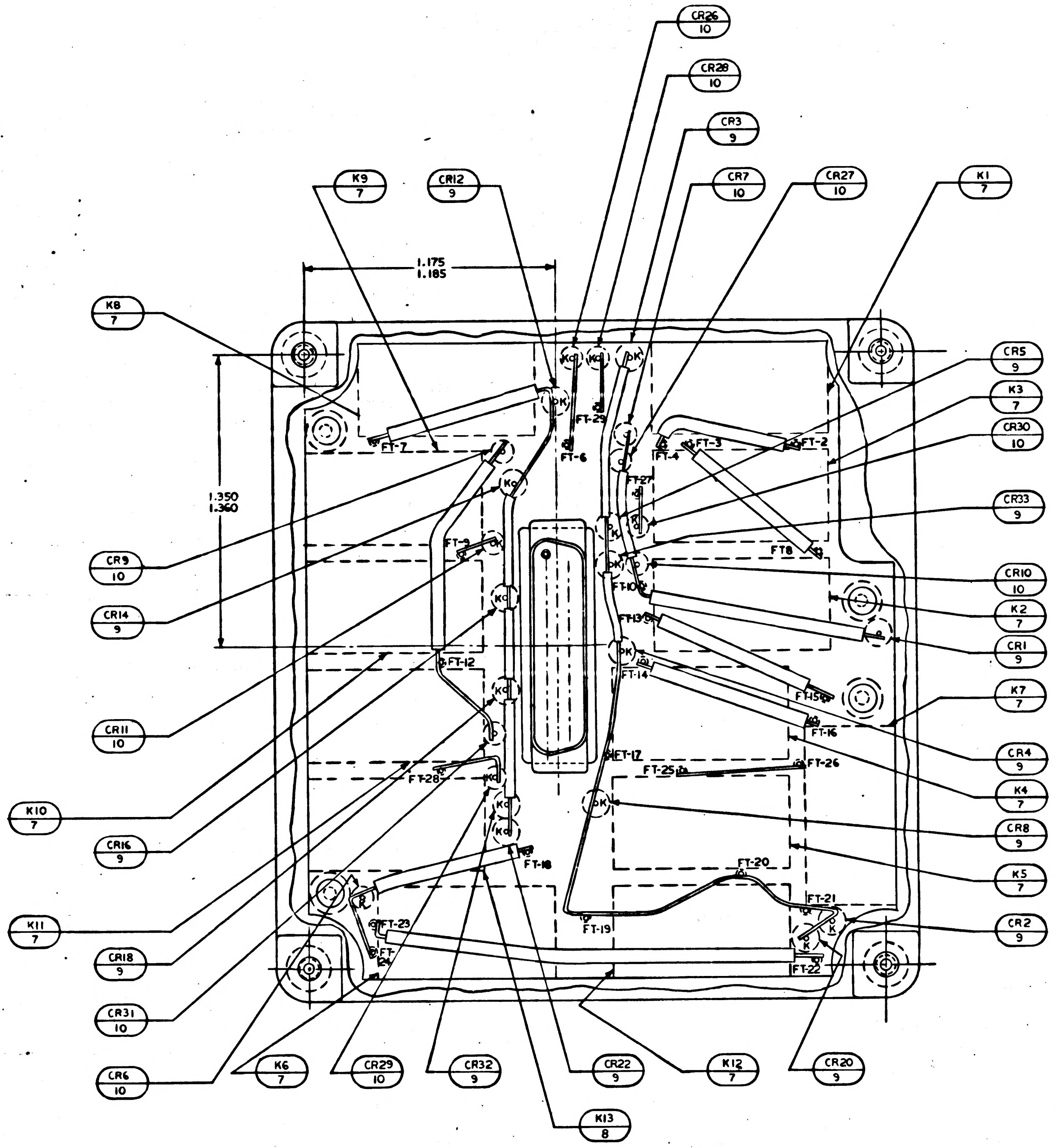
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±# DECIMALS ±.03 ANGLES ±#
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO. CONTRACT
DRAWN J.F. [illegible] DATE 9/16/63
CHECKED [illegible]
APPROVAL [illegible] 9-16-63
APPROVAL [illegible] 9-17-63
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 9/17/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

RELAY AND DIODE MODULE ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO. 1007036
SCALE 4/1
WT
SHEET 1 OF 1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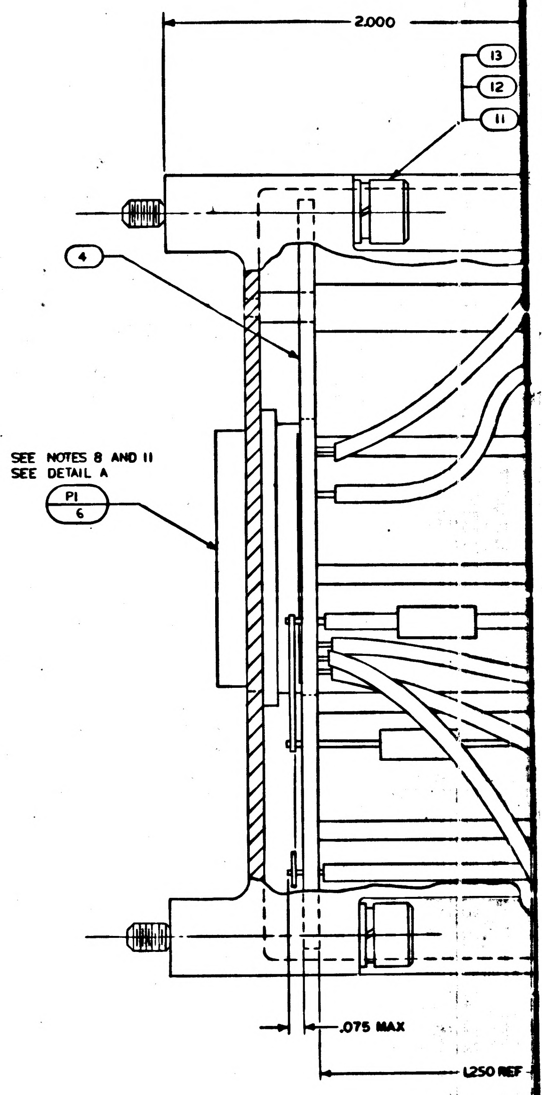
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SEE NOTES 8 AND 11
SEE DETAIL A
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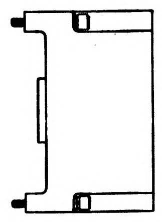
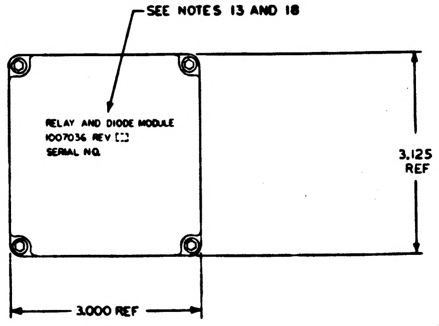


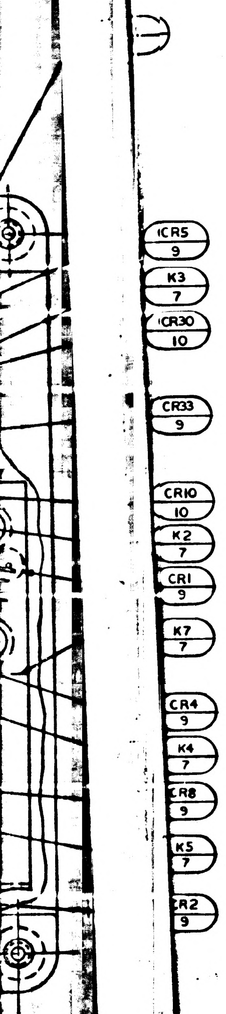

SEE NOTES 13 AND 18
RELAY AND DIODE MODULE
1007036 REV [ ]
SERIAL NO.
3.125
REF
3.000 REF

MARKING VIEW
SCALE 1:1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FT DENOTES FEED THRU
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. AR DENOTES AS REQUIRED
6. BOND FIND NO 7 AND FIND NO 8 TO FIND NO 4 PER ND1002004
7. BOND FIND NO 5 TO FIND NO 4 PER ND 1002004
8. SPARE LEADS ON FIND NO 6 TO BE CUT .030 TO .090 LENGTH
9. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN
10. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
11. BOND FIND NO5 AND FIND NO6 TO FIND NO1 PER ND1002004
12. ENCAPSULATE MODULE PER ND1002106
13. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND 1002023
14. ALL UNUSED RELAY LEADS TO BE CUT 030/090 ABOVE RELAY CASE
15. INSULATION SLEEVING TO BE USED ON DIODE LEADS
16. INSULATION SLEEVING TO BE USED ON RELAY LEADS
17. INSULATION SLEEVING TO BE USED ON FT POINTS
18. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
19. INSPECT PER PS.1007036
20. TEST PER FTM 1007036

SYM	DESCRIPTION	DATE	APPROVAL
F	REVISED PER TDRR 03199	[illegible]	[illegible]
G	REVISED PER TDRR 03765	[illegible]	[illegible]
H	REVISED PER TDRR 05098	[illegible]	[illegible]
J	REVISED PER TDRR 05704	[illegible]	[illegible]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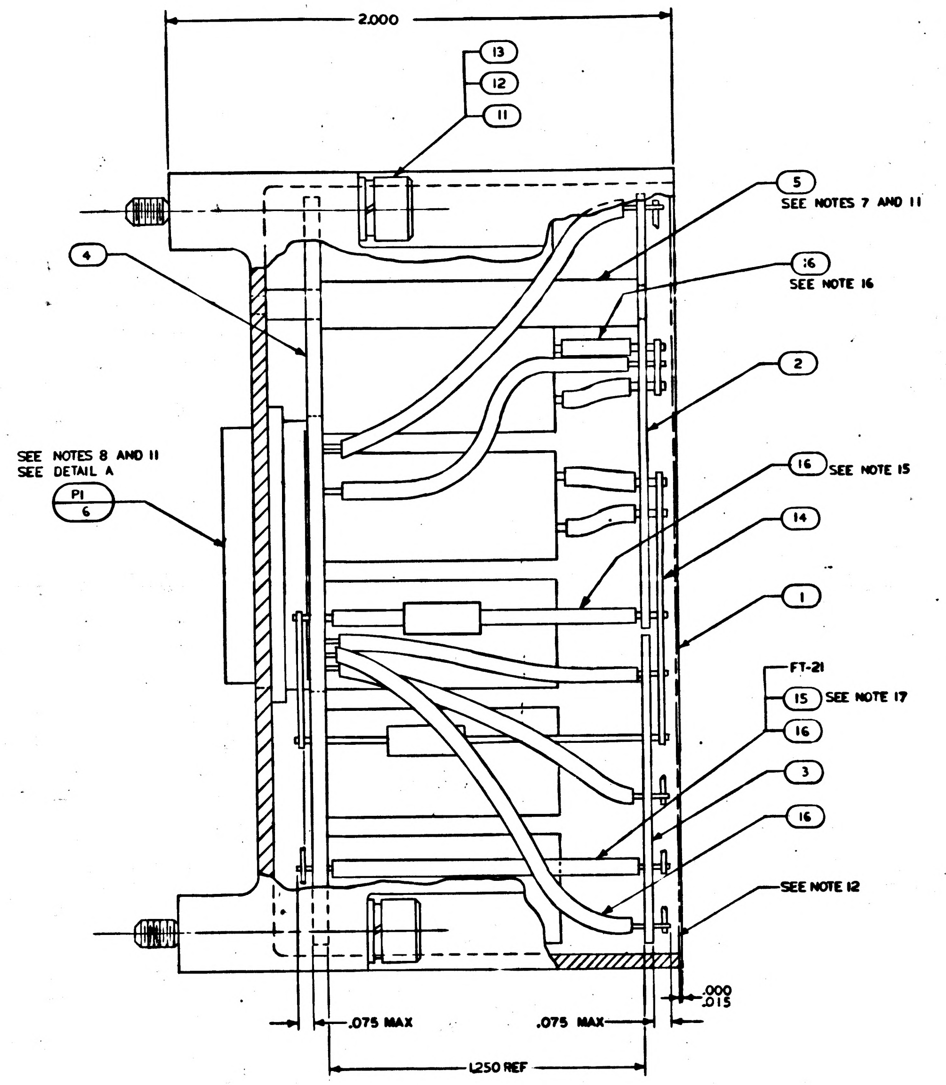
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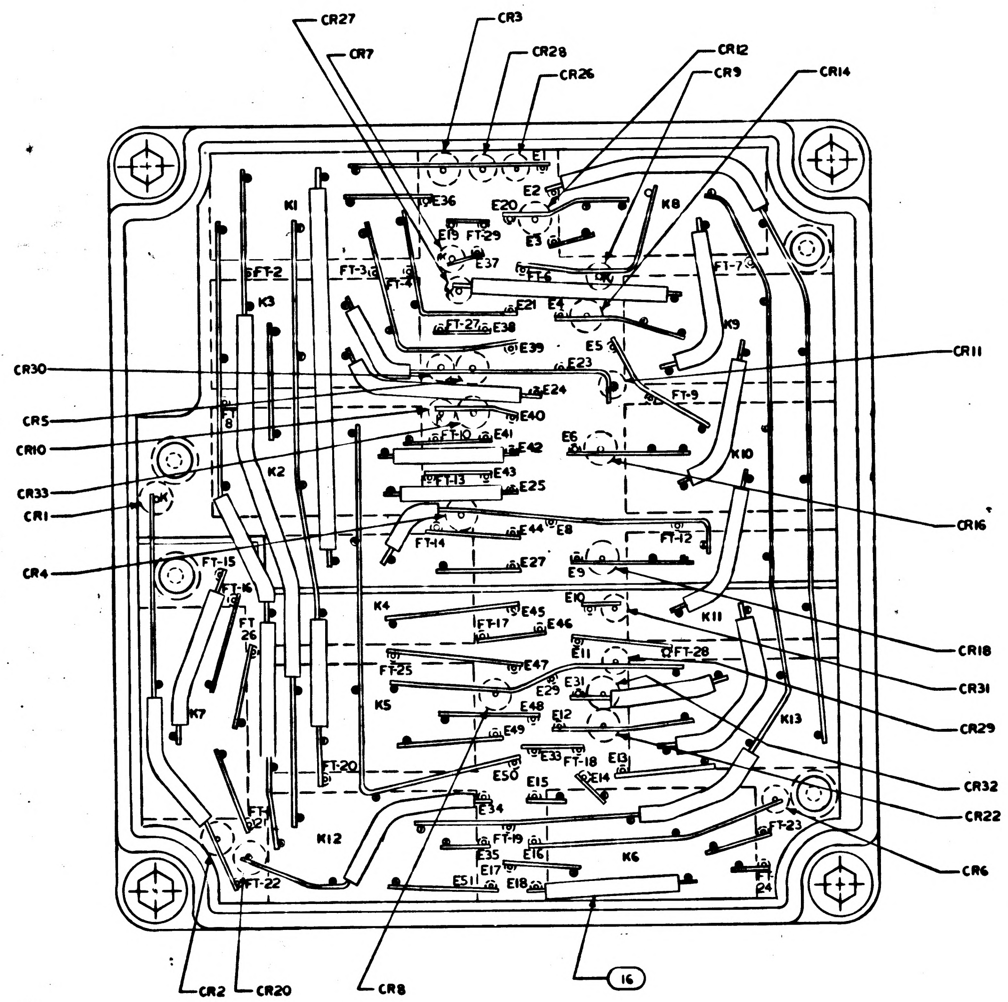
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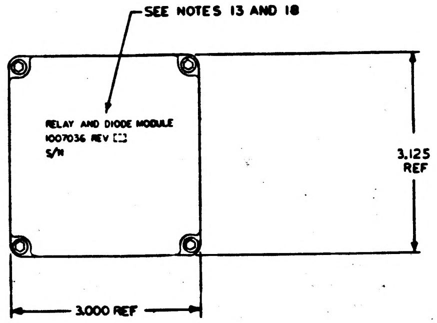
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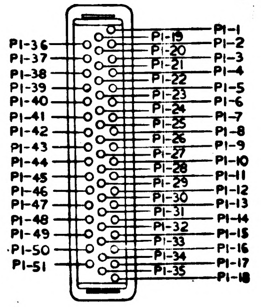
RELAY AND DIODE MODULE
1007036 REV [ ]
S/N
3.125 REF
3.000 REF

MARKING VIEW
SCALE 1:1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P1-16
P1-17
P1-18

DETAIL A

CONNECTOR TERMINAL
IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT(AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU)
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK (IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND (AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VARILLUM & IND LAMP PWR 400 (IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT (IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE (IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT (IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND (AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND (AGC)
P1-39	E39	MODE LAMP TEST (G & N PANEL)
P1-40	E40	BACK UP ELECTRONICS RELAY (PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL (IMU CONT)

REV F REPLACES REV E

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-2	WIRE, ELECTRICAL	15
AR	1006757-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC HD, EXT RELIEVED BODY	11
11	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1006772-3	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007059	

APPLICATION

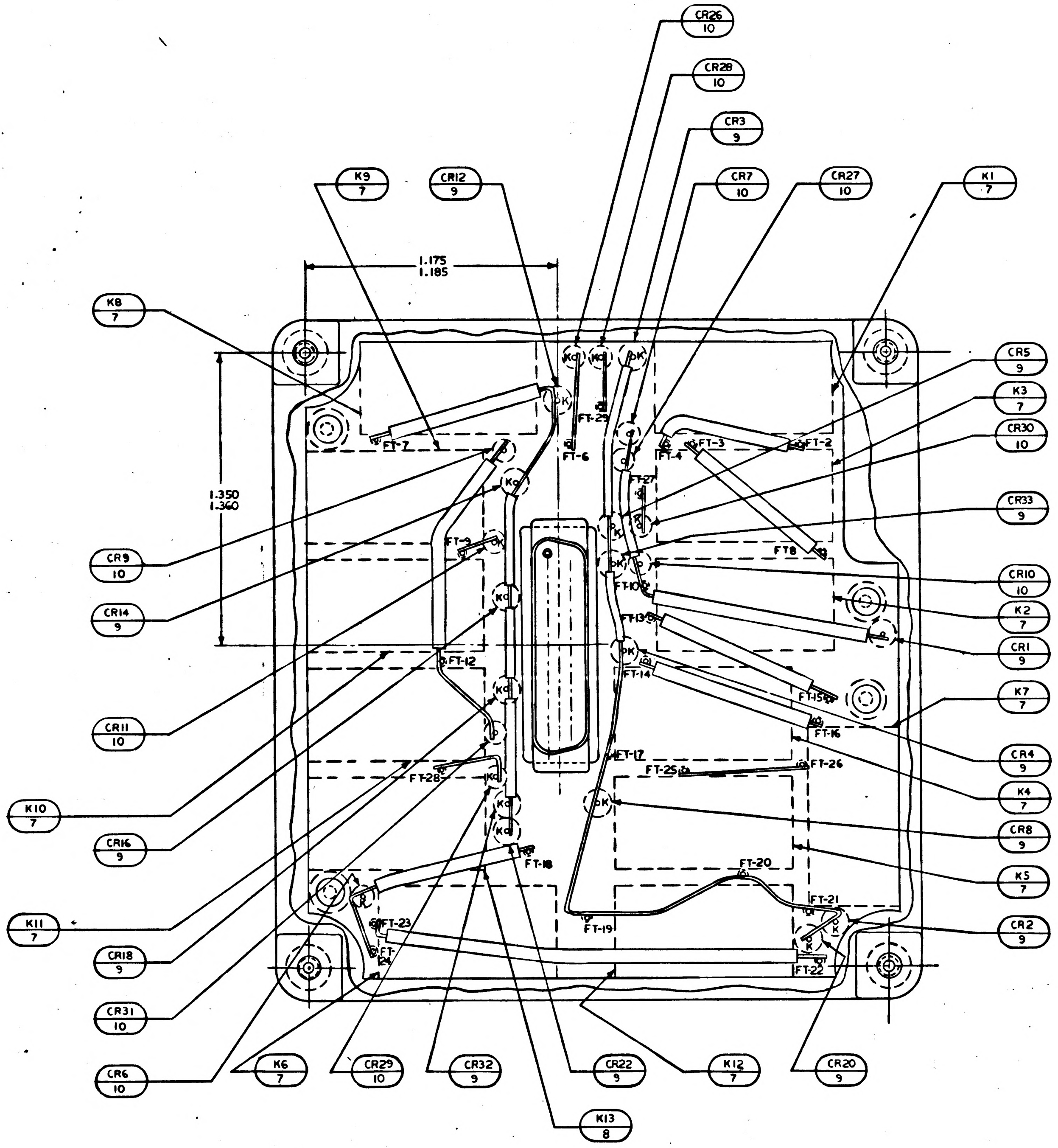
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±# DECIMALS ±.03 ANGLES ±#
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT
DRAWN J.F. [illegible] DATE 9/16/63
CHECKED R.P. Kingsbury
APPROVAL [illegible] 9-16-63
APPROVAL L.C. Smith 9-17-63
NASA APPROVAL
MIT APPROVAL [illegible] 9/17/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

RELAY AND DIODE MODULE
ASSEMBLY

CODE IDENT NO
SIZE J
NASA DRAWING NO. 1007036
SCALE 4/1
WT
SHEET 1 OF 1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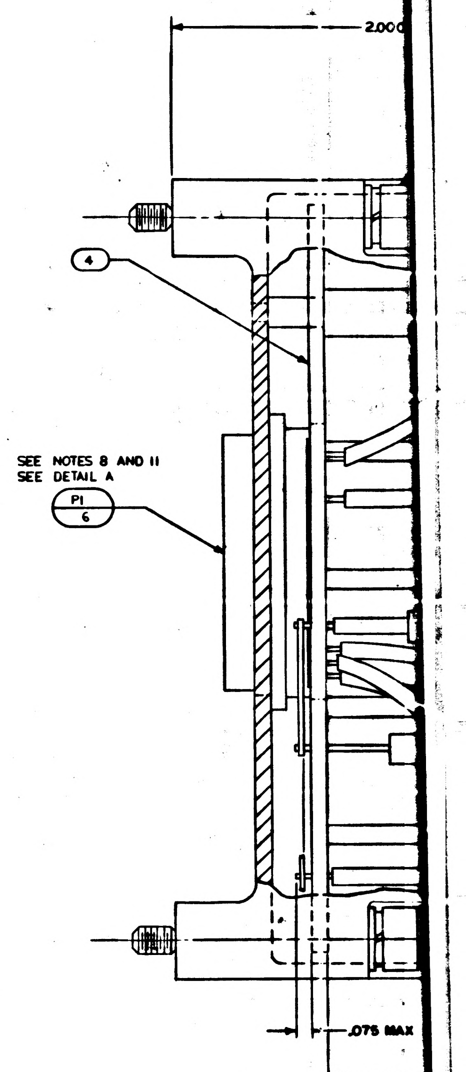
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SEE DETAIL A
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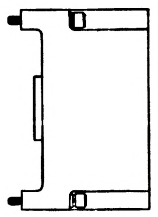
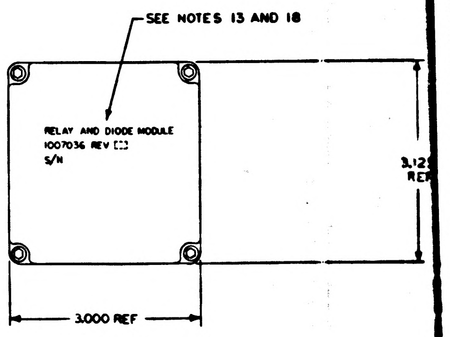


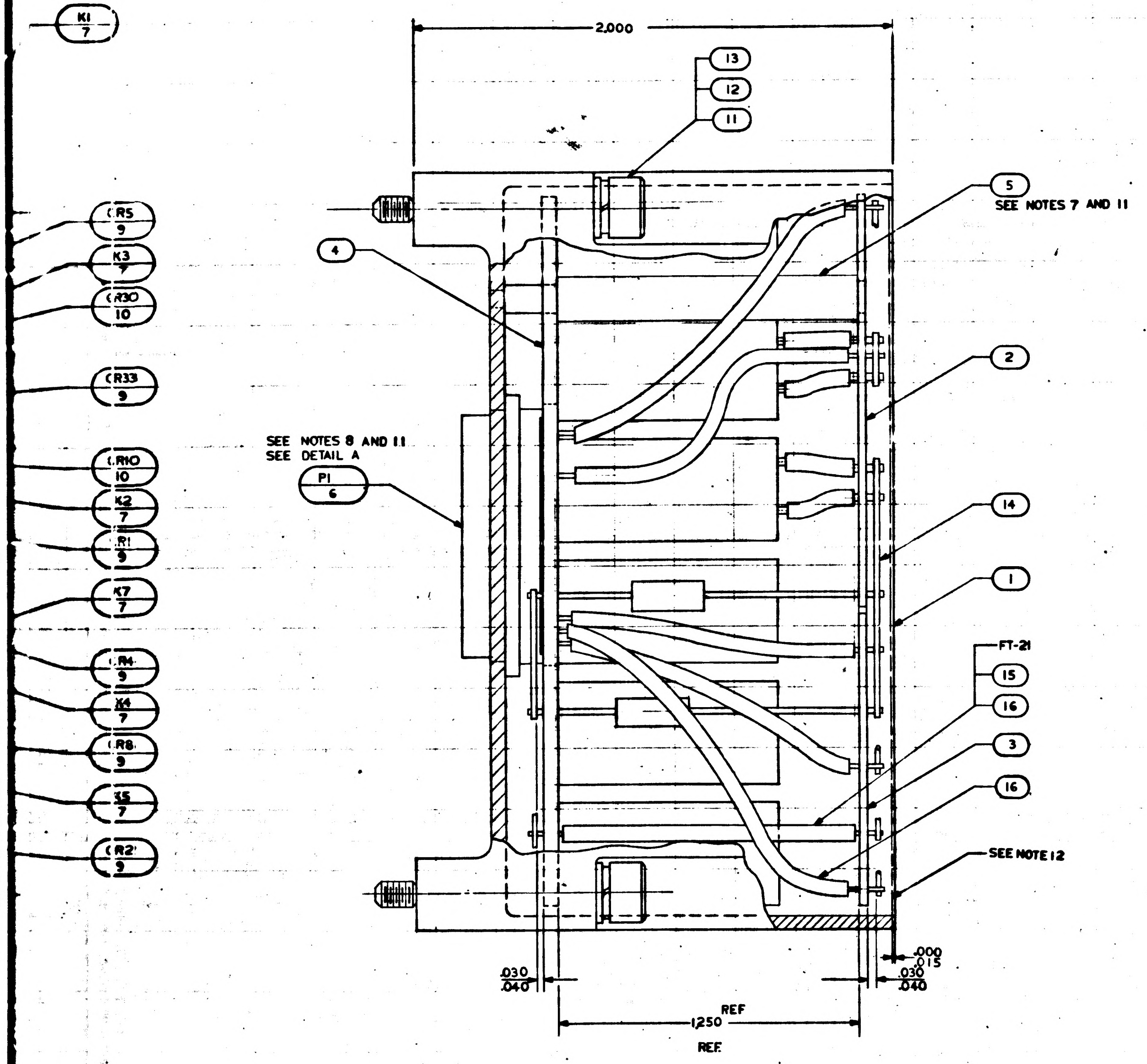

SEE NOTES 13 AND 18
RELAY AND DIODE MODULE
1007036 REV [ ]
S/N
3.12
REF
3.000 REF

MARKING VIEW
SCALE 1:1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FT DENOTES FEED THRU
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. AR DENOTES AS REQUIRED
6. BOND FIND NO 7 AND FIND NO 8 TO FIND NO 4 PER ND1002004
7. BOND FIND NO 5 TO FIND NO 4 PER ND 1002004
8. SPARE LEADS ON FIND NO 6 TO BE CUT .030 TO .090 LENGTH
9. AFTER WELDING ALL LEADS MUST EXTEND BEYOND RIBBON .010 MIN
10. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
11. BOND FIND NO5 AND FIND NO6 TO FIND NO1 PER ND1002004
12. ENCAPSULATE MODULE PER ND1002106
13. SERIALIZE AND MARK .100 TO .140 HIGH BLACK PER ND 1002023
14. ALL UNUSED RELAY LEADS TO BE CUT 030/090 ABOVE RELAY CASE
15. INSULATION SLEEVING TO BE USED ON DIODE LEADS
16. INSULATION SLEEVING TO BE USED ON RELAY LEADS
17. INSULATION SLEEVING TO BE USED ON FT POINTS
18. PIECEMARK TO BE CENTRALLY LOCATED ON SURFACE INDICATED
19. INSPECT PER PS.1007036
20. TEST PER FTM 1007036

1007036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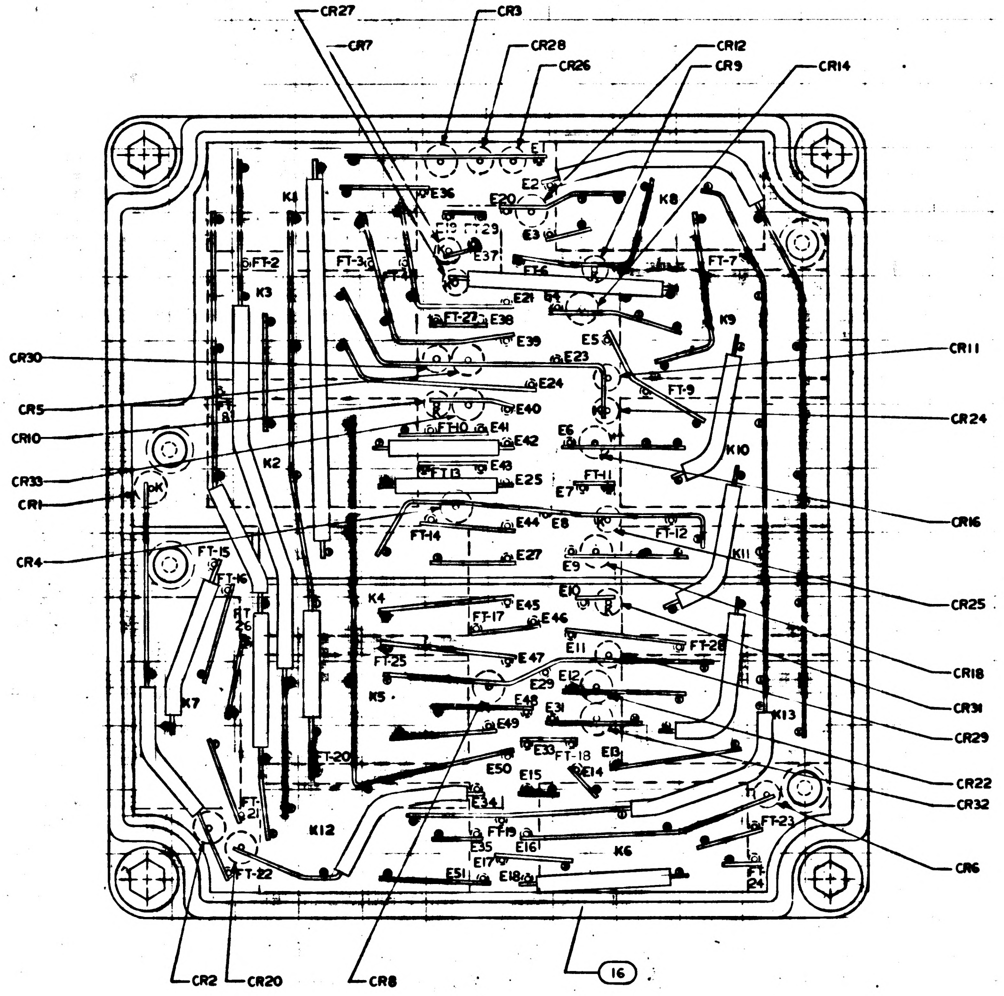
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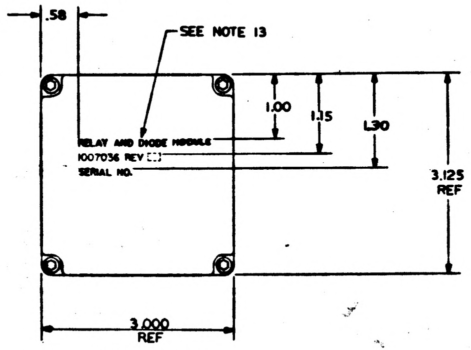
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RELAY AND DIODE MODULE
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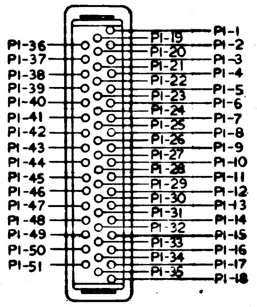
MARKING VIEW
SCALE 1:1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P1-18

DETAIL A

CONNECTOR TERMINAL
IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT (AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE (IMU
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-7	E7	DAC INHIBIT (PSA)
P1-8	E8	FINE ALIGN RELAY CONT (AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK (IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND (AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VAR ILLUM & IND LAMP PWR 400 (IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT (IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT (IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE (IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT (IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND (AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND (AGC)
P1-39	E39	MODE LAMP TEST (GEN PANEL)
P1-40	E40	BACK-UP ELECTRONICS RELAY (PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+ 28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT (IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL (IMU CONT)

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-8	WIRE, ELECTRICAL	15
AR	1006787-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC HD, EXT RELIEVED BODY	11
13	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1010436-1	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1

LIST OF MATERIALS

1007059	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±# DECIMALS ±.03 ANGLES ±#
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

M I T
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN L. J. BERKELEY DATE
CHECKED E. P. Kingsbury
APPROVAL 7-1-65
APPROVAL S. C. Smith 7-2-65
NASA APPROVAL 7/2/65
MIT APPROVAL W Kupfer 2 July 65

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

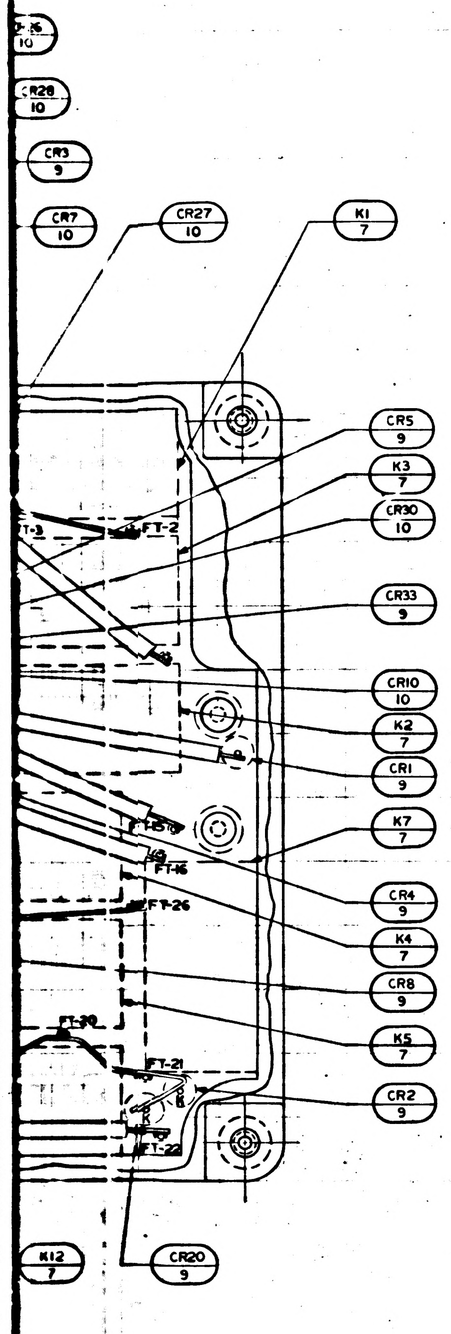
RELAY AND DIODE MODULE
ASSEMBLY

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007036
SCALE 4/1
WT
SHEET 1 OF 1

1007036

INCHES
PHOTOGRAPHIC SCALE ONLY

E3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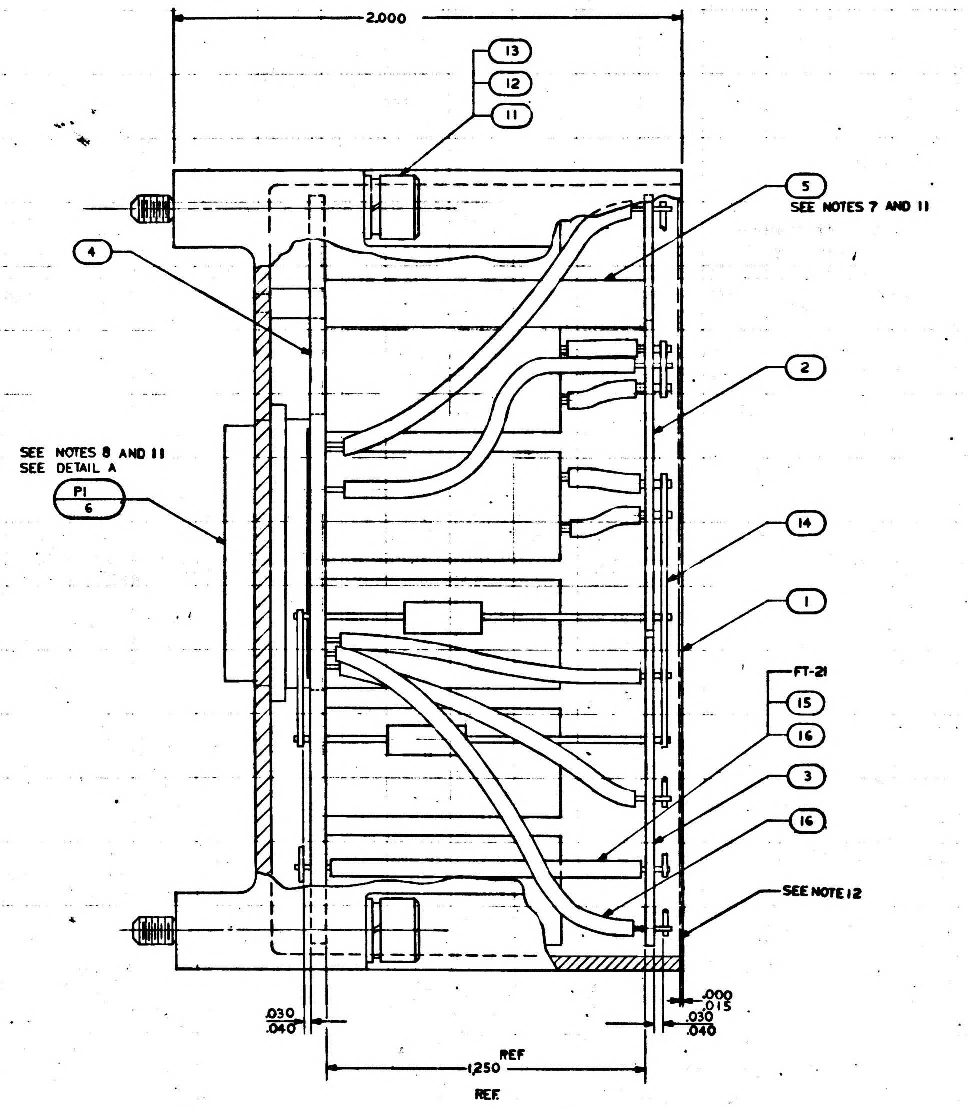
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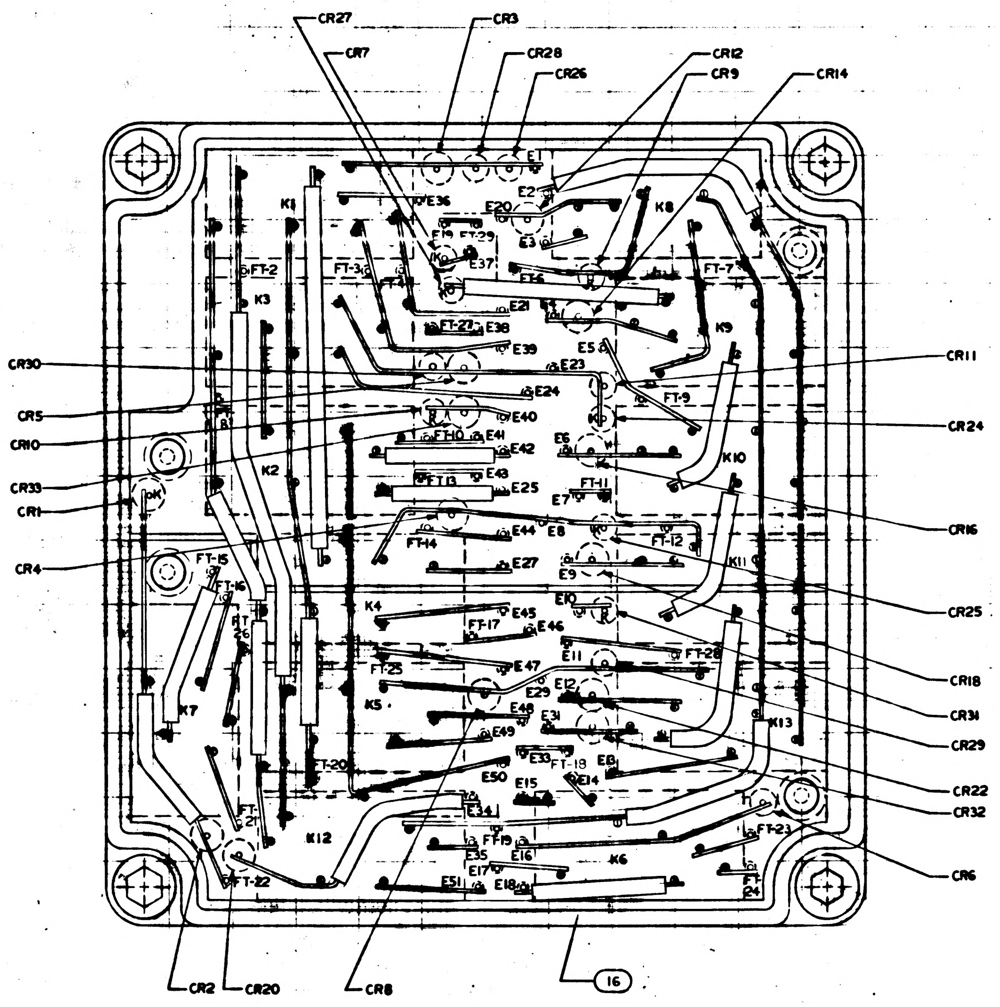
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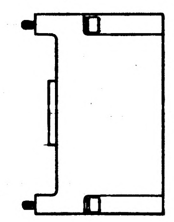

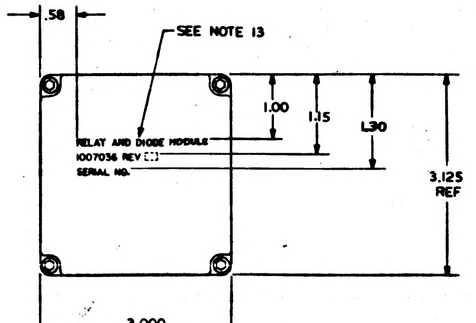
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SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV [ ]
SERIAL NO.
1.00
1.15
1.30
3.125
REF
3.000
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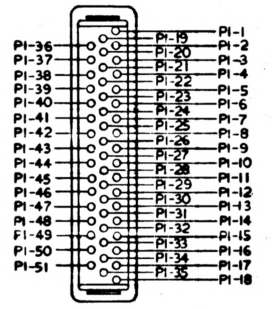
MARKING VIEW
SCALE 1:1


P1-1
P1-2
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P1-41
P1-42
P1-43
P1-44
P1-45
P1-46
P1-47
P1-48
P1-49
P1-50
P1-51

DETAIL A

CONNECTOR TERMINAL IDENTIFICATION VIEW

WIRING DATA

FROM CIRCUIT POINT	TO CIRCUIT POINT	CIRCUIT FUNCTION
P1-1	E1	ZERO ENCODER RELAY CONT(AGC)
P1-2	E2	MANUAL MODE RELAY COMMON LINE(IMU)
P1-3	E3	ATTITUDE CONTROL SIGNAL
P1-4	E4	COARSE ALIGN RELAY CONT
P1-5	E5	MANUAL ALIGN (IMU CONT PNL)
P1-6	E6	CDU MANUAL RELAY CONT
P1-7	E7	DAC INHIBIT(PSA)
P1-8	E8	FINE ALIGN RELAY CONT(AGC)
P1-9	E9	FINE ALIGN RELAY CONT
P1-10	E10	FINE ALIGN RELAY COMMAND (AGC)
P1-11	E11	ENTRY RELAY COMMAND (AGC)
P1-12	E12	ENTRY RELAY CONT
P1-13	E13	MODE SW INTERLOCK(IMU CONT PNL)
P1-14	E14	OVDC
P1-15	E15	TO TEMP CONT
P1-16	E16	40 SEC TIME DELAY RELAY CONT
P1-17	E17	TO TEMP CONT
P1-18	E18	TO TEMP CONT
P1-19	E19	ZERO ENCODER RELAY COMMAND(AGC)
P1-20	E20	ZERO ENCODER RELAY CONT
P1-21	E21	VAR ILLUM & IND LAMP PWR 400(IMU)
P1-22	SPARE	
P1-23	E23	CDU PANEL RELAY CONT (AGC)
P1-24	E24	CDU MANUAL LT(IMU CONT PNL)
P1-25	E25	COARSE ALIGN MODE LT(IMU CONT PNL)
P1-26	SPARE	
P1-27	E27	AGC FINE ALIGN

WIRING DATA

		CIRCUIT FUNCTION
P1-28	SPARE	
P1-29	E29	ENTRY RELAY CONT (AGC)
P1-30	SPARE	
P1-31	E31	ENTRY RELAY CONT RESET
P1-32	SPARE	
P1-33	E33	MODE RELAY COMMON LINE(IMU CONT)
P1-34	E34	ATTITUDE CONT RELAY CONT
P1-35	E35	ATTITUDE CONT MODE SW IND (AGC)
P1-36	E36	ZERO ENCODER MODE LT(IMU CONT PNL)
P1-37	E37	COARSE ALIGN RELAY COMMAND(AGC)
P1-38	E38	CDU MANUAL RELAY COMMAND(AGC)
P1-39	E39	MODE LAMP TEST (GEN PANEL)
P1-40	E40	BACK-UP ELECTRONICS RELAY(PSA)
P1-41	E41	COARSE ALIGN RELAY
P1-42	E42	AGC COARSE ALIGN
P1-43	E43	6 V 400 ~ HI
P1-44	E44	IMU DELAY LT
P1-45	E45	FINE ALIGN MODE LT (IMU CONT PNL)
P1-46	E46	+ 28 VDC (TO TEMP CONT)
P1-47	E47	CONDITION LAMP TEST
P1-48	E48	AGC HI SPEED ROLL (AGC)
P1-49	E49	ENTRY MODE LT(IMU CONT PNL)
P1-50	E50	AGC COMMON (IMU CONT PNL)
P1-51	E51	ATTITUDE CONT LT SIGNAL(IMU CONT)

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
☒	1014623	SCHEMATIC	REF
AR	1006776-21	INSULATION, SLEEVING, ELEC	16
AR	1006787-6	WIRE, ELECTRICAL	15
AR	1006787-1	WIRE, ELECTRICAL	14
4	MS35338-78	WASHER, LOCK	13
4	MS15795-303	WASHER, FLAT	12
4	1008069-2	SCREW, SOC HD, EXT RELIEVED BODY	11
13	1010392	DIODE	10
14	1010362-3	DIODE	9
1	1010436-1	RELAY	8
12	1010353-4	RELAY	7
1	1010615-2	CONNECTOR	6
4	1008112	SPACER, INSULATED	5
1	1008091	WIRING BOARD, BOTTOM	4
1	1008111-2	WIRING BOARD, TOP	3
1	1008111-1	WIRING BOARD, TOP	2
1	1008082	HOUSING	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007059	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± #   DECIMALS ± .03   ANGLES ± #
DO NOT SCALE THIS DRAWING
MATERIAL #
HEAT TREATMENT #
FINAL FINISH #

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DWG. NO.   CONTRACT
DRAWN L. J. BERKELEY   DATE
CHECKED E. P. Kingsbury
APPROVAL 7-1-63
APPROVAL 7-2-63
NASA APPROVAL
MIT APPROVAL W Kupfer 2 July 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

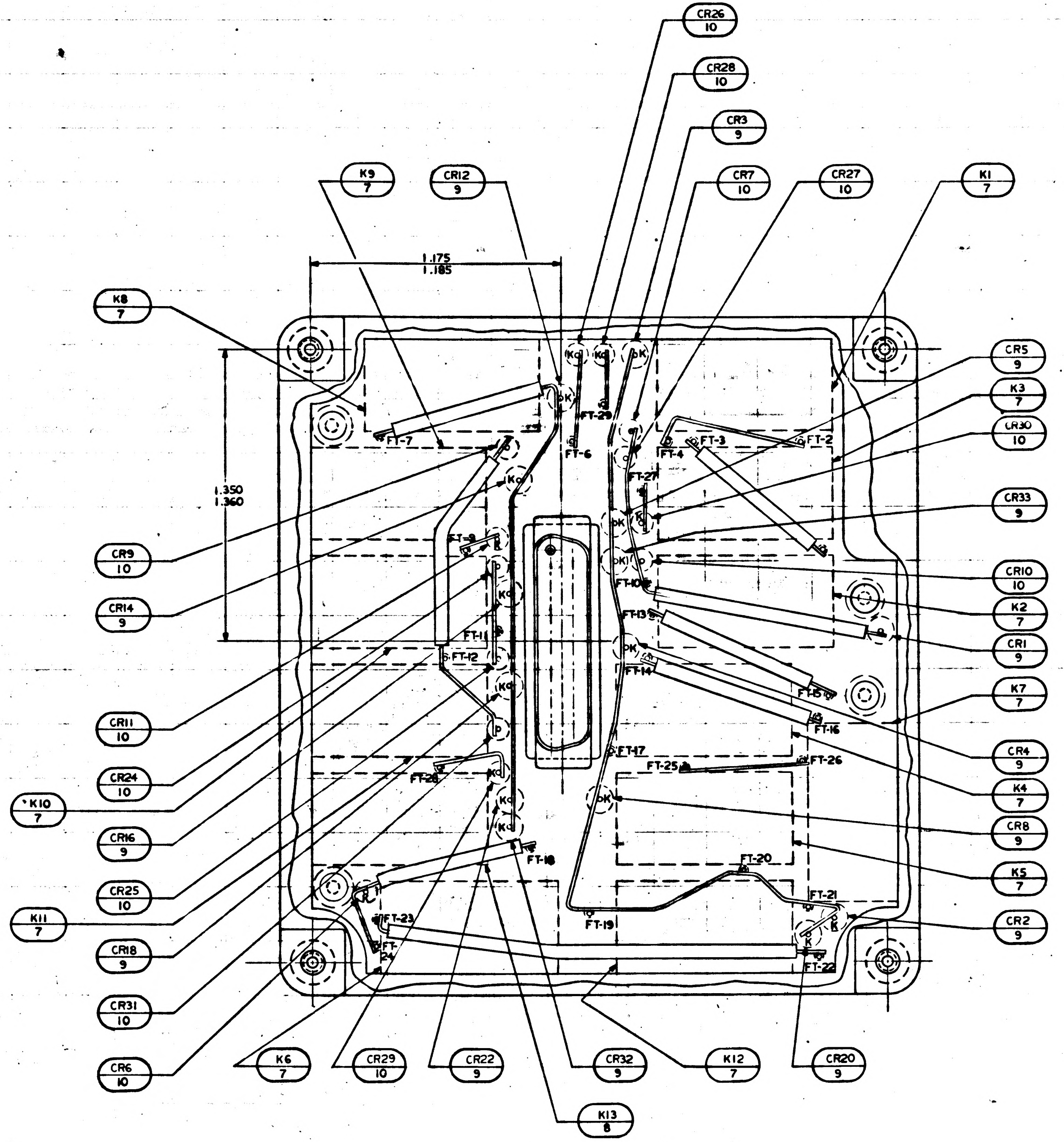
RELAY AND DIODE MODULE ASSEMBLY

CODE IDENT NO.   SIZE J   NASA DRAWING NO. 1007036
SCALE 4/1   WT   SHEET 1 OF 1

INCHES
0 2
PHOTOGRAPHIC SCALE ONLY

F-2

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.


CR26 10
CR28 10
CR3 9
K9 7
CR12 9
CR7 10
CR27 10
K1 7
1.175
1.185
K8 7
1.350
1.360
CR5 9
K3 7
CR30 10
CR33 9
CR9 10
CR14 9
CR10 10
K2 7
CR1 9
K7 7
CR11 10
CR24 10
K10 7
CR4 9
K4 7
CR16 9
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CR25 10
K11 7
CR18 9
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CR32 9
K12 7
CR20 9
K13 8
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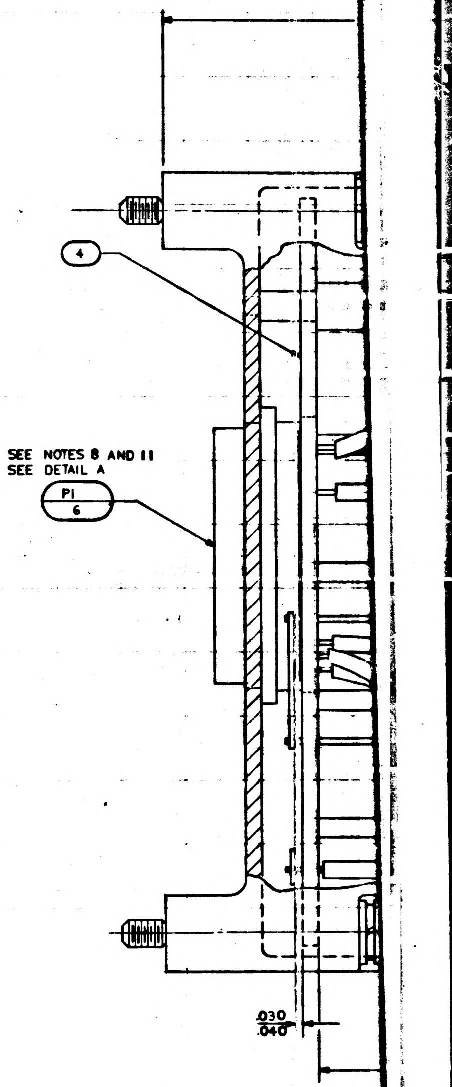
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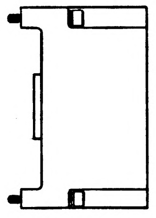
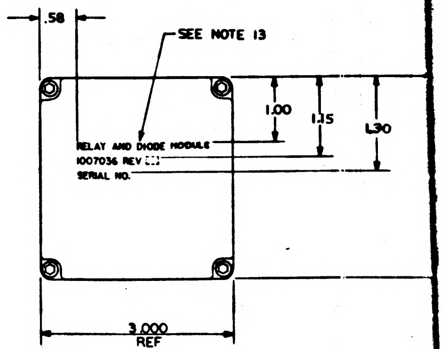
SEE NOTES 8 AND 11
SEE DETAIL A
P1 6
.030
.040

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SEE NOTE 13
RELAY AND DIODE MODULE
1007036 REV
SERIAL NO.
1.00
1.15
1.30
3.000
REF

MARKING VIEW
SCALE 1:1

NOTES.

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. FT DENOTES FEED THRU
3. ALL WELDS TO BE PER ND1002005
4. K DENOTES CATHODE END OF DIODE
5. AR DENOTES AS REQUIRED
6. BOND FIND NUMBERS 7 AND 8 TO FIND NO. 4 PER ND1002004
7. BOND FIND NO. 5 TO FIND NO. 4 PER PER ND1002004
8. SPARE LEADS ON FIND NO.6 TO BE CUT TO .030 TO .090 LENGTH
9. AFTER WELDING TRIM ALL LEADS .005 TO .015 BEYOND RIBBON
10. DIPCOAT PER ND1002068 PRIOR TO ENCAPSULATION
11. BOND FIND NUMBERS 5 AND 6 TO FIND NO. 1 PER ND1002004
12. ENCAPSULATE MODULE PER ND1002106
13. MARK .060 TO .100 HIGH BLACK PER ND1002019
14. LEAD NO 6 ON K2 K4 AND K7 LEAD NO 2 ON K8 THRU K13 LEAD NO 7 ON K13 AND K17 AND LEAD NO 6 ON K7 TO BE CUT .030/.060 ABOVE RELAY CASE

1007036

INCHES
PHOTOGRAPHIC SCALE ONLY

F-1

APOLLO G&N Specification
PS-1007036
21 January 1964
Class A Release
TDRR 05904

PROCUREMENT SPECIFICATION

FOR

RELAY AND DIODE MODULE ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 7 inclusive.

PROCUREMENT SPECIFICATION

FOR

RELAY AND DIODE MODULE ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Relay and Diode Module Assembly for use in the APOLLO Guidance and Navigation Equipment.

W.A. Kopp Jr 22 Jan 64
MIT/IL DATE

Barnard 1/22/64
NASA/MSC APPROVAL DATE

PROCUREMENT SPECIFICATION

FOR

RELAY AND DIODE MODULE ASSEMBLY

1. SCOPE

1.1 PURPOSE. This specification establishes the requirements for the procurement of the Relay and Diode Module Assembly, Drawing 1007036, hereafter called the assembly.

2. APPLICABLE DOCUMENTS

2.1 EFFECTIVE ISSUES. The following documents of the issue in effect on the date of this specification form a part of this specification to the extent specified herein.

SPECIFICATIONS

APOLLO G&N

ND-1002210	General Specification for Procurement of APOLLO Guidance and Navigation Assemblies and Subassemblies
FTM-1007036	Final Test Method for Relay and Diode Module Assembly

STANDARDS

Military

MIL-STD-202	Test Methods for Electronic and Electrical Component Parts

DRAWINGS

APOLLO G&N

1007036	Relay and Diode Module Assembly
1014623	Relay and Diode Module Schematic Diagram

APOLLO G&N Specification
PS-1007036
21 January 1964
Class A Release
TDRR 05904

PROCUREMENT SPECIFICATION
FOR
RELAY AND DIODE MODULE ASSEMBLY

Record of Revisions

Date	Revision Letter	TDRR No.	Pages Revised	Approvals	
				MIT	NASA

This specification consists of page i to iii and 1 to 7 inclusive.

APOLLO G&N Specification
PS-1007036
21 January 1964

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FOR
RELAY AND DIODE MODULE ASSEMBLY

The purpose of this document is to establish the requirements for the procurement of the Relay and Diode Module Assembly for use in the APOLLO Guidance and Navigation Equipment.

22 Jan 64
MIT/IL DATE

1/22/64
NASA/MSC APPROVAL DATE

PREPARED BY	**TITLE**	**DATE**
E. P. Armstrong	Spec Engr Writer	12-6-63
AC Spark Plug		
EXAMINED BY	**TITLE**	**DATE**
R. E. Priest	Proj Engr	12-6-63
AC Spark Plug		
APPROVED BY	**TITLE**	**DATE**
J. F. Nevins	Asst Dir	1/20/64
MIT/IL		
APPROVED BY	**TITLE**	**DATE**
MIT/IL		
APPROVED BY	**TITLE**	**DATE**
MIT/IL		

APOLLO G&N Specification
PS-1007036
21 January 1964

PROCUREMENT SPECIFICATION

FOR

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STANDARDS

Military

MIL-STD-202	Test Methods for Electronic and Electrical Component Parts

DRAWINGS

APOLLO G&N

1007036	Relay and Diode Module Assembly
1014623	Relay and Diode Module Schematic Diagram

3. REQUIREMENTS

3.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all of the requirements of Specification ND-1002210 shall apply as requirements of this specification.

3.2 DESCRIPTION. The assembly shall function in a manner that will enable the Inertial Measurement Unit control panel or computer to command the mode of the IMU and Coupling Display Unit.

3.3 FUNCTIONAL REQUIREMENTS

3.3.1 Electrical Input. The assembly shall perform as specified herein with an input of 24 vdc to 31 vdc.

3.3.2 Continuity and DC Resistance. Continuity and dc resistance of the assembly shall be as specified in Tables I and II using Method 303 of Standard MIL-STD-202. (Reference Drawing 1014623).

3.3.3 Continuity and Relay Operation. With 24 vdc max applied to pin 46 (+), pin 13 (-), and other pins continuously or momentarily 0 vdc (-) as specified in Table II, the electrical switching of connector pins of the assembly in terms of resistance readings shall be as specified in Table II using Method 303 of Standard MIL-STD-202.

TABLE I

CONTINUITY AND DC RESISTANCE*1

FROM P1 PIN	TO P1 PIN	RESISTANCE (ohms)	FROM P1 PIN *4	TO P1 PIN *4	RESISTANCE (ohms)
39	36	0.5 max	11(+)	29(-)	100K min
39	45	↑	11(-)	29(+)	30 max *2
39	25	│	46(+)	11(-)	4K-12K *3
39	24	│	46(-)	11(+)	100 meg min
39	51	↓	46(+)	19(-)	4K-12K *3
39	49	0.5 max	46(-)	19(+)	100 meg min
21	49	100M min	46(+)	29(-)	3100±10%
21	50	↑	46(-)	29(+)	30 max *2
21	36	│	46(+)	1(-)	3100±10%
21	45	│	46(-)	1(+)	30 max *2
21	24	↓	46(+)	41(-)	3100±10%
21	25	100M min	46(-)	41(+)	1.5K-2.5K *3
19(+)	1(-)	100K min	46(+)	23(-)	3100±10%
19(-)	1(+)	30 max *2	46(-)	23(+)	30 max *2
37(+)	41(-)	100K min	46(+)	8(-)	3100±10%
37(-)	41(+)	30 max *2	46(-)	8(+)	30 max *2
40(+)	41(-)	4K-12K *3	46(+)	12(-)	1200±10%
40(-)	41(+)	30 max *2	46(-)	12(+)	30 max *2
48	50	100M min	46(+)	34(-)	3100±10%
46(-)	34(+)	30 max *2			
46(+)	9(-)	3100±10%			
46(-)	9(+)	30 max *2	44	47	0.5 max
46(+)	6(-)	3100±10%	44	43	100M min
46(-)	6(+)	30 max *2	38(+)	23(-)	100K min
46(+)	4(-)	3100±10%	38(-)	23(+)	30 max *2
46(-)	4(+)	30 max *2	27	50	100M min
46(+)	20(-)	3100±10%	10(+)	8(-)	100K min
46(-)	20(+)	30 max *2	10(-)	8(+)	30 max *2
46(+)	13(-)	100M min	5	2	100M min
46(+)	31(-)	1200±10%	5(+)	23(-)	100K min
46(-)	31(+)	30 max *2	5(-)	23(+)	30 max *2
46(+)	40(-)	4K-12K *3	35	50	100M min
46(-)	40(+)	30 max *2	2	29	↑
46(+)	14(-)	1K-6K *3	2	8	│
46(-)	14(+)	30 max *2			│
			2(-)	41(+)	↓
46	16	3100±10%	2(-)	1(+)	100M min

TABLE I (Continued)

FROM P1 PIN	TO P1 PIN	RESISTANCE (ohms)	FROM P1 PIN *4	TO P1 PIN *4	RESISTANCE (ohms)
			3	13	0.5 max
33	14	100 M min	41 (-)	14 (+)	4K-6K *3
33(+)	16(-)	100 K min	41 (+)	14 (-)	30 max *2
33(-)	16 (+)	30 max *2			
18	17	0.5 max			
18	15	100 M min			

*1. K-13 must be in the reset position. This is accomplished by applying 28 vdc momentarily between pins 46 (+) and 31 (-).

*2. Use Simpson 260 or equivalent on the X1 scale.

*3. Use Simpson 260 or equivalent on the X100 scale.

*4. Polarity of test probe as indicated by (+) (-).

3.3.4 Insulation Resistance. With 150 to 200 vdc applied, the insulation resistance between the housing and all pins of the connector shall be greater than or equal to 100 megohms when tested in accordance with Method 302 or Standard MIL-STD-202.

TABLE II

CONTINUITY AND RELAY OPERATION

CONTINUOUSLY 0 VDC PIN	MOMENTARILY 0 VDC PIN	TEST PROBE * FROM PIN	TEST PROBE * TO PIN	RESISTANCE (ohms)
2	31 then 20	39	45	0.5 max
		21	36	0.5 max
		39	36	100 M min
		21	45	100 M min
		50	27	0.5 max
2	31 then 4	21	25	0.5 max
		42	50	0.5 max
		39	25	100 M min
		39	36	0.5 max

TABLE II (Continued)

CONTINUOUSLY 0 VDC PIN	MEMENTARILY 0 VDC PIN	TEST PROBE *		RESISTANCE (ohms)
		FROM PIN	TO PIN	
2	31 then 6	24 39	21 25	0.5 max 0.5 max
2	31 then 9	21 27 24 36	45 50 39 39	0.5 max 0.5 max 0.5 max 0.5 max
2	12	45 49 50	39 21 48	0.5 max 0.5 max 0.5 max
34	-	51 50	21 35	0.5 max 0.5 max
14	-	43	44	0.5 max
14	33	47 18	44 15	0.5 max
14, 16	31 then 20	36 45	39 39	0.5 max 0.5 max
14, 16	31 then 4	39	25	0.5 max
14, 16	31 then 6	39	24	0.5 max
14, 16	31 then 9	45	39	0.5 max
14, 16	12	39	49	0.5 max
14, 16, 19	-	36	21	0.5 max
14, 16, 37	-	25	21	0.5 max
14, 16, 38	-	21	24	0.5 max
10, 14, 16	-	21	45	0.5 max

* Polarity of test probe as indicated by ( ) (-)

3.4 PERFORMANCE AND PRODUCT CHARACTERISTICS

3.4.1 Service Life

3.4.1.1 Operating Life. The assembly shall meet performance specifications for at least 2000 hours of operation, excluding the supplier's test time of the completed unit.

3.4.1.2 Shelf Life. The assembly shall have a life of at least 5 years, without operation, at ambient room temperature after final acceptance at the supplier's facility.

3.4.2 Reliability. Design objectives require maximum reliability of the assembly during its period of useful life. Every effort shall be made to design and produce units capable of meeting a maximum failure rate of 20 failures per million hours.

4. QUALITY ASSURANCE PROVISIONS

4.1 GENERAL SPECIFICATION. Unless otherwise specified herein, all the quality assurance provisions of Specification ND-1002210 shall form a part of this specification.

4.2 NASA ACCEPTANCE INSPECTION. The NASA acceptance inspection shall be in accordance with Specification FTM-1007036.

5. PREPARATION FOR DELIVERY

5.1 GENERAL. Preparation for delivery shall be in accordance with Specification ND-1002210.

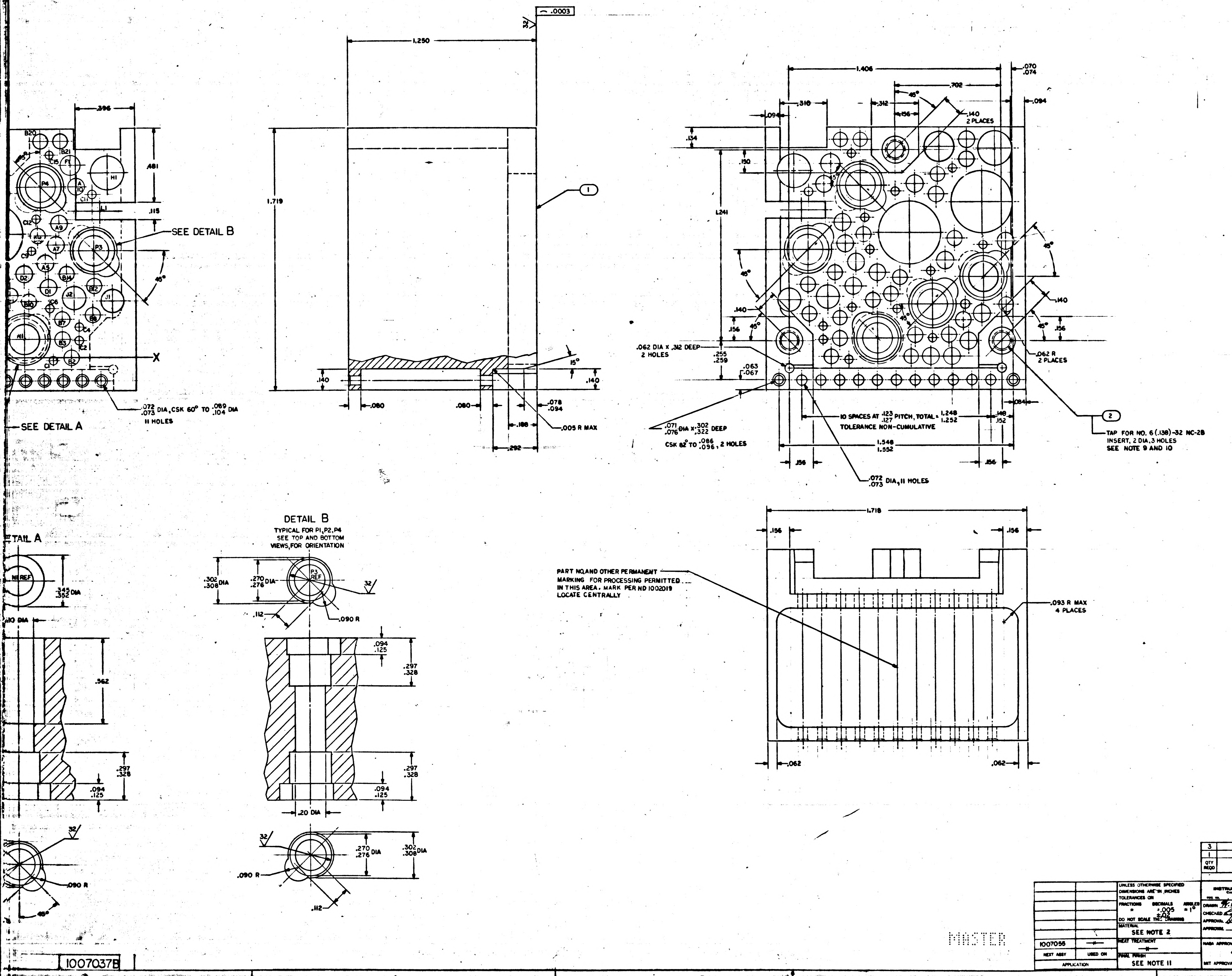
6. NOTES

Notice: When APOLLO G&N drawings, specifications, or other data are used for any purpose other than in connection with a definitely related NASA procurement operation, NASA thereby incurs no responsibility nor any obligation whatsoever, and the fact that NASA may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

EA:efo

REVISIONS TDRR 01538

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03851	10/15/63	
B	REVISED PER TDRR 03852	10/15/63	



.0003
32
1.250
1.719
①
.140
.080
.080
.188
.292
.078
.094
.140
15°
.005 R MAX
.396
.481
.115
B20
B21
P4
F1
H1
C15
A10
C11
L1
C12
A9
A7
P3
A5
D2
B14
D1
J2
B12
J1
B16
B7
B8
C4
N1
B3
E2
C1
B2
SEE DETAIL B
45°
X
.072/.073 DIA, CSK 60° TO .089/.104 DIA
11 HOLES
SEE DETAIL A
1.406
.070/.074
.702
45°
.312
.310
.094
.156
.140 2 PLACES
.094
.134
.150
1.241
45°
45°
.140
.156
.140
.156
45°
.062 DIA x .312 DEEP 2 HOLES
.255/.259
.063/.067
.062 R 2 PLACES
.084
10 SPACES AT .123/.127 PITCH, TOTAL 1.248/1.252
TOLERANCE NON-CUMULATIVE
.148/.152
.071/.076 DIA x .302/.322 DEEP
CSK 82° TO .086/.096, 2 HOLES
1.548/1.552
.156
.156
.072/.073 DIA, 11 HOLES
②
TAP FOR NO. 6 (.138)-32 NC-2B INSERT, 2 DIA, 3 HOLES
SEE NOTE 9 AND 10
1.718
.156
.156
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND 1002019 LOCATE CENTRALLY
.093 R MAX 4 PLACES
.062
.062
DETAIL B
TYPICAL FOR P1, P2, P4
SEE TOP AND BOTTOM VIEWS FOR ORIENTATION
.302/.308 DIA
.270/.276 DIA
P3 REF
32
.112
.090 R
.094/.125
.297/.328
.297/.328
.094/.125
.20 DIA
32
.270/.276 DIA
.302/.308 DIA
.090 R
.112
DETAIL A
N1 REF
.345/.352 DIA
.30 DIA
.562
.297/.328
.094/.125
32
.090 R
45°

MASTER

3	MS21209-C0620	INSERT, SCREW LOCKING	2
1	1007037-1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007055	—‖—
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ±1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —‖—
FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN W. Horgan DATE 5-27-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
CDU D TO A CONVERTER

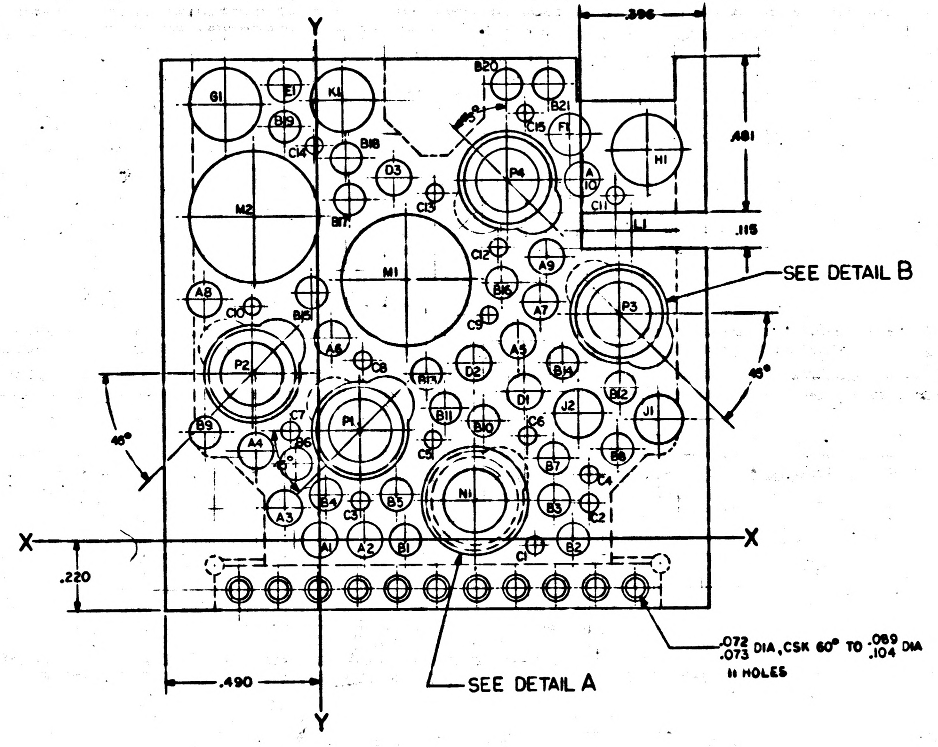
CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007037
SCALE 5:1 | WT | SHEET 1 OF 1

1007037 B

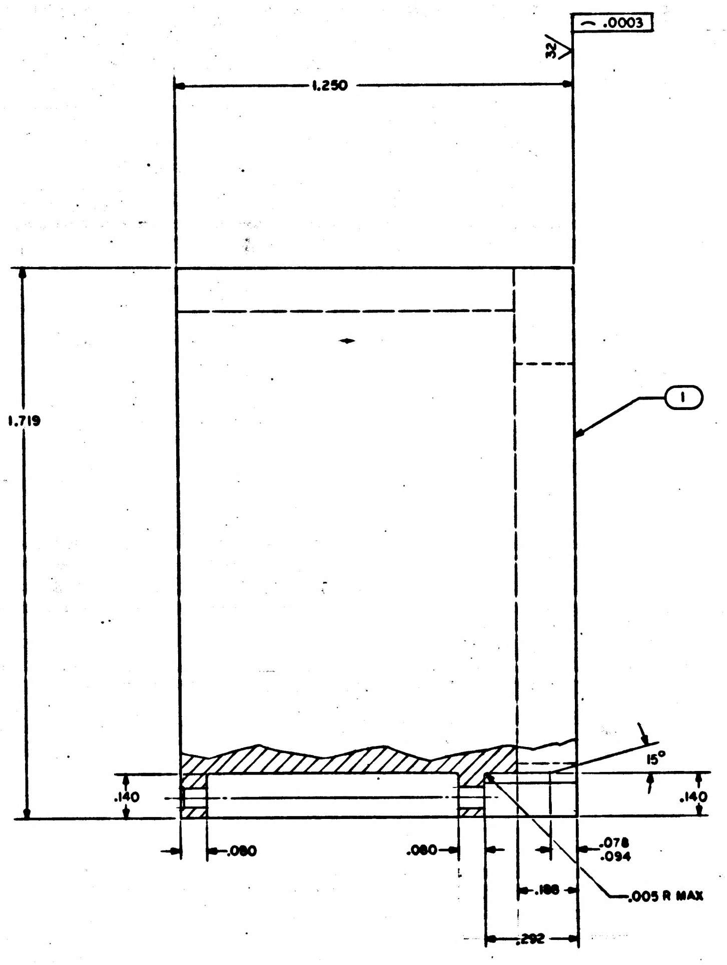
1007037B

INCHES
PHOTOGRAPHIC SCALE ONLY

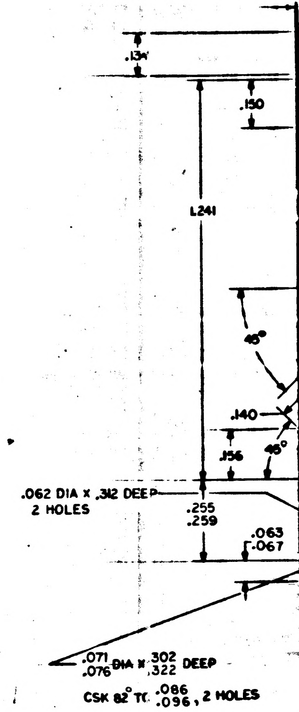
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.000	.000	.006	.108 .112	10
A2	.140	.000			
A3	−.110	.100			
A4	−.200	.280			
A5	.630	.620			
A6	.040	.630			
A7	.700	.740			
A8	−.360	.750			
A9	.720	.880			
A10	.840	1.120			
B1	.270	.000	.006	.100 .104	21
B2	.800	.000			
B3	.740	.120			
B4	.020	.140			
B5	.240	.140			
B6	−.080	.230			
B7	.740	.250			
B8	.940	.280			
B9	−.360	.340			
B10	.520	.370			
B11	.400	.410			
B12	.950	.470			
B13	.340	.520			
B14	.770	.550			
B15	−.020	.770			
B16	.580	.800			
B17	.100	1.060			
B18	.090	1.190			
B19	−.100	1.290			
B20	.600	1.420			
B21	.730	1.420			
C1	.680	−.020	.006	.058 .062	15
C2	.850	.110			
C3	.130	.120			
C4	.850	.200			
C5	.360	.310			
C6	.660	.320			
C7	−.090	.340			
C8	.140	.560			
C9	.540	.700			
C10	−.210	.730			
C11	.940	1.070			
C12	.570	.910			
C13	.370	1.080			
C14	−.010	1.230			
C15	.660	1.330			
D1	.650	.460	.006	.110 .114	3
D2	.490	.550			
D3	.240	1.130			
E1	−.100	1.420	.006	.105 .109	1
F1	.800	1.260	.006	.127 .131	1
G1	−.290	1.360	.006	.227 .231	1
H1	1.080	1.210	.006	.220 .224	1
J1	1.070	.370	.006	.153 .157	2
J2	.820	.390			
K1	.080	1.370	.006	.198 .202	1
M1	.280	.810	.006	.438 .445	2
M2	−.200	1.010			
N1	.490	.120	.006	SEE DETAIL A	1
P1	.130	.340	.006	SEE DETAIL B	4
P2	−.210	.520			
P3	.950	.700			
P4	.600	1.120			



Y
X
.396
.481
.115
.220
.490
SEE DETAIL B
SEE DETAIL A
45°
.072 .073 DIA, CSK 60° TO .089 .104 DIA
11 HOLES



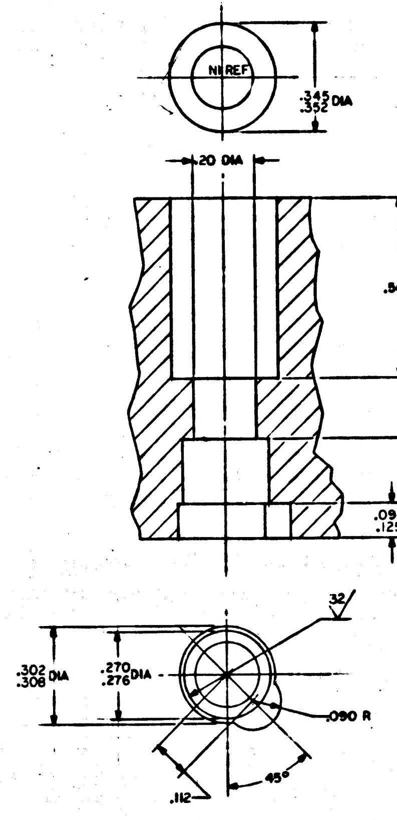
.0003
32
1.250
1.719
1
15°
.140
.140
.080
.080
.078 .094
.188
.005 R MAX
.292



.134
.150
1.241
45°
.140
.156
45°
.062 DIA x .312 DEEP
2 HOLES
.255 .259
.063 .067
.071 .076 DIA x .302 .322 DEEP
CSK 82° TO .086 .096, 2 HOLES

PART NO.AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND 1002019 LOCATE CENTRALLY

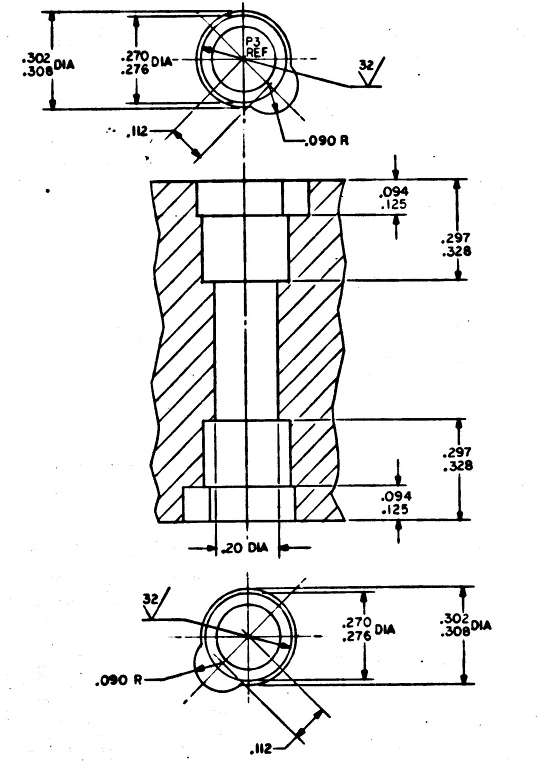
DETAIL A



N1 REF
.345 .352 DIA
.20 DIA
.562
.297 .328
.094 .125
32
.302 .308 DIA
.270 .276 DIA
.090 R
.112
45°

DETAIL B

TYPICAL FOR P1, P2, P4
SEE TOP AND BOTTOM VIEWS, FOR ORIENTATION



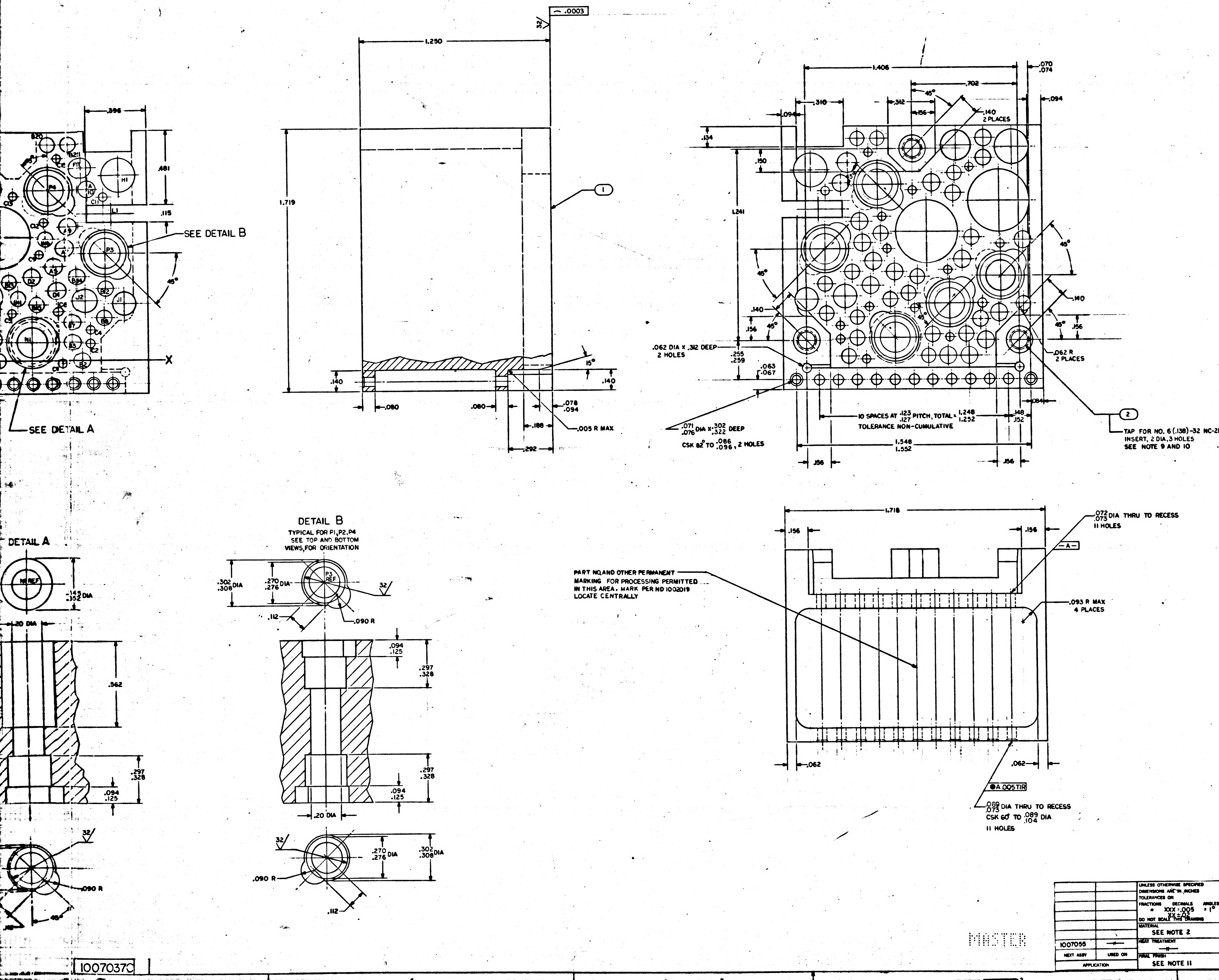
.302 .308 DIA
.270 .276 DIA
P3 REF
32
.112
.090 R
.094 .125
.297 .328
.297 .328
.094 .125
.20 DIA
32
.270 .276 DIA
.302 .308 DIA
.090 R
.112

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED $\overset{125}{\checkmark}$ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND / OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005 −.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO.2 PER MS 35646 EXCEPT DIM.F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171A TYPE IV

INCHES
PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03851	10/15/63	
B	REVISED PER TDRR 03852	10/15/63	
C	REVISED PER TDRR 05458	12-23-63	WR

REVISIONS TDRR 01338



SEE DETAIL B
SEE DETAIL A
DETAIL A
DETAIL B
TYPICAL FOR P1,P2,P4
SEE TOP AND BOTTOM VIEWS FOR ORIENTATION
.0003
1.250
1.719
1.406
.702
.310
.312
.094
.140 2 PLACES
1.241
.062 DIA x .312 DEEP 2 HOLES
.062 R 2 PLACES
.071 .076 DIA x .302 .322 DEEP CSK 82° TO .086 .096, 2 HOLES
10 SPACES AT .123 .127 PITCH, TOTAL = 1.248 1.252 TOLERANCE NON-CUMULATIVE
1.548 1.552
TAP FOR NO. 6 (.138)-32 NC-2B INSERT, 2 DIA, 3 HOLES SEE NOTE 9 AND 10
.005 R MAX
1.718
.072 .073 DIA THRU TO RECESS 11 HOLES
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND 1002019 LOCATE CENTRALLY
.093 R MAX 4 PLACES
A .005 TIR
.069 .073 DIA THRU TO RECESS CSK 60° TO .089 .104 DIA 11 HOLES
.090 R
.270 .276 DIA
.302 .308 DIA
.20 DIA
.297 .328
.094 .125
MASTER
1007037C

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS21209-C0620	INSERT, SCREW LOCKING	2
1	1007037-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007055	—

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ±.005 XX ±.02 ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 11

MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN W. Horgan DATE 5-27-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

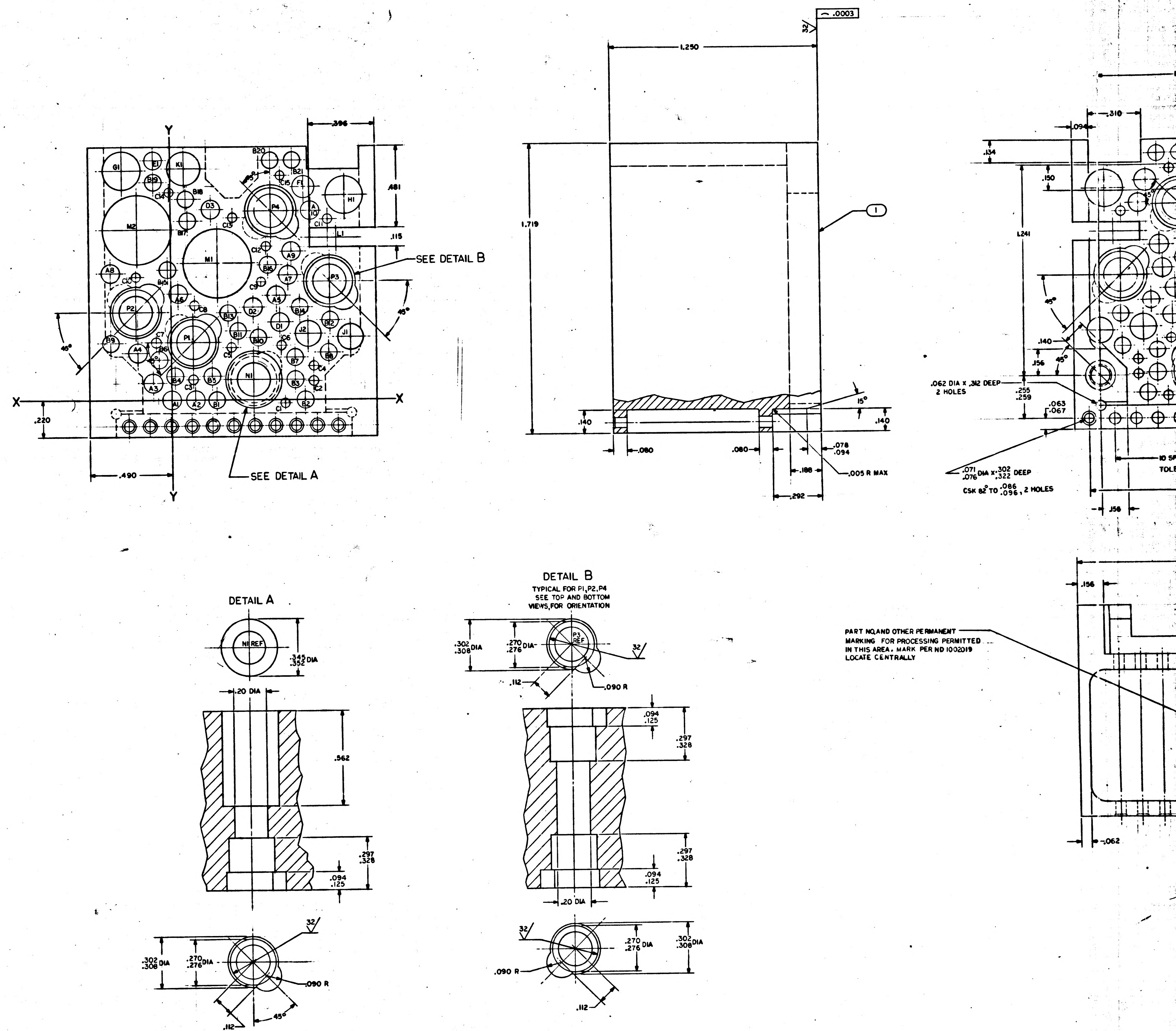
HEATSINK
CDU D TO A CONVERTER

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007037
SCALE 5:1 WT SHEET 1 OF 1

1007037 C

SEE NOTE 12

HOLE IDENT	X DIM.	Y DIM.	HOLE DIA	QTY
A1	.000	.000	.108 .112	10
A2	.140	.000		
A3	−.110	.100		
A4	−.200	.280		
A5	.630	.620		
A6	.040	.630		
A7	.700	.740		
A8	−.360	.750		
A9	.720	.880		
A10	.840	1.120		
B1	.270	.000	.100 .104	21
B2	.800	.000		
B3	.740	.120		
B4	.020	.140		
B5	.240	.140		
B6	−.080	.230		
B7	.740	.250		
B8	.940	.280		
B9	−.360	.340		
B10	.520	.370		
B11	.400	.410		
B12	.950	.470		
B13	.340	.520		
B14	.770	.550		
B15	−.020	.770		
B16	.580	.800		
B17	.100	1.060		
B18	.090	1.190		
B19	−.100	1.290		
B20	.600	1.420		
B21	.730	1.420		
C1	.680	−.020	.058 .062	15
C2	.850	.110		
C3	.130	.120		
C4	.850	.200		
C5	.360	.310		
C6	.660	.320		
C7	−.090	.340		
C8	.140	.560		
C9	.540	.700		
C10	−.210	.730		
C11	.940	1.070		
C12	.570	.910		
C13	.370	1.080		
C14	−.010	1.230		
C15	.660	1.330		
D1	.650	.460	.110 .114	3
D2	.490	.550		
D3	.240	1.130		
E1	−.100	1.420	.105 .109	1
F1	.300	1.260	.127 .131	1
G1	−.290	1.360	.227 .231	1
H1	1.040	1.210	.220 .224	1
J1	1.070	.370	.153 .157	2
J2	.820	.390		
K1	.080	1.370	.198 .202	1
M1	.280	.810	.438 .445	2
M2	−.200	1.010		
N1	.490	.120	SEE DETAIL A	1
P1	.130	.340	SEE DETAIL B	4
P2	−.210	.520		
P3	.950	.700		
P4	.600	1.120		

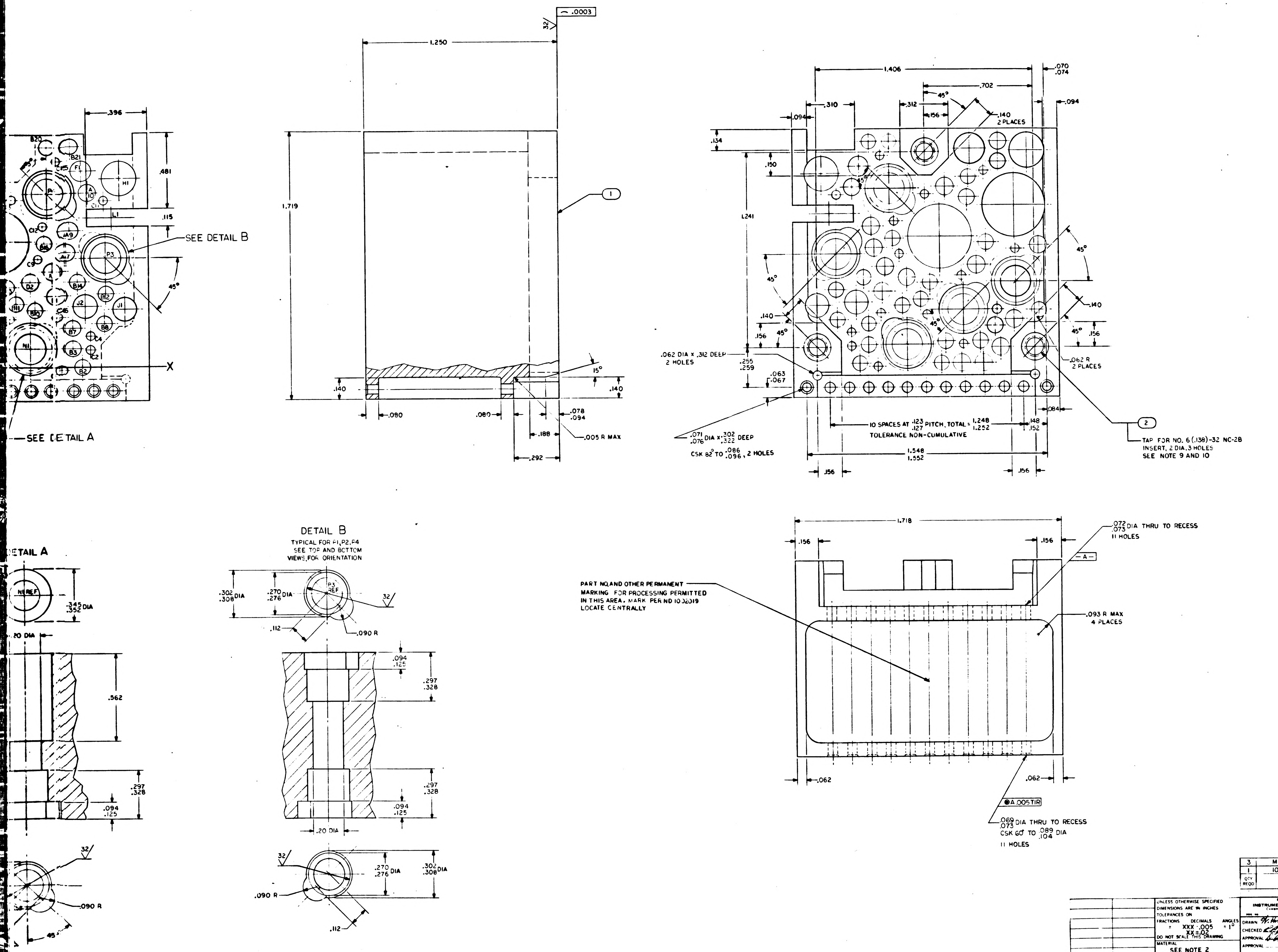

SEE DETAIL B
SEE DETAIL A
X
Y
.396
.481
.115
.220
.490
45°
1.250
1.719
.0003
32
1
.140
.080
.188
.292
.078
.094
.005 R MAX
15°
.310
.094
.134
.150
1.241
.156
.255
.259
.063
.067
.062 DIA X .312 DEEP 2 HOLES
.071 .076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096, 2 HOLES
10 SP
.062
DETAIL A
N1 REF
.345 .352 DIA
.20 DIA
.562
.297 .328
.094 .125
.302 .308 DIA
.270 .276 DIA
.090 R
.112
DETAIL B
TYPICAL FOR P1, P2, P4 SEE TOP AND BOTTOM VIEWS FOR ORIENTATION
P3 REF
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND 1002019 LOCATE CENTRALLY

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
~~4. TRUE POSITIONING AS SHOWN IN CHART~~
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED .125√ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND / OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005 −.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO.2 PER MS 35646, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 A TYPE IV
12. THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN AN ADJACENT HOLE OR ON AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART

1007037C

INCHES
PHOTOGRAPHIC SCALE ONLY

SYM	DESCRIPTION	DATE	APPROVAL
	REVISIONS TDRR 01538		
A	REVISED PER TDRR 03851	10/15/63	
B	REVISED PER TDRR 03852	10/15/63	
C	REVISED PER TDRR 05458	2-27-63	WR
D	REVISED PER TDRR 19331	1 JUNE 65	JWP



SEE DETAIL B
SEE DETAIL A
X
.396
.481
.115
45°
1.250
1.719
.0003
32
1
.140
.080
.080
.078
.094
.188
.292
15°
.005 R MAX
1.406
.702
.310
.312
.156
.094
.070
.074
45°
.140 2 PLACES
.134
.150
1.241
.140
.156
.062 DIA x .312 DEEP 2 HOLES
.255
.259
.063
.067
.062 R 2 PLACES
.084
.148
.152
10 SPACES AT .123 .127 PITCH, TOTAL = 1.248 1.252
TOLERANCE NON-CUMULATIVE
1.548
1.552
.071 .076 DIA x .302 .322 DEEP
CSK 82° TO .086 .096, 2 HOLES
2
TAP FOR NO. 6 (.138)-32 NC-2B
INSERT, 2 DIA, 3 HOLES
SEE NOTE 9 AND 10
DETAIL A
.345 .352 DIA
.20 DIA
.562
.297 .328
.094 .125
.090 R
45°
DETAIL B
TYPICAL FOR F1, P2, F4
SEE TOP AND BOTTOM
VIEWS FOR ORIENTATION
.302 .308 DIA
.270 .276 DIA
P3 REF
.112
.090 R
.094 .125
.297 .328
.20 DIA
1.718
.156
.156
.072 .073 DIA THRU TO RECESS
11 HOLES
A
PART NO. AND OTHER PERMANENT
MARKING FOR PROCESSING PERMITTED
IN THIS AREA. MARK PER ND 1032019
LOCATE CENTRALLY
.093 R MAX
4 PLACES
.062
.062
A .005 TIR
.069 .073 DIA THRU TO RECESS
CSK 60° TO .089 .104 DIA
11 HOLES

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
3	MS21209-C0620	INSERT, SCREW LOCKING	2
1	1007037-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007055	—‖—

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .02 ANGLES ± 1°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT
—‖—

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN W. Horgan DATE 5-27-63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON TEXAS

HEATSINK
CDU D TO A CONVERTER

CODE IDENT NO	SIZE	NASA DRAWING NO
80230	J	1007037

SCALE 5:1
SHEET 1 OF 1

1007037 D

1007037 D

2H

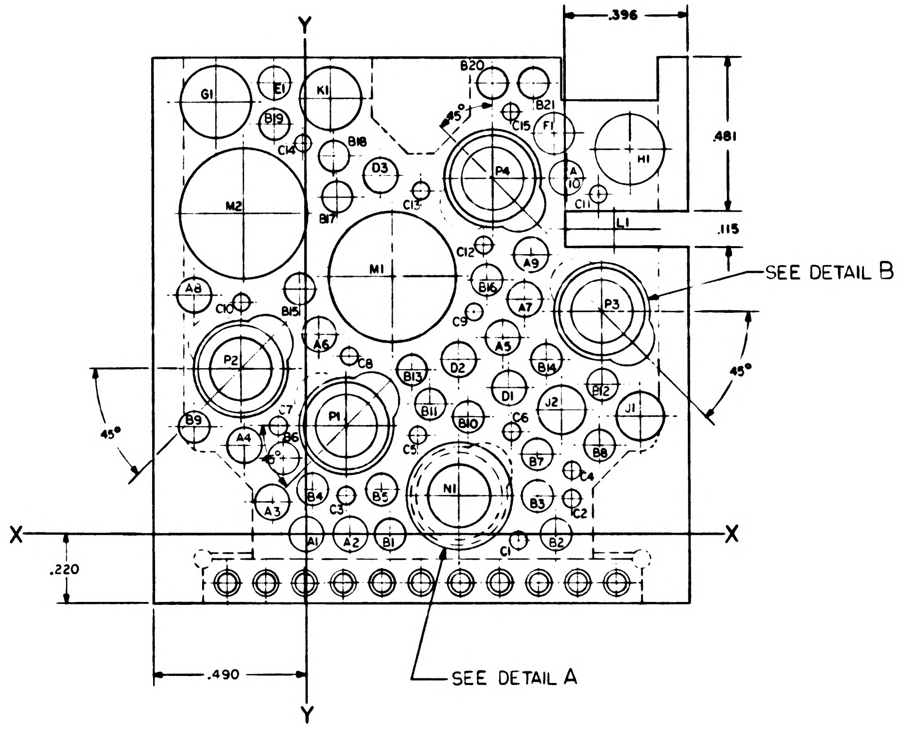
2/1007037

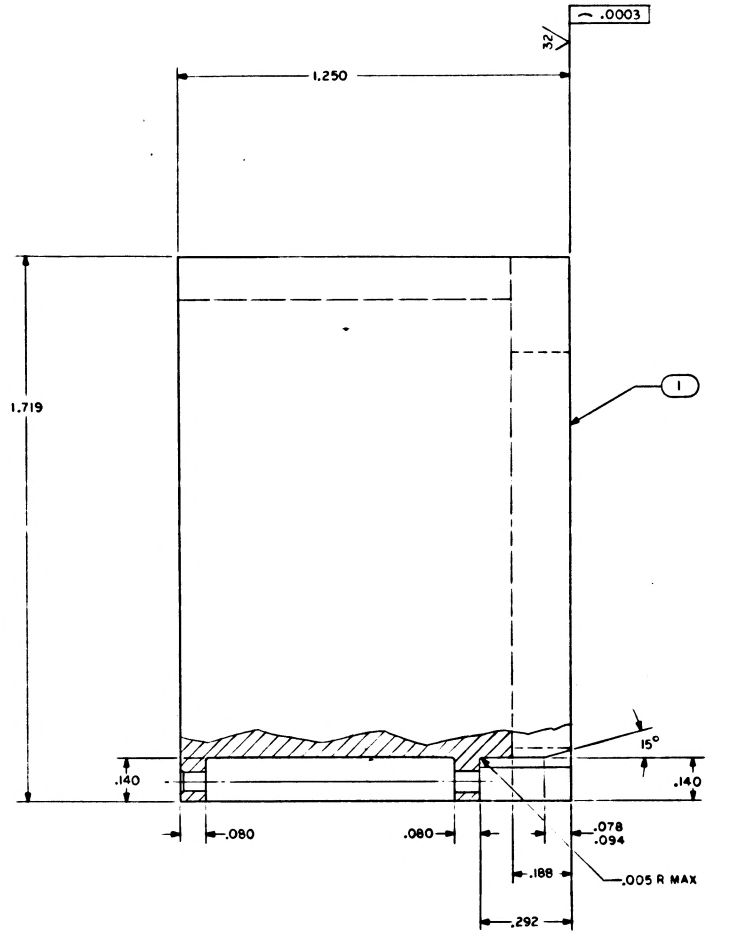
SEE NOTE 12

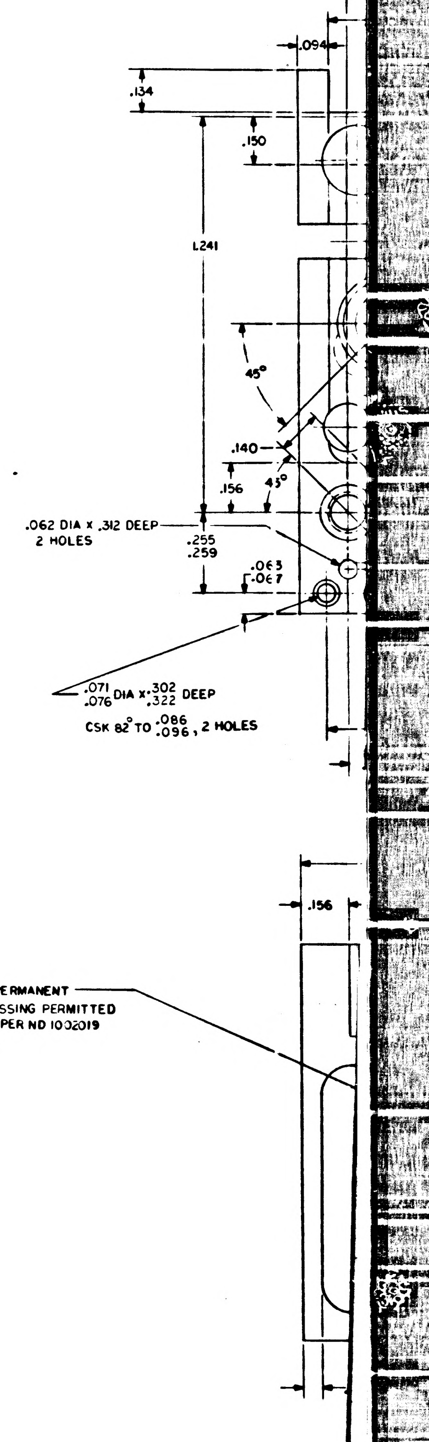
HOLE IDENT	X DIM.	Y DIM.	HOLE DIA	QTY
A1	.000	.000	.108 .112	10
A2	.140	.000		
A3	−.110	.100		
A4	−.200	.280		
A5	.630	.620		
A6	.040	.630		
A7	.700	.740		
A8	−.360	.750		
A9	.720	.880		
A10	.840	1.120		
B1	.270	.000	.100 .104	21
B2	.800	.000		
B3	.740	.120		
B4	.020	.140		
B5	.240	.140		
B6	−.080	.230		
B7	.740	.250		
B8	.940	.280		
B9	−.360	.340		
B10	.520	.370		
B11	.400	.410		
B12	.950	.470		
B13	.340	.520		
B14	.770	.550		
B15	−.020	.770		
B16	.580	.800		
B17	.100	1.060		
B18	.090	1.190		
B19	−.100	1.290		
B20	.600	1.420		
B21	.730	1.420		
C1	.680	−.020	.058 .062	15
C2	.850	.110		
C3	.130	.120		
C4	.850	.200		
C5	.360	.310		
C6	.660	.320		
C7	−.090	.340		
C8	.140	.560		
C9	.540	.700		
C10	−.210	.730		
C11	.940	1.070		
C12	.570	.910		
C13	.370	1.080		
C14	−.010	1.230		
C15	.660	1.330		
D1	.650	.460	.110 .114	3
D2	.490	.550		
D3	.240	1.130		
E1	−.100	1.420	.105 .109	1
F1	.800	1.260	.127 .131	1
G1	−.290	1.360	.227 .231	1
H1	1.040	1.210	.220 .224	1
J1	1.070	.370	.153 .157	2
J2	.820	.390		
K1	.080	1.370	.198 .202	1
M1	.280	.810	.438 .445	2
M2	−.200	1.010		
N1	.490	.120	SEE DETAIL A	1
P1	.130	.340	SEE DETAIL B	4
P2	−.210	.520		
P3	.950	.700		
P4	.600	1.120		

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4. ~~TRUE POSITIONING AS SHOWN IN CHART~~
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED .125✓ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND / OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005 -.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO.2 PER MS 35646, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-45202 TYPE I, CLASS C
12. THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN AN ADJACENT HOLE OR ON AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART
13. APPLY A .31 MIN WIDTH PERIMETER OF ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II TO THE TWO SURFACES WITH COMPONENT HOLES WHICH ARE .188 AND 1.25 FROM THE HELICOIL MOUNTING SURFACE.

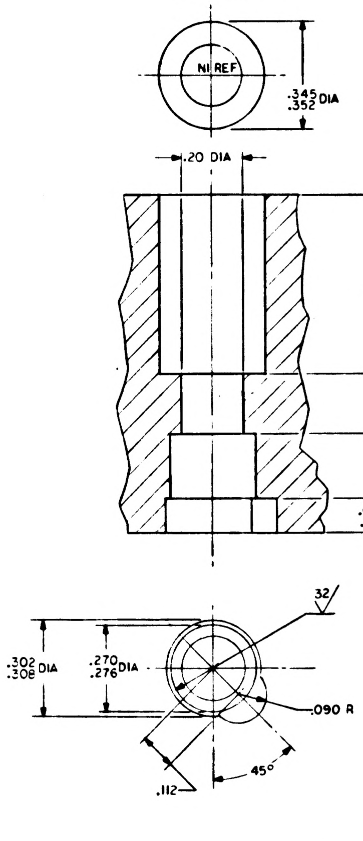

Y
X
.396
.481
.115
.220
.490
45°
SEE DETAIL B
SEE DETAIL A
G1 E1 K1 B19 B18 B20 B21 C15 F1 H1 P4 M2 M1 D3 C14 C13 B17 C12 A9 A8 C10 B15 B16 A7 P3 A6 C9 A5 P2 C8 B13 D2 B14 B12 J1 J2 B9 C7 P1 B11 B10 D1 C6 A4 B6 B7 B8 C4 A3 B4 C3 B5 N1 B3 A1 A2 B1 C1 B2 C2


.0003
32
1.250
1.719
1
15°
.140
.140
.080
.080
.078
.094
.188
.005 R MAX
.292


.094
.134
.150
1.241
45°
.140
.156
45°
.062 DIA x .312 DEEP 2 HOLES
.255
.259
.063
.067
.071 .076 DIA x .302 .322 DEEP
CSK 82° TO .086 .096, 2 HOLES
.156

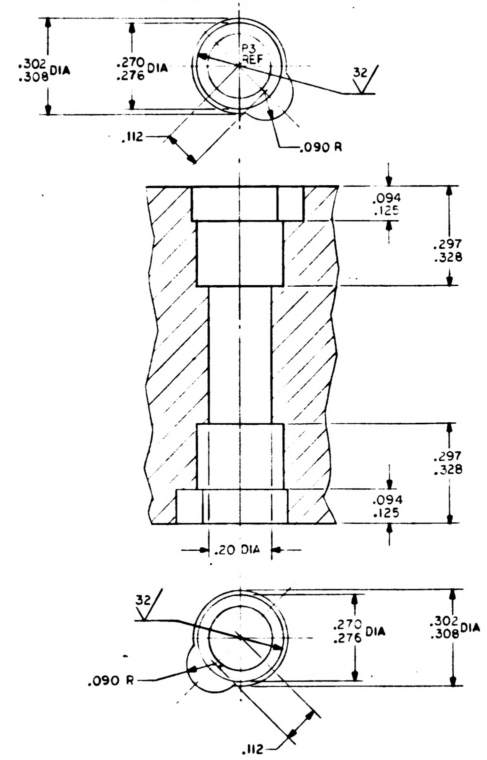
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA, MARK PER ND 1002019 LOCATE CENTRALLY

DETAIL A


N1 REF
.345 .352 DIA
.20 DIA
.562
.297 .328
.094 .125
32
.302 .308 DIA
.270 .276 DIA
.090 R
.112
45°

DETAIL B

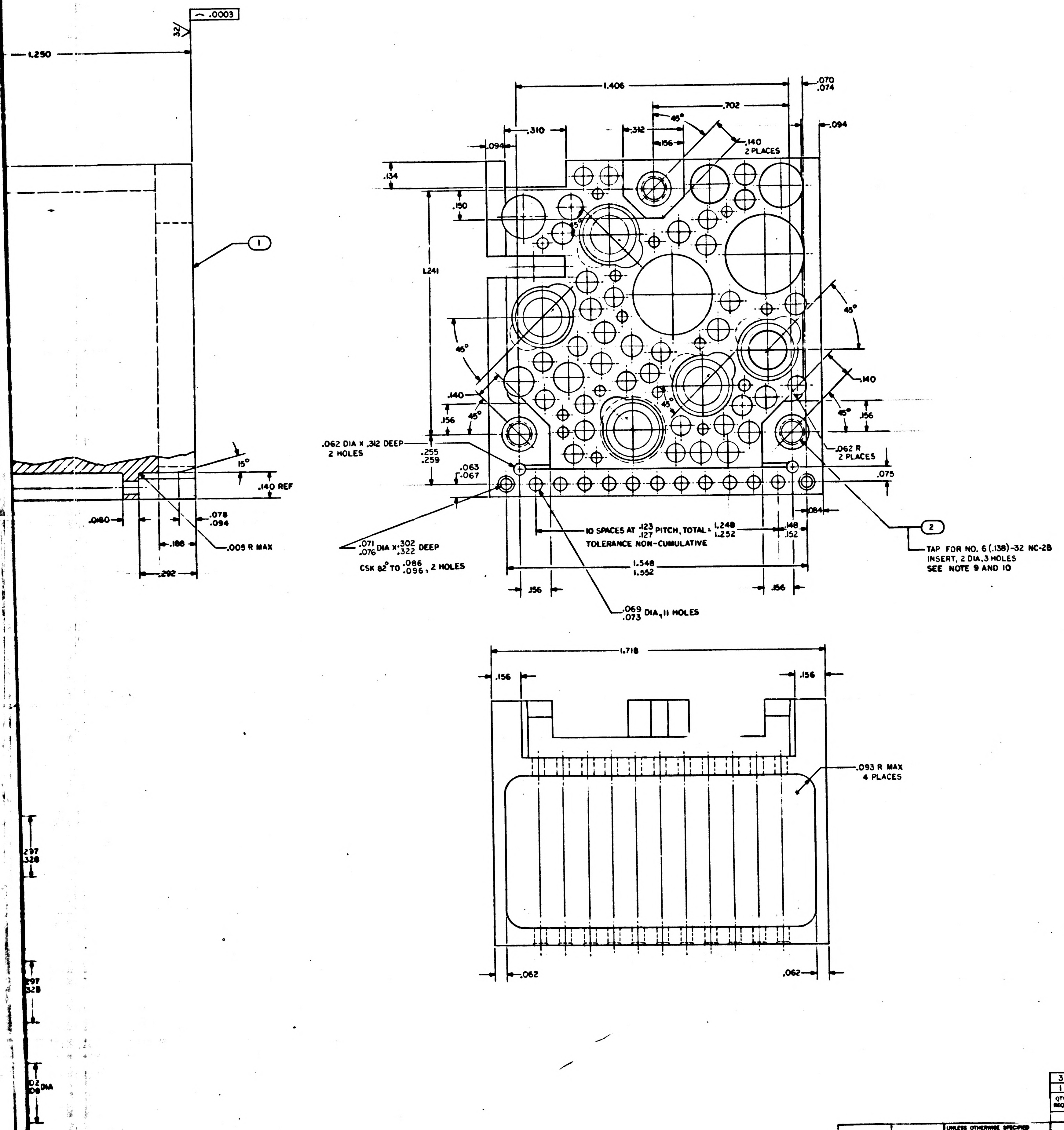
TYPICAL FOR P1, P2, P4
SEE TOP AND BOTTOM
VIEWS FOR ORIENTATION


.302 .308 DIA
.270 .276 DIA
P3 REF
32
.112
.090 R
.094 .125
.297 .328
.297 .328
.094 .125
.20 DIA
32
.270 .276 DIA
.302 .308 DIA
.090 R
.112

1007037 D

REVISIONS TDRR 01838

SYM	DESCRIPTION	DATE	APPROVAL


1.250
32
.0003
1.406
.070
.074
.702
.094
.310
.312
.156
45°
.140
2 PLACES
.094
.134
.150
1.241
45°
45°
.140
.156
45°
45°
.140
45°
.156
.062 DIA x .312 DEEP
2 HOLES
.255
.259
.063
.067
.062 R
2 PLACES
.075
.084
15°
.140 REF
.078
.094
.080
.188
.005 R MAX
.292
.071
.076 DIA x .302
.322 DEEP
CSK 82° TO .086
.096, 2 HOLES
10 SPACES AT .123
.127 PITCH, TOTAL = 1.248
1.252
TOLERANCE NON-CUMULATIVE
.148
.152
1.548
1.552
.156
.156
.069
.073 DIA, 11 HOLES
1
2
TAP FOR NO. 6 (.138)-32 NC-2B
INSERT, 2 DIA. 3 HOLES
SEE NOTE 9 AND 10
1.718
.156
.156
.093 R MAX
4 PLACES
.062
.062
.297
.328
.297
.328
.102
.108 DIA

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS1222-06E	INSERT, SCREW LOCKING	2
1	1007037-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007055	——

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ±.005 ±.02 ANGLES ±1°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT
——

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS

DRAWN W. Horgan DATE 5-27-63
CHECKED
APPROVAL
APPROVAL

NASA APPROVAL
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
CDU D TO A CONVERTER

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007037
SCALE 5:1
WT.
SHEET 1 OF 1

1007037

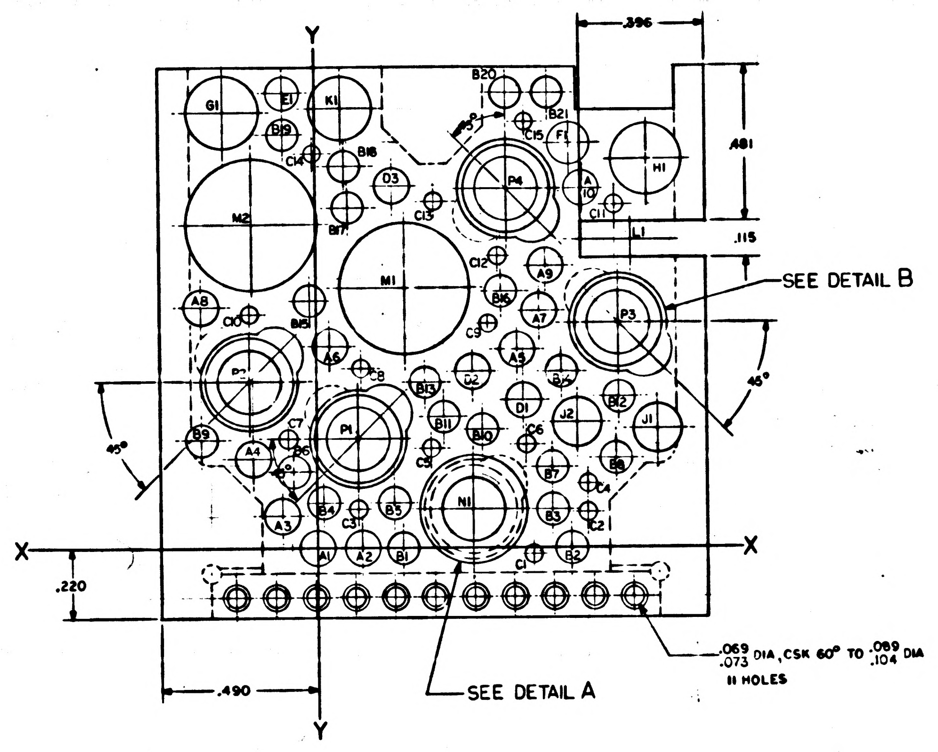
MASTER

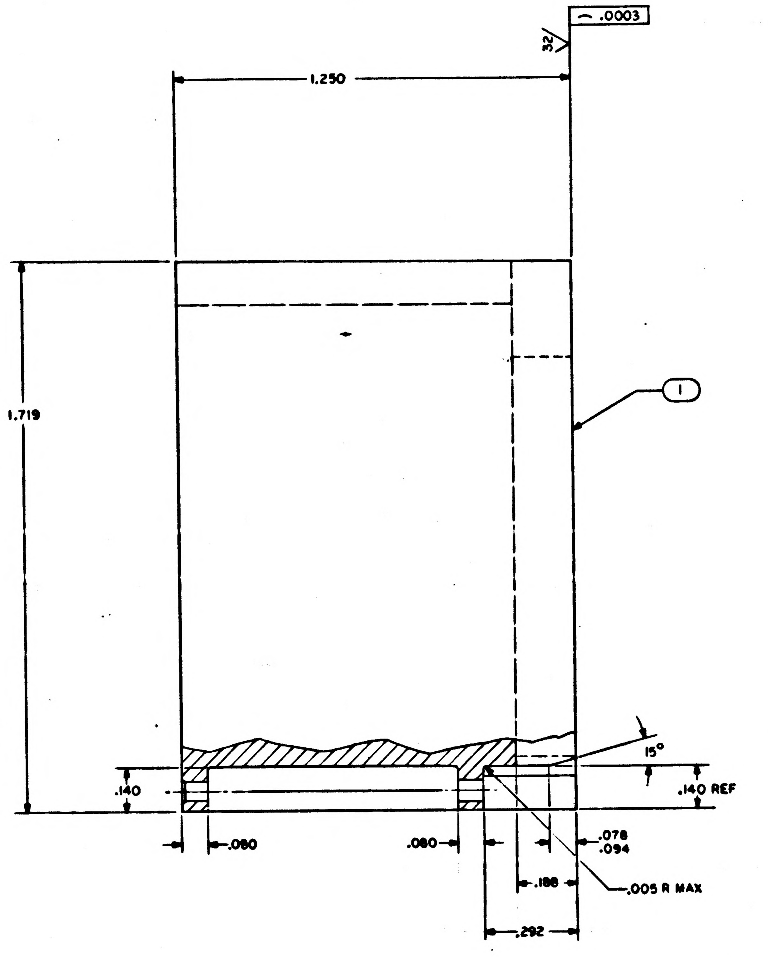
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

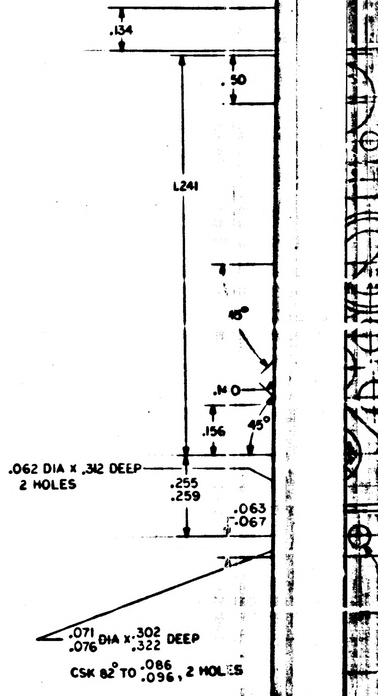
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIA	HOLE DIA	QTY
A1	.000	.000	.006	.108 .112	10
A2	.140	.000			
A3	−.110	.100			
A4	−.200	.280			
A5	.630	.620			
A6	.040	.630			
A7	.700	.740			
A8	−.360	.750			
A9	.720	.880			
A10	.840	1.120			
B1	.270	.000	.006	.100 .104	21
B2	.800	.000			
B3	.740	.120			
B4	.020	.140			
B5	.240	.140			
B6	−.080	.230			
B7	.740	.250			
B8	.940	.280			
B9	−.360	.340			
B10	.520	.370			
B11	.400	.410			
B12	.950	.470			
B13	.340	.520			
B14	.770	.550			
B15	−.020	.770			
B16	.580	.800			
B17	.100	1.060			
B18	.090	1.190			
B19	−.100	1.290			
B20	.600	1.420			
B21	.730	1.420			
C1	.680	−.020	.006	.058 .062	15
C2	.850	.110			
C3	.130	.120			
C4	.850	.200			
C5	.360	.310			
C6	.660	.320			
C7	−.090	.340			
C8	.140	.560			
C9	.540	.700			
C10	−.210	.730			
C11	.940	1.070			
C12	.570	.910			
C13	.370	1.080			
C14	−.010	1.230			
C15	.660	1.330			
D1	.650	.460	.006	.110 .114	3
D2	.490	.550			
D3	.240	1.130			
E1	−.100	1.420	.006	.105 .109	1
F1	.800	1.260	.006	.127 .131	1
G1	−.290	1.360	.006	.227 .231	1
H1	1.040	1.210	.006	.220 .224	1
J1	1.070	.370	.006	.153 .157	2
J2	.820	.390			
K1	.080	1.370	.006	.198 .202	1
M1	.280	.810	.006	.438 .445	2
M2	−.200	1.010			
N1	.490	.120	.006	SEE DETAIL A	1
P1	.130	.340	.006	SEE DETAIL B	4
P2	−.210	.520			
P3	.950	.700			
P4	.600	1.120			

NOTES:

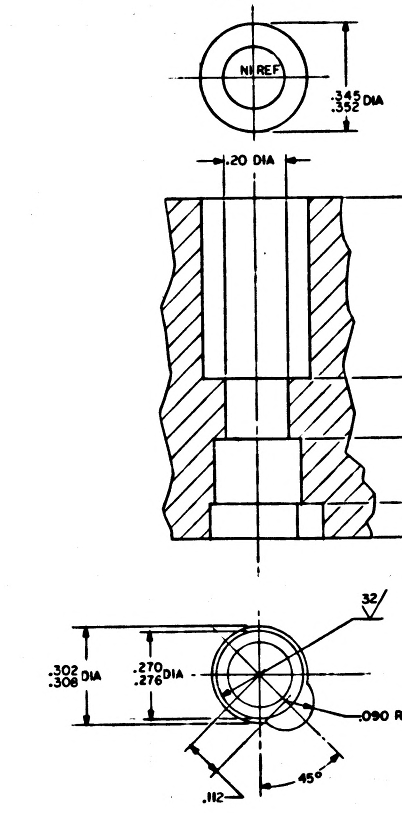
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED 125√ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND / OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005 −.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO.2 PER MS 35646 EXCEPT DIM.F TO BE .594, BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 A TYPE IV


Y
X
G1 E1 K1 B19 C14 B18 D3 B17 M2 M1 C13
B20 B21 C15 F1 H1 P4 A10 C11 L1
45°
.396
.481
.115
SEE DETAIL B
A8 C10 B15 A6 C8 B13 D2 B16 A9 C12 C9 A7 A5 B14 P3
P2 B9 C7 A4 B6 P1 B11 B10 C5 D1 C6 J2 B12 J1 B8 B7 C4
A3 B4 C3 B5 N1 B3 C2 A1 A2 B1 C1 B2
45°
45°
.220
.490
.069 .073 DIA, CSK 60° TO .089 .104 DIA
11 HOLES
SEE DETAIL A


32
⌒ .0003
1.250
1.719
1
15°
.140
.140 REF
.080
.080
.078 .094
.188
.292
.005 R MAX

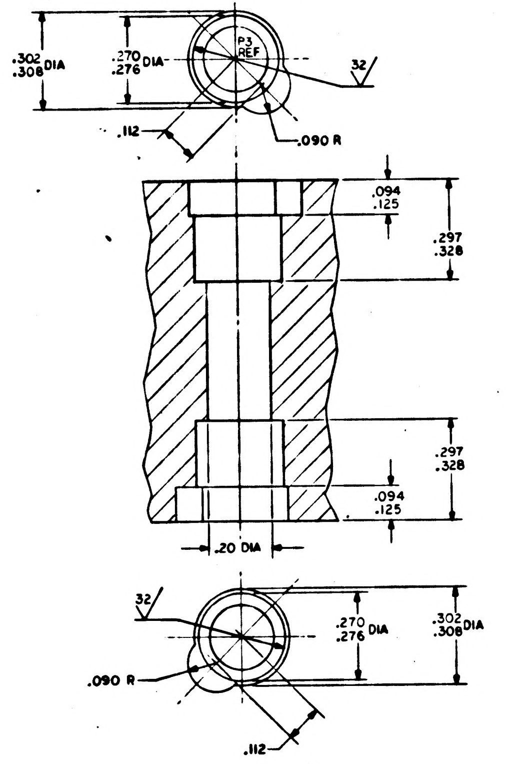

.134
.50
1.241
45°
.140
45°
.156
.062 DIA X .312 DEEP
2 HOLES
.255 .259
.063 .067
.071 .076 DIA X .302 .322 DEEP
CSK 82° TO .086 .096, 2 HOLES

DETAIL A


N1 REF
.345 .352 DIA
.20 DIA
.562
.297 .328
.094 .125
32
.302 .308 DIA
.270 .276 DIA
.090 R
.112
45°

DETAIL B

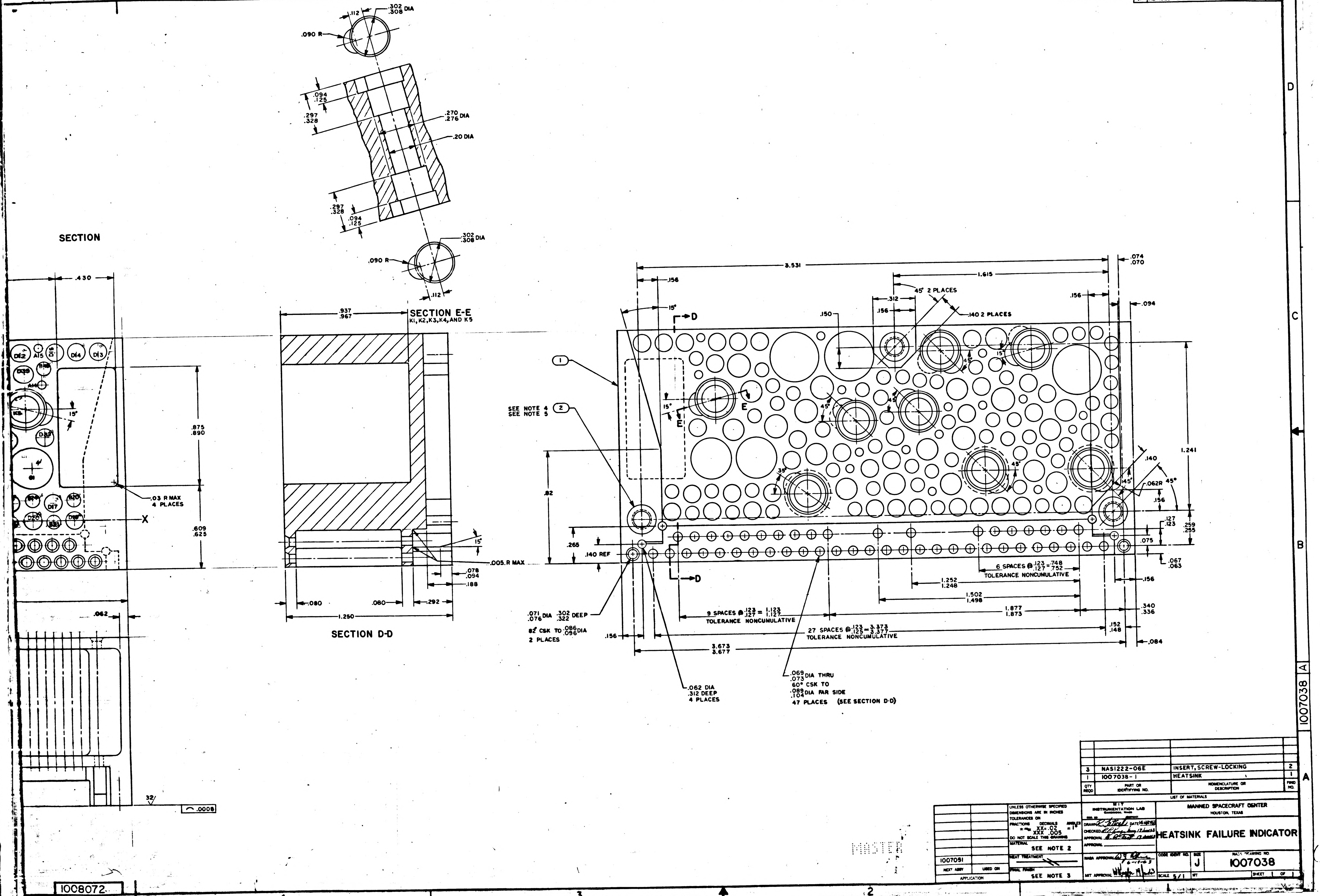
TYPICAL FOR P1, P2, P4
SEE TOP AND BOTTOM
VIEWS, FOR ORIENTATION


P3 REF
.302 .308 DIA
.270 .276 DIA
32
.112
.090 R
.094 .125
.297 .328
.297 .328
.094 .125
.20 DIA
32
.270 .276 DIA
.302 .308 DIA
.090 R
.112

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01958		

REVISIONS TDRR 01614

1007038 A



SECTION
SECTION E-E
K1, K2, K3, K4, AND K5
SECTION D-D
.302/.308 DIA
.090 R
.112
.094/.125
.297/.328
.270/.276 DIA
.20 DIA
.430
.937/.967
.875/.890
.609/.625
.03 R MAX 4 PLACES
X
.062
.080
.080
.292
1.250
.005 R MAX
.078/.094
.188
15°
3.531
1.615
.156
.074/.070
45° 2 PLACES
.312
.150
.140 2 PLACES
.094
D
E
1
2
SEE NOTE 4
SEE NOTE 5
1.241
.82
.265
.140 REF
.140
.062R
45°
.156
.127/.123
.259/.255
.075
.067/.063
6 SPACES @ .123/.127 = .748/.752 TOLERANCE NONCUMULATIVE
1.252/1.248
1.502/1.498
1.877/1.873
.340/.336
.152/.148
.084
9 SPACES @ .123/.127 = 1.123/1.127 TOLERANCE NONCUMULATIVE
27 SPACES @ .123/.127 = 3.373/3.377 TOLERANCE NONCUMULATIVE
3.673/3.677
.071/.076 DIA .302/.322 DEEP
82° CSK TO .086/.096 DIA
2 PLACES
.062 DIA
.312 DEEP
4 PLACES
.069/.073 DIA THRU
60° CSK TO
.089/.104 DIA FAR SIDE
47 PLACES (SEE SECTION D-D)
32
.0008
1008072
MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS1222-06E	INSERT, SCREW-LOCKING	2
1	1007038-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007051	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ±1/64 DECIMALS XX ±.02 XXX .005 ANGLES ±1°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 3

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Fitz DATE 14 MAY 63
CHECKED 17 June 63
APPROVAL 17 June 63
APPROVAL
NASA APPROVAL 6-19-63
MIT APPROVAL 19 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK FAILURE INDICATOR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007038
SCALE 5/1
WT
SHEET 1 OF 1

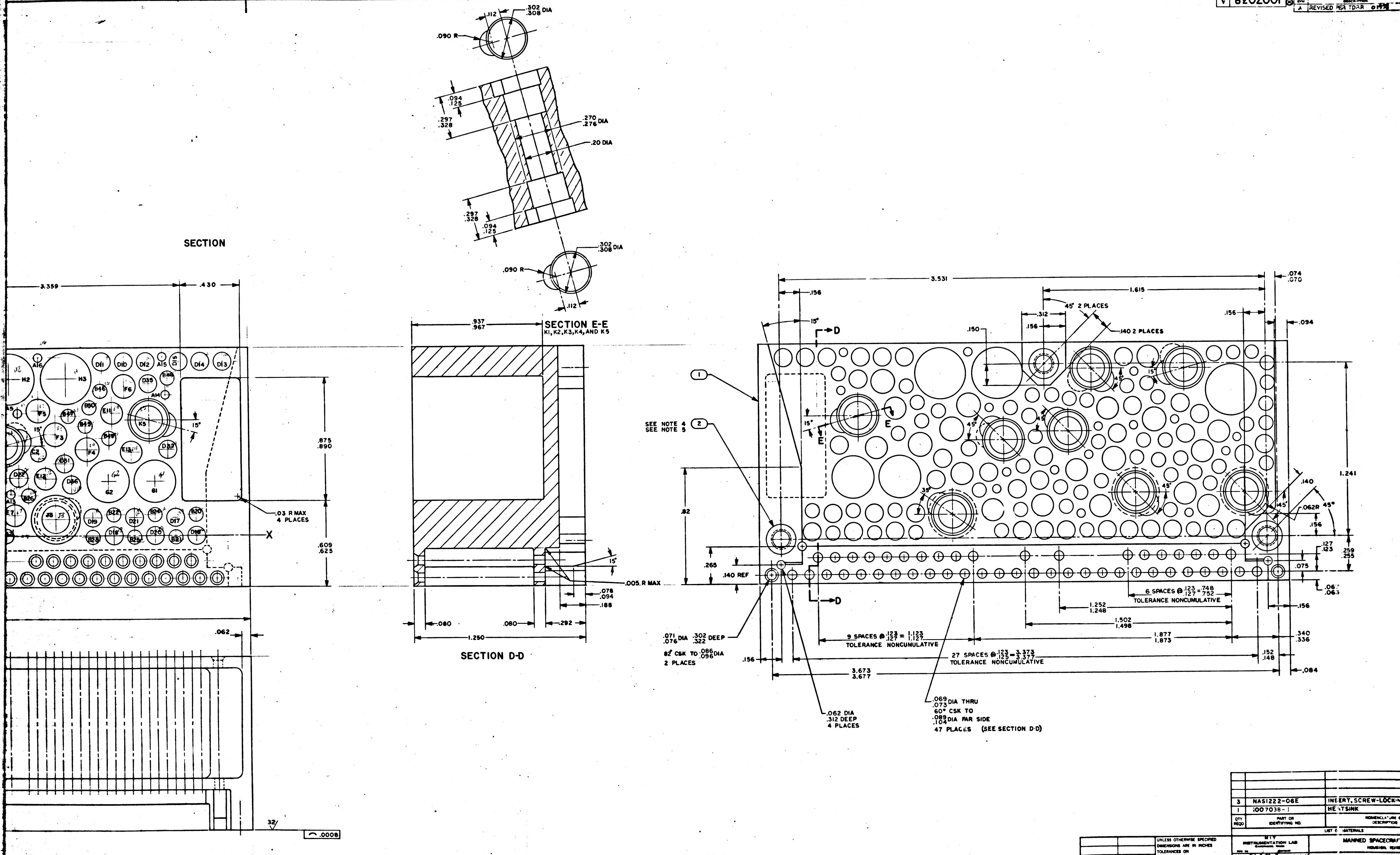
1007038 A

INCHES
PHOTOGRAPHIC SCALE ONLY

F3

1007038 A

SYM	DESCRIPTION
A	REVISED PER TDRR 01925



SECTION
SECTION E-E
K1, K2, K3, K4, AND K5
SECTION D-D
.302 .308 DIA
.112
.090 R
.094 .125
.297 .328
.270 .276 DIA
.20 DIA
3.359
.430
.875 .890
.609 .625
.03 R MAX 4 PLACES
.937 .967
.005 R MAX
.078 .094
.188
.080
1.250
.292
.062
.0008
3.531
1.615
.156
.074 .070
45° 2 PLACES
.312
.140 2 PLACES
.150
.094
1.241
SEE NOTE 4
SEE NOTE 5
.82
.265
.140 REF
.140
.062R
.127 .123
.259 .255
.075
.067 .063
6 SPACES @ .123 .127 = .748 .752 TOLERANCE NONCUMULATIVE
1.252 1.248
1.502 1.498
1.877 1.873
.340 .336
9 SPACES @ .123 .127 = 1.123 1.127 TOLERANCE NONCUMULATIVE
27 SPACES @ .123 .125 = 3.373 3.377 TOLERANCE NONCUMULATIVE
.152 .148
.084
3.673 3.677
.071 .076 DIA .302 .322 DEEP
82° CSK TO .086 .096 DIA 2 PLACES
.062 DIA .312 DEEP 4 PLACES
.069 .073 DIA THRU 60° CSK TO .089 .104 DIA FAR SIDE 47 PLACES (SEE SECTION D-D)
1
2
D
E
X
15°
45°
35°

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
3	NAS1222-06E	INSERT, SCREW-LOCKIN
1	1007038-1	HEATSINK

LIST OF MATERIALS

NEXT ASSY	USED ON
1007051	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX .005 ANGLES ±1°
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

HEAT TREATMENT

FINAL FINISH SEE NOTE 3

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Fritcat DATE 4 JAN 63
CHECKED 17 June 63
APPROVAL 17 June 63
APPROVAL
NASA APPROVAL 6-19-63
MIT APPROVAL 19 June 63

MANNED SPACECRAFT
HOUSTON, TEXAS

HEATSINK FAILURE

CODE IDENT NO
SIZE J
SCALE 5/1
WT

MASTER

1008072

E-2

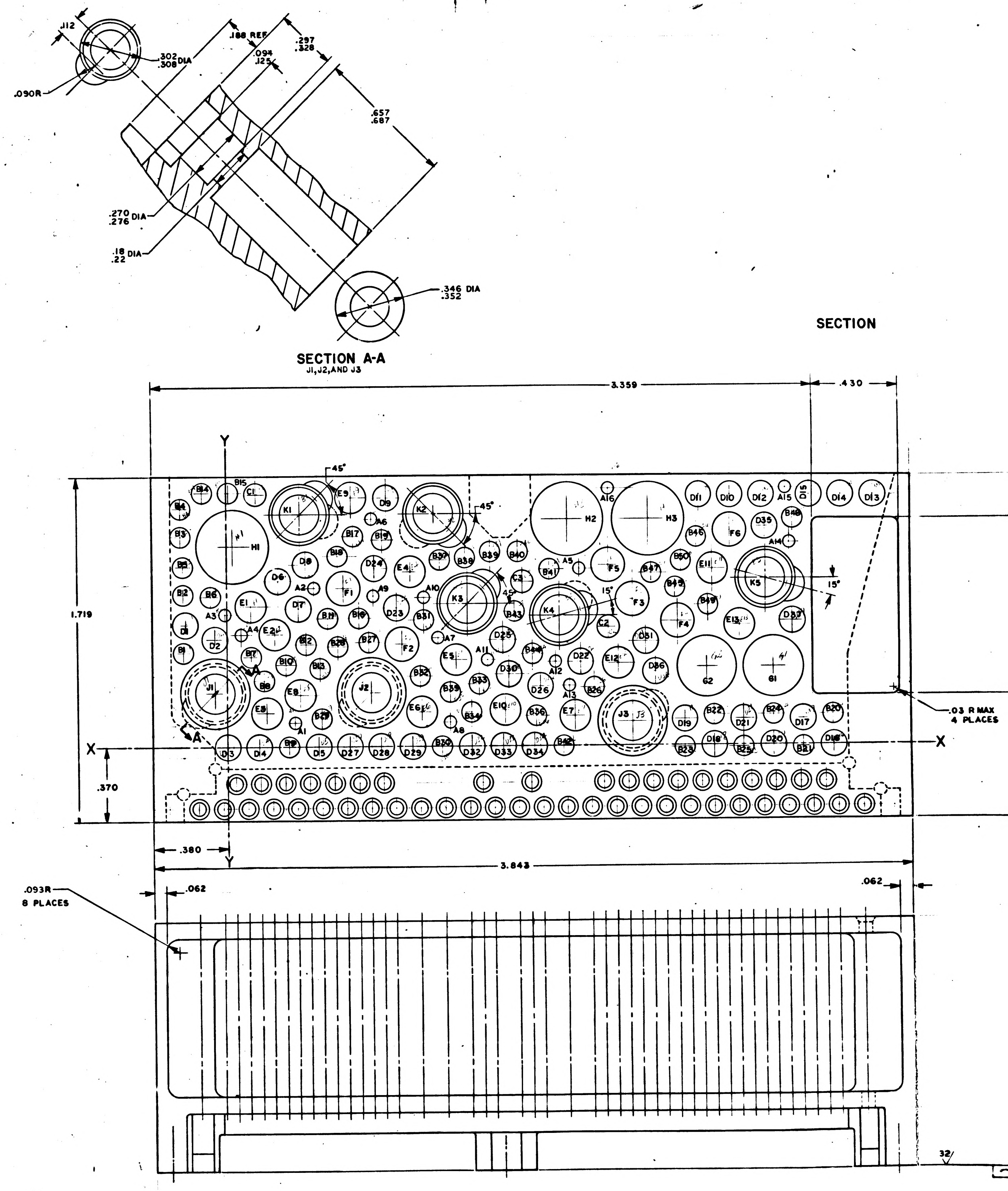
INCHES
PHOTOGRAPHIC SCALE ONLY

NOTICE -- WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIM	HOLE DIA	QTY
A1	.340	.120	.006	.058 .062	16
A2	.440	.790			
A3	−.010	.660			
A4	.070	.560			
A5	1.790	.880			
A6	.730	1.130			
A7	1.070	.540			
A8	1.130	.120			
A9	.740	.750			
A10	1.000	.740			
A11	1.320	.430			
A12	1.670	.420			
A13	1.740	.300			
A14	2.860	1.010			
A15	2.840	1.280			
A16	1.940	1.280			
B1	−.220	.470	.006	.100 .104	50
B2	−.220	760			
B3	−.230	1.050			
B4	−.230	1.190			
B5	−.220	.900			
B6	−.080	.750			
B7	.120	.450			
B8	.190	.330			
B9	.310	0			
B10	.300	.410			
B11	.510	.640			
B12	.400	.510			
B13	.470	.390			
B14	−.120	1.270			
B15	.010	1.270			
B16	.670	.640			
B17	.640	1.050			
B18	.560	.950			
B19	.790	1.030			
B20	3.080	.150			
B21	2.930	−.010			
B22	2.480	.150			
B23	2.330	−.010			
B24	2.780	.150			
B25	2.630	−.010			
B26	1.870	.290			
B27	.720	.520			
B28	.560	.500			
B29	480	140			
B30	1.090	0			
B31	1.000	.630			
B32	.980	.350			
B33	1.280	.310			
B34	1.240	.170			
B35	1.130	.270			
B36	1.570	.150			
B37	1.080	.930			
B38	1.210	.940			
B39	1.340	.970			
B40	1.480	.970			
B41	1.640	.880			
B42	1.710	0			
B43	1.460	.670			
B44	1.550	.460			
B45	2.280	.790			
B46	2.390	1.040			
B47	2.160	.860			
B48	2.880	1.130			
B49	2.450	.700			
B50	2.310	.920			
C1	.150	1.260	.006	.106 .110	3
C2	1.940	.590			
C3	1.500	.820			
D1	−.210	.610	.006	.127 .131	37
D2	−.060	.540			
D3	0	0			
D4	.160	0			
D5	.460	0			
D6	.260	.830			
D7	.360	.690			

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIM	HOLE DIA	QTY
D8	.400	.910	.006	.127 .131	37
D9	.810	1.240			
D10	2.560	1.250			
D11	2.400	1.250			
D12	2.720	1.250			
D13	3.280	1.250			
D14	3.120	1.250			
D15	2.960	1.250			
D16	3.080	0			
D17	2.930	.130			
D18	2.480	0			
D19	2.330	.130			
D20	2.780	0			
D21	2.630	.130			
D22	1.800	.420			
D23	.860	.690			
D24	.750	.890			
D25	1.400	.530			
D26	1.590	.300			
D27	.620	0			
D28	.780	0			
D29	.940	0			
D30	1.430	.360			
D31	2.130	.520			
D32	1.240	0			
D33	1.400	0			
D34	1.560	0			
D35	2.740	1.090			
D36	2.180	.370			
D37	2.880	.620			
E1	.120	.710	.006	.153 .157	13
E2	.240	.560			
E3	.200	.170			
E4	.930	.870			
E5	1.160	.430			
E6	.990	.170			
E7	1.770	.150			
E8	.370	.260			
E9	.630	1.240			
E10	1.410	.180			
E11	2.470	.880			
E12	1.990	.410			
E13	2.610	.600			
F1	.590	.790	.006	.165 .169	6
F2	.890	.510			
F3	2.060	.730			
F4	2.290	.620			
F5	1.940	.900			
F6	2.560	1.070			
G1	2.780	.390	.006	.306 .313	2
G2	2.440	.390			
H1	.030	1.000	.006	.368 .375	3
H2	1.730	1.130			
H3	2.140	1.130			
J1	−.060	.270	.006	SECTION A-A	3
J2	.730	.270			
J3	2.060	.120			
K1	.370	1.160	.006	SECTION E-E	5
K2	1.050	1.160			
K3	1.220	.710			
K4	1.690	.650			
K5	2.740	.830			

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31
3. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 TYPE IV
4. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIMENSION F TO BE .594, BREAK OFF TANG
5. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
7. TRUE POSITIONING AS SHOWN IN CHART
8. UNLESS OTHERWISE SPECIFIED .125 ALL OVER
9. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015



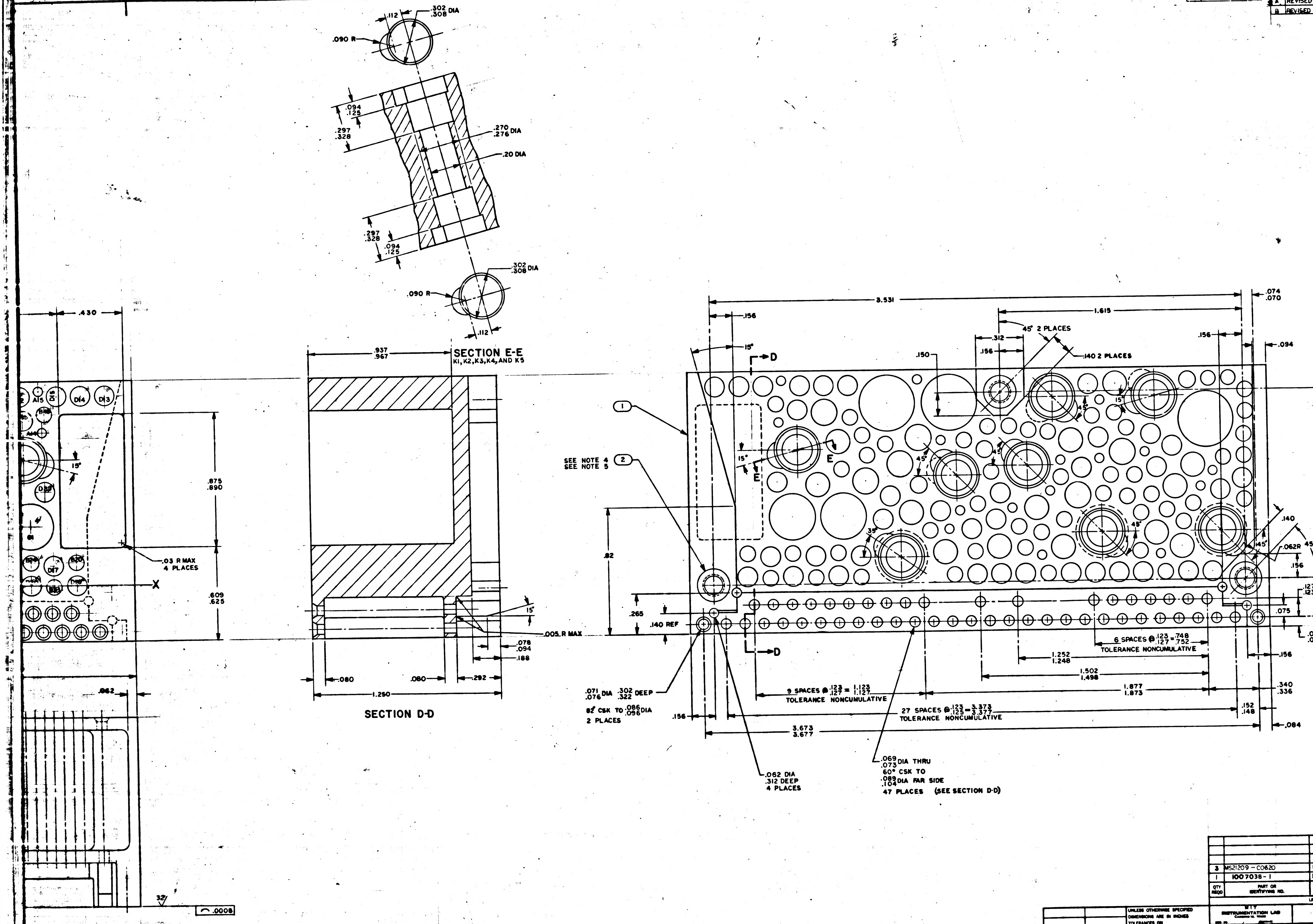
1008072

INCHES
PHOTOGRAPHIC SCALE ONLY

1007038 B

REVISIONS TDRR 01614

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01958		
B	REVISED PER TDRR 03331	9-25-63	



.112
.302 .308 DIA
.090 R
.094 .125
.297 .328
.270 .276 DIA
.20 DIA
.297 .328
.094 .125
.302 .308 DIA
.090 R
.112
SECTION E-E
K1, K2, K3, K4, AND K5
.430
.875 .890
.03 R MAX 4 PLACES
X
.609 .625
.862
32
.0008
.937 .967
15°
.005 R MAX
.078 .094
.188
.080
.080
.292
1.250
SECTION D-D
3.531
.156
1.615
.074 .070
45° 2 PLACES
.312
.156
.150
.140 2 PLACES
.156
.094
D
1
SEE NOTE 4 SEE NOTE 5
2
15°
E
E
45°
35°
1.241
.140
45°
.062R 45°
.156
.82
.265
.140 REF
.127 .123
.259 .255
.075
.067 .063
6 SPACES @ .123 .127 = .748 .752
TOLERANCE NONCUMULATIVE
D
1.252 1.248
.156
1.502 1.498
.340 .336
9 SPACES @ .123 .127 = 1.123 1.127
TOLERANCE NONCUMULATIVE
1.877 1.873
.071 .076 DIA .302 .322 DEEP
82° CSK TO .086 .096 DIA
2 PLACES
.152 .148
27 SPACES @ .123 .125 = 3.373 3.377
TOLERANCE NONCUMULATIVE
.156
3.673 3.677
.084
.062 DIA
.312 DEEP
4 PLACES
.069 .073 DIA THRU
60° CSK TO
.083 .104 DIA FAR SIDE
47 PLACES (SEE SECTION D-D)
A15 D15 D14 D13 A14 D32 D17

3	MS21209 – C0620	INSERT, SCREW-LOCKING	2
1	1007038 - 1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX .005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 3

NEXT ASSY	USED ON
1007091	

APPLICATION

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN R. [illegible] DATE 14 MAY 63
CHECKED [illegible]
APPROVAL [illegible] 17 JUNE 63
APPROVAL
NASA APPROVAL [illegible] 6-19-63
MIT APPROVAL [illegible] 19 [illegible] 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK FAILURE INDICATOR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007038
SCALE 5/1 WT SHEET 1 OF 1

MASTER

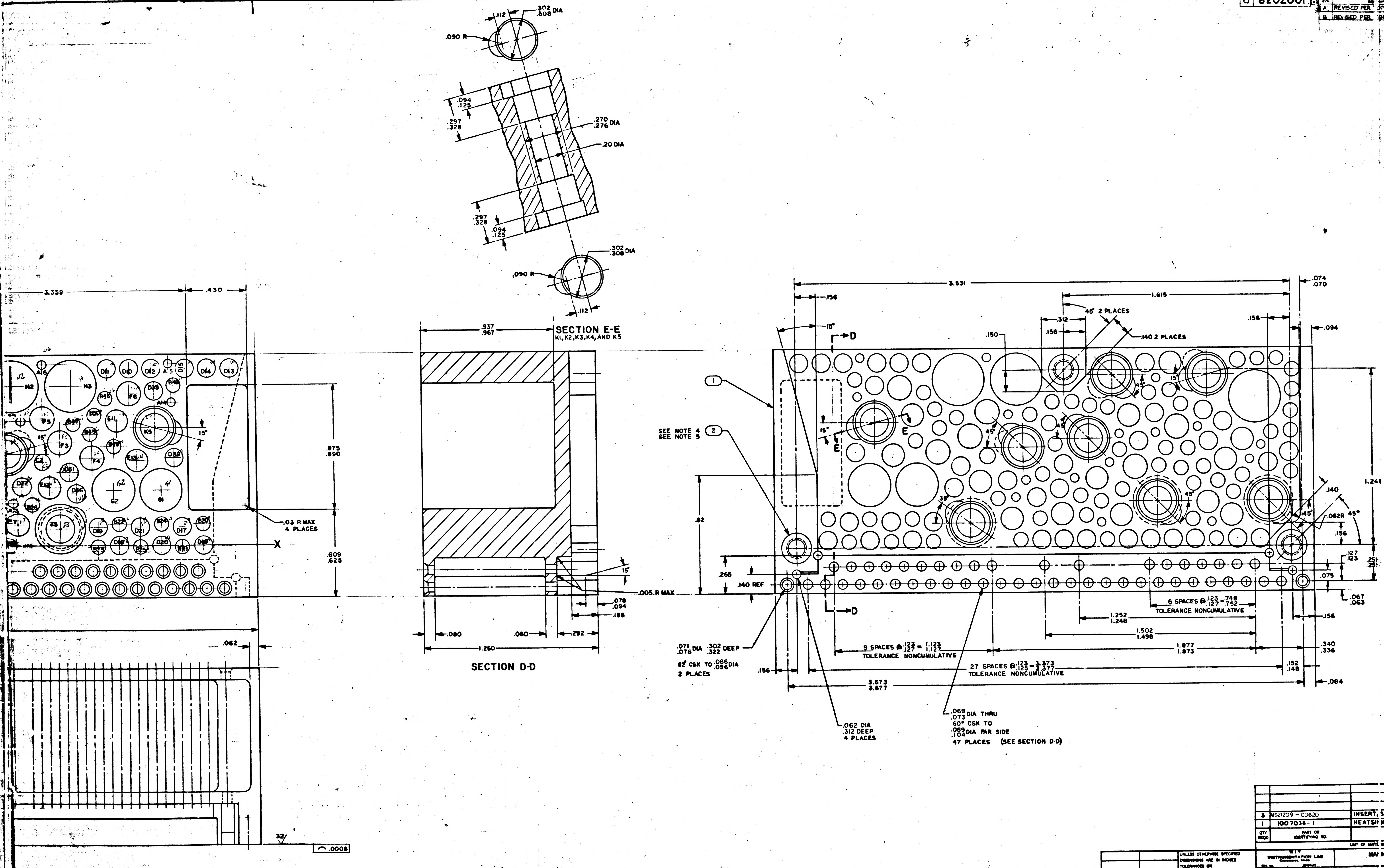
1007038

INCHES
PHOTOGRAPHIC SCALE ONLY

F-3

SYM	DESCRIPTION
A	REVISED PER DRR 0195
B	REVISED PER DRR 0333/

1007038 B



SECTION E-E
K1, K2, K3, K4, AND K5
SECTION D-D
.302 .308 DIA
.112
.090 R
.094 .125
.297 .328
.270 .276 DIA
.20 DIA
3.359
.430
.937 .967
.875 .890
.609 .625
.03 R MAX 4 PLACES
X
.062
32/
.0008
.080
1.250
.292
.005 R MAX
.078 .094
.188
15°
3.531
1.615
.156
.312
45° 2 PLACES
.140 2 PLACES
.150
.074 .070
.094
1.241
D
E
SEE NOTE 4
SEE NOTE 5
1
2
.82
.265
.140 REF
.071 .076 DIA .302 .322 DEEP
82° CSK TO .086 .096 DIA
2 PLACES
9 SPACES @ .123 .127 = 1.123 1.127
TOLERANCE NONCUMULATIVE
27 SPACES @ .123 .127 = 3.373 3.377
TOLERANCE NONCUMULATIVE
6 SPACES @ .123 .127 = .748 .752
TOLERANCE NONCUMULATIVE
1.252 1.248
1.502 1.498
1.877 1.873
3.673 3.677
.152 .148
.340 .336
.084
.156
.075
.067 .063
.127 .123
.140
.062R 45°
.062 DIA
.312 DEEP
4 PLACES
.069 .073 DIA THRU
60° CSK TO
.089 .104 DIA FAR SIDE
47 PLACES (SEE SECTION D-D)
H2 M2 H5 A16 D11 D10 D12 A15 D15 D14 D13 D35 B48 F6 B46 A14 F5 B47 B50 E11 K5 F3 B45 B49 D33 F4 E13 D51 D22 E12 D36 G2 G1 A13 E7 J3 D19 B22 D21 B24 D17 B20 D16 B23 D20 B21 D18

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
3	MS21209 - C0620	INSERT, SCREW-LOCKING
1	1007038 - 1	HEATSINK

LIST OF MATERIALS

NEXT ASSY	USED ON
1007051	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS XX ± .02 XXX .005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

HEAT TREATMENT

FINAL FINISH SEE NOTE 3

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Fitleoll DATE 4 MAY 63
CHECKED R.P. Kru June 17, 1963
APPROVAL 17 June 63
APPROVAL
NASA APPROVAL 6-19-63
MIT APPROVAL 19 Jun 63

MANNED SPACECRAFT CEN
HOUSTON, TEXAS

HEATSINK FAILURE IN

CODE IDENT NO.

1007

SCALE 5/1

MASTER

1007038

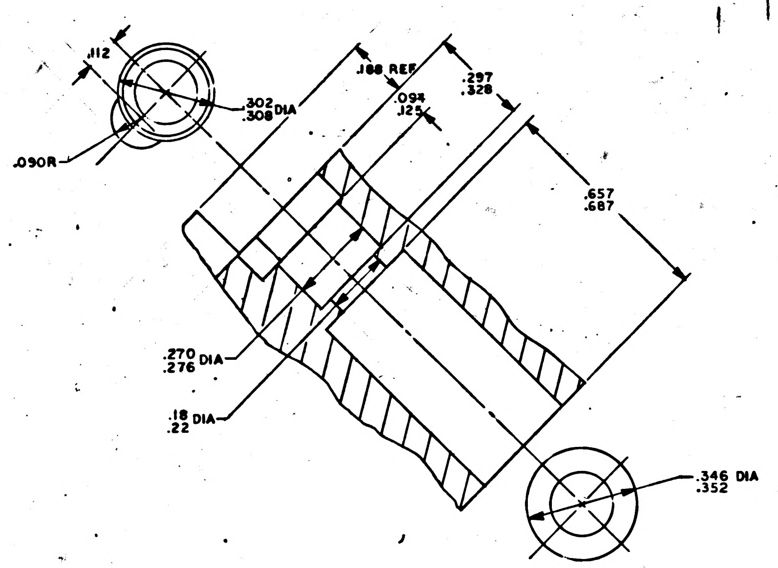
INCHES
PHOTOGRAPHIC SCALE ONLY

E-2

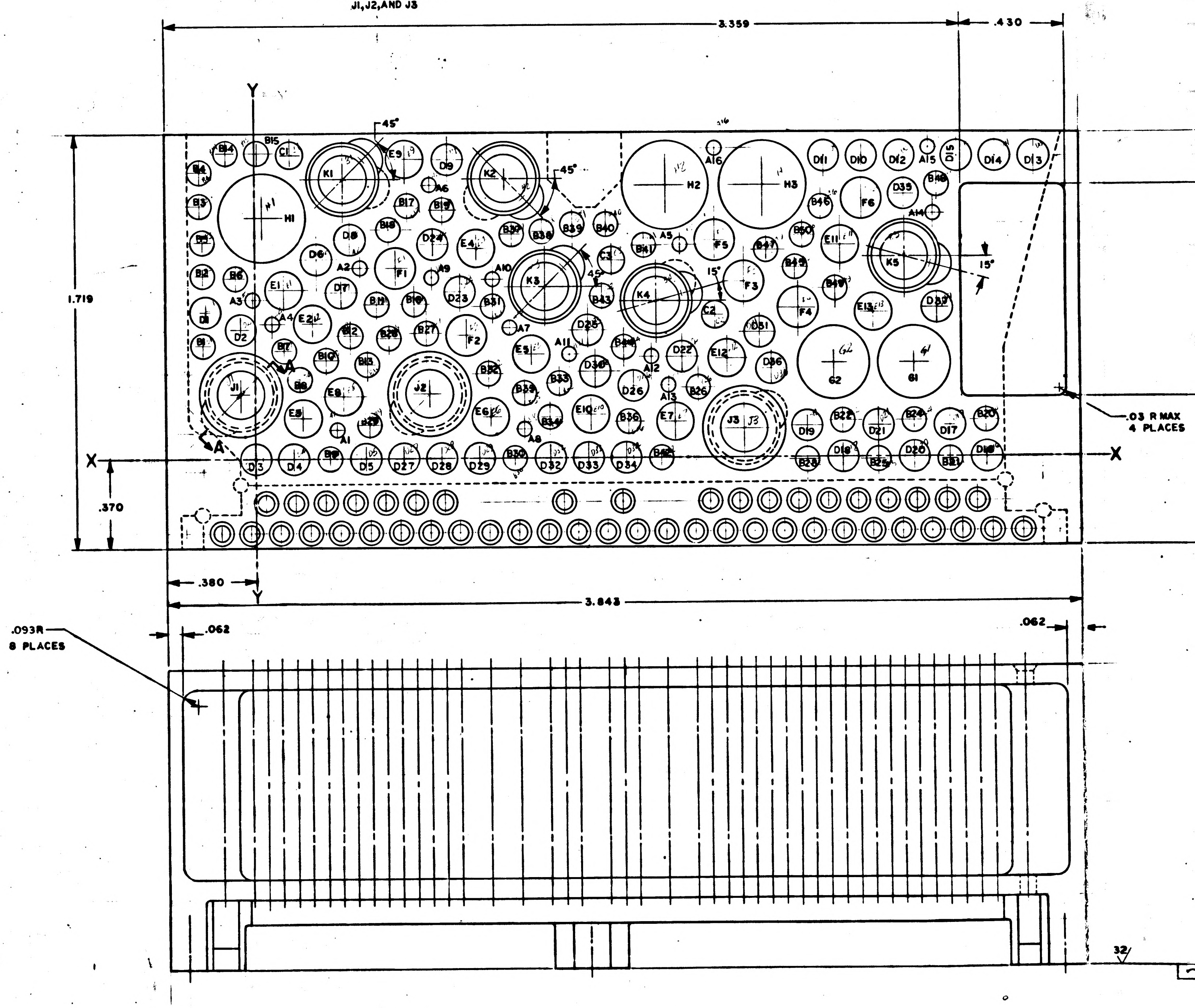
HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIM	HOLE DIA	QTY
A1	.340	.120	.006	.058 .062	16
A2	.440	.790			
A3	−.010	.660			
A4	.070	.560			
A5	1.790	.880			
A6	.730	1.130			
A7	1.070	.540			
A8	1.130	.120			
A9	.740	.750			
A10	1.000	.740			
A11	1.320	.430			
A12	1.670	.420			
A13	1.740	.300			
A14	2.860	1.010			
A15	2.840	1.280			
A16	1.940	1.280			
B1	−.220	.470	.006	.100 .104	50
B2	−.220	760			
B3	−.230	1.050			
B4	−.230	1.190			
B5	−.220	.900			
B6	.060	.730			
B7	.120	.450			
B8	.190	.330			
B9	.310	0			
B10	.300	.410			
B11	.510	.640			
B12	.400	.510			
B13	.470	.390			
B14	−.120	1.270			
B15	.010	1.270			
B16	.670	.640			
B17	.640	1.050			
B18	.560	.950			
B19	.790	1.030			
B20	3.080	.150			
B21	2.930	−.010			
B22	2.480	.150			
B23	2.330	−.010			
B24	2.780	.150			
B25	2.630	−.010			
B26	1.870	.290			
B27	.720	.520			
B28	.560	.500			
B29	480	140			
B30	1.090	0			
B31	1.000	.630			
B32	.980	.350			
B33	1.280	.310			
B34	1.240	.170			
B35	1.130	.270			
B36	1.570	.150			
B37	1.080	.930			
B38	1.210	.940			
B39	1.340	.970			
B40	1.480	.970			
B41	1.640	.880			
B42	1.710	0			
B43	1.460	.670			
B44	1.550	.460			
B45	2.280	.790			
B46	2.390	1.040			
B47	2.160	.860			
B48	2.880	1.130			
B49	2.450	.700			
B50	2.310	.920			
C1	.150	1.260	.006	.106 .110	3
C2	1.940	.590			
C3	1.500	.820			
D1	−.210	.610	.006	.127 .131	37
D2	−.060	.540			
D3	0	0			
D4	.160	0			
D5	.460	0			
D6	.260	.830			
D7	.360	.690			
D8	.400	.910	.006	.127 .131	37
D9	.810	1.240			
D10	2.560	1.250			
D11	2.400	1.250			
D12	2.720	1.250			
D13	3.280	1.250			
D14	3.120	1.250			
D15	2.960	1.250			
D16	3.080	0			
D17	2.930	.130			
D18	2.480	0			
D19	2.330	.130			
D20	2.780	0			
D21	2.630	.130			
D22	1.800	.420			
D23	.860	.690			
D24	.750	.890			
D25	1.400	.530			
D26	1.590	.300			
D27	.620	0			
D28	.780	0			
D29	.940	0			
D30	1.430	.360			
D31	2.130	.520			
D32	1.240	0			
D33	1.400	0			
D34	1.560	0			
D35	2.740	1.090			
D36	2.180	.370			
D37	2.880	.620			
E1	.120	.710	.006	.153 .157	13
E2	.240	.560			
E3	.200	.170			
E4	.930	.870			
E5	1.160	.430			
E6	.990	.170			
E7	1.770	.150			
E8	.370	.260			
E9	.630	1.240			
E10	1.410	.180			
E11	2.470	.880			
E12	1.990	.410			
E13	2.610	.600			
F1	.590	.790	.006	.165 .169	6
F2	.890	.510			
F3	2.060	.730			
F4	2.290	.620			
F5	1.940	.900			
F6	2.560	1.070			
G1	2.780	.390	.006	.306 .313	2
G2	2.440	.390			
H1	.030	1.000	.006	.368 .375	3
H2	1.730	1.130			
H3	2.140	1.130			
J1	−.060	.270	.006	SECTION A-A	3
J2	.730	.270			
J3	2.060	.120			
K1	.370	1.160	.006	SECTION E-E	5
K2	1.050	1.160			
K3	1.220	.710			
K4	1.690	.650			
K5	2.740	.830			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31
3. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 TYPE IV
4. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIMENSION F TO BE .594, BREAK OFF TANG
5. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
7. TRUE POSITIONING AS SHOWN IN CHART
8. UNLESS OTHERWISE SPECIFIED .125 ALL OVER
9. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015



SECTION A-A
J1, J2, AND J3

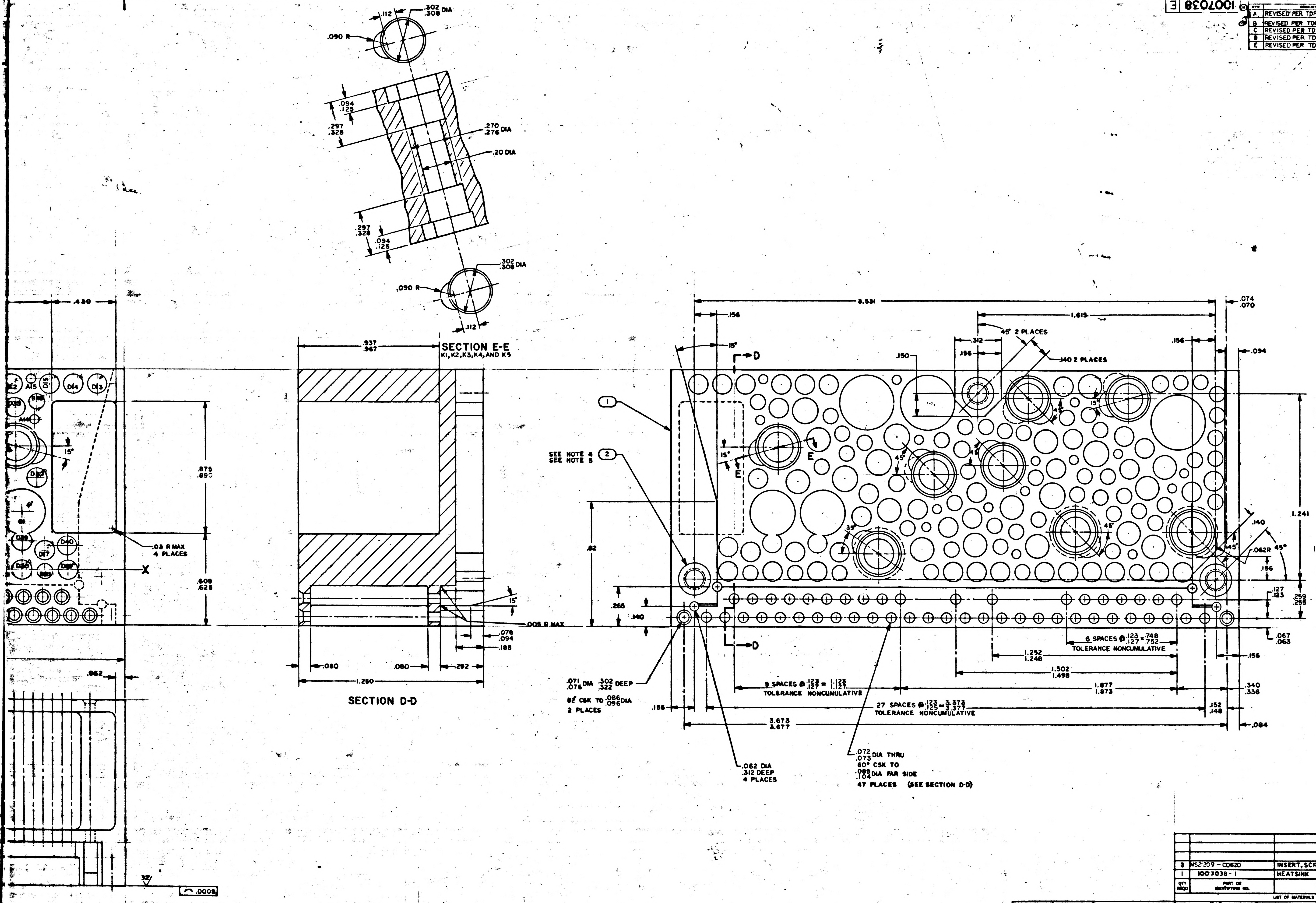


1007038

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01958		
B	REVISED PER TDRR 03331	9-25-63	
C	REVISED PER TDRR 03795		
D	REVISED PER TDRR 03851	10-15-63	LK
E	REVISED PER TDRR 03852	10-15-63	LK

REVISIONS TDRR 01612

1007038 E



.302 .308 DIA
.112
.090 R
.094 .125
.297 .328
.270 .276 DIA
.20 DIA
SECTION E-E
K1, K2, K3, K4, AND K5
.430
.937 .967
D14
D13
D15
A15
A14
15°
D39
D17
D40
.03 R MAX 4 PLACES
X
.875 .890
.609 .625
.062
SECTION D-D
.080
.080
.292
1.250
15°
.005 R MAX
.078 .094
.188
3.531
.156
15°
D
1.615
.074 .070
45° 2 PLACES
.312
.150
.156
.140 2 PLACES
.156
.094
SEE NOTE 4 SEE NOTE 5
E
45°
1.241
.82
.140
.062R
45°
.156
.266
.140
.127 .123
.259 .255
.067 .063
.156
6 SPACES @ .123 .127 = .748 .752
TOLERANCE NONCUMULATIVE
1.252 1.248
1.502 1.498
.071 .076 DIA .302 .322 DEEP
82° CSK TO .086 .096 DIA
2 PLACES
9 SPACES @ .123 .127 = 1.123 1.127
TOLERANCE NONCUMULATIVE
1.877 1.873
.340 .336
.156
27 SPACES @ .123 .125 = 3.373 3.377
TOLERANCE NONCUMULATIVE
.152 .148
3.673 3.677
.084
.062 DIA .312 DEEP 4 PLACES
.072 .073 DIA THRU
60° CSK TO .089 .104 DIA FAR SIDE
47 PLACES (SEE SECTION D-D)
32
⌒ .0008

EATENT MARKING
TTED IN THIS AREA.
ICATE CENTRALLY.

1007038 E

MASTER

3	MS21209 - C0620	INSERT, SCREW-LOCKING	2
1	1007038 - 1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007051	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS XX ±.02 XXX .005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 3

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN R. Fitzgerald DATE 14 MAY 63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 6-19-63
MIT APPROVAL

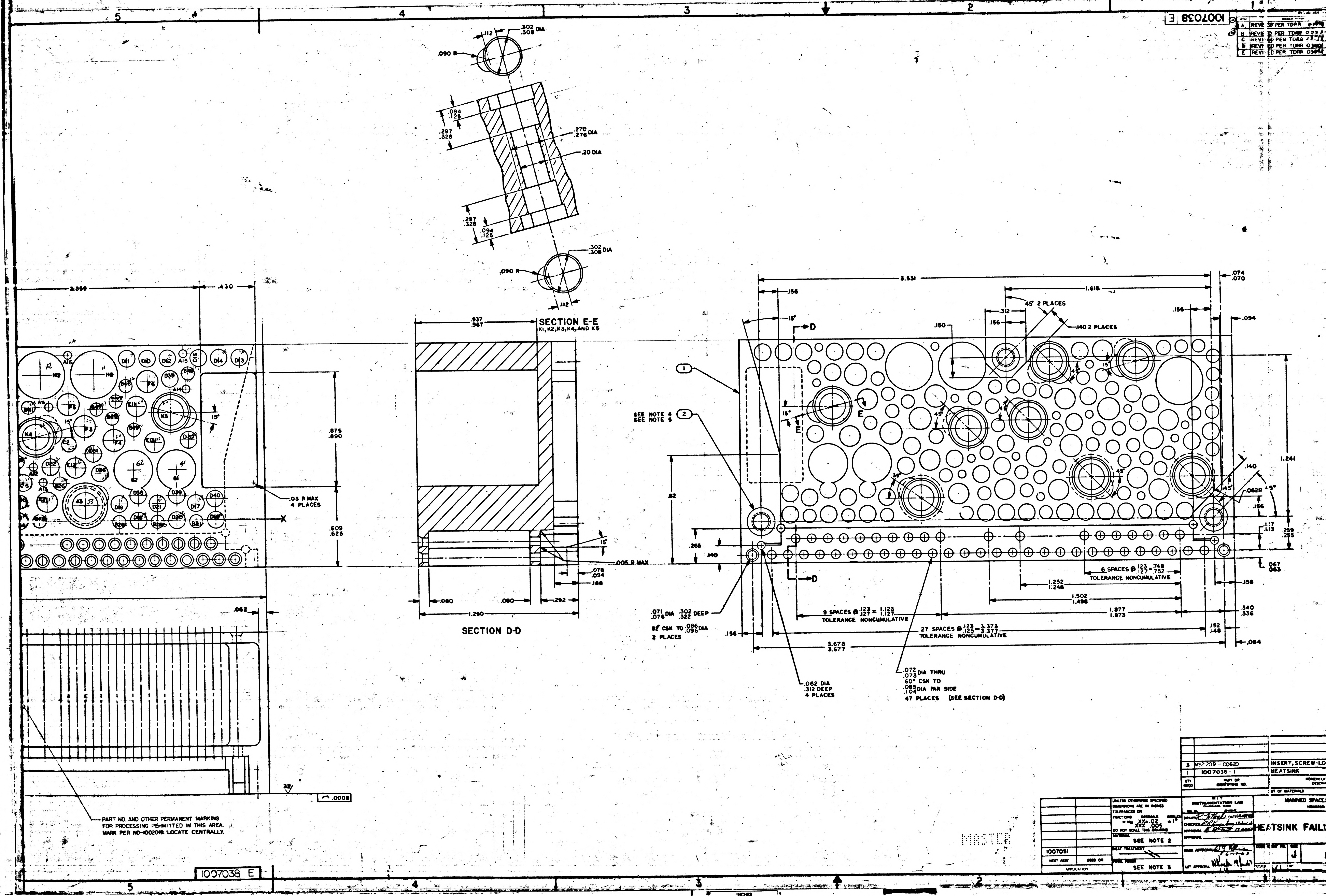
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK FAILURE INDICATOR

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007038
SCALE 5/1
WT
SHEET 1 OF 1

1007038 E

INCHES
PHOTOGRAPHIC SCALE ONLY


SECTION E-E
K1, K2, K3, K4, AND K5
SECTION D-D
.302 .308 DIA
.090 R
.112
.094 .125
.297 .328
.270 .276 DIA
.20 DIA
3.531
1.615
45° 2 PLACES
.140 2 PLACES
.937 .967
1.250
.080
.292
.005 R MAX
.03 R MAX 4 PLACES
.875 .890
.609 .625
1.241
SEE NOTE 4
SEE NOTE 5
.071 .076 DIA .302 .322 DEEP
82° CSK TO .086 .096 DIA 2 PLACES
.062 DIA .312 DEEP 4 PLACES
.072 .073 DIA THRU 60° CSK TO .089 .104 DIA FAR SIDE 47 PLACES (SEE SECTION D-D)
9 SPACES @ .123 .127 = 1.123 1.127 TOLERANCE NONCUMULATIVE
27 SPACES @ .123 .125 = 3.373 3.377 TOLERANCE NONCUMULATIVE
6 SPACES @ .123 .127 = .748 .752 TOLERANCE NONCUMULATIVE
3.673 3.677
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND-1002019. LOCATE CENTRALLY.
.0008
MASTER

1007038 E

SYM	DESCRIPTION
A	REVISED PER TDRR
B	REVISED PER TDRR
C	REVISED PER TDRR
D	REVISED PER TDRR
E	REVISED PER TDRR

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION
3	MS21209 – C0620	INSERT, SCREW-LO
1	1007038 - 1	HEATSINK

LIST OF MATERIALS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX .005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

HEAT TREATMENT

FINAL FINISH SEE NOTE 3

NEXT ASSY	USED ON
1007091	

APPLICATION

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Le Roy DATE 14 MAY 63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 6-19-63
MIT APPROVAL

MANNED SPACE

HEATSINK FAILU

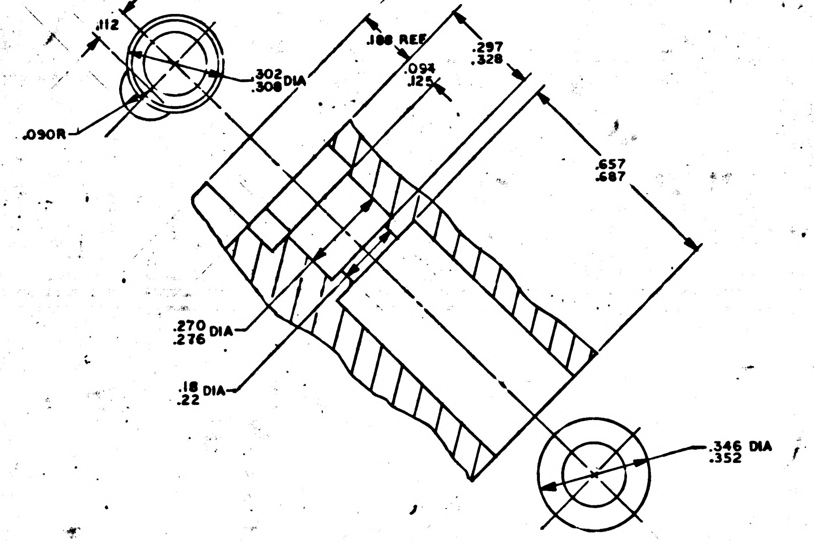
SIZE J

1007038 E

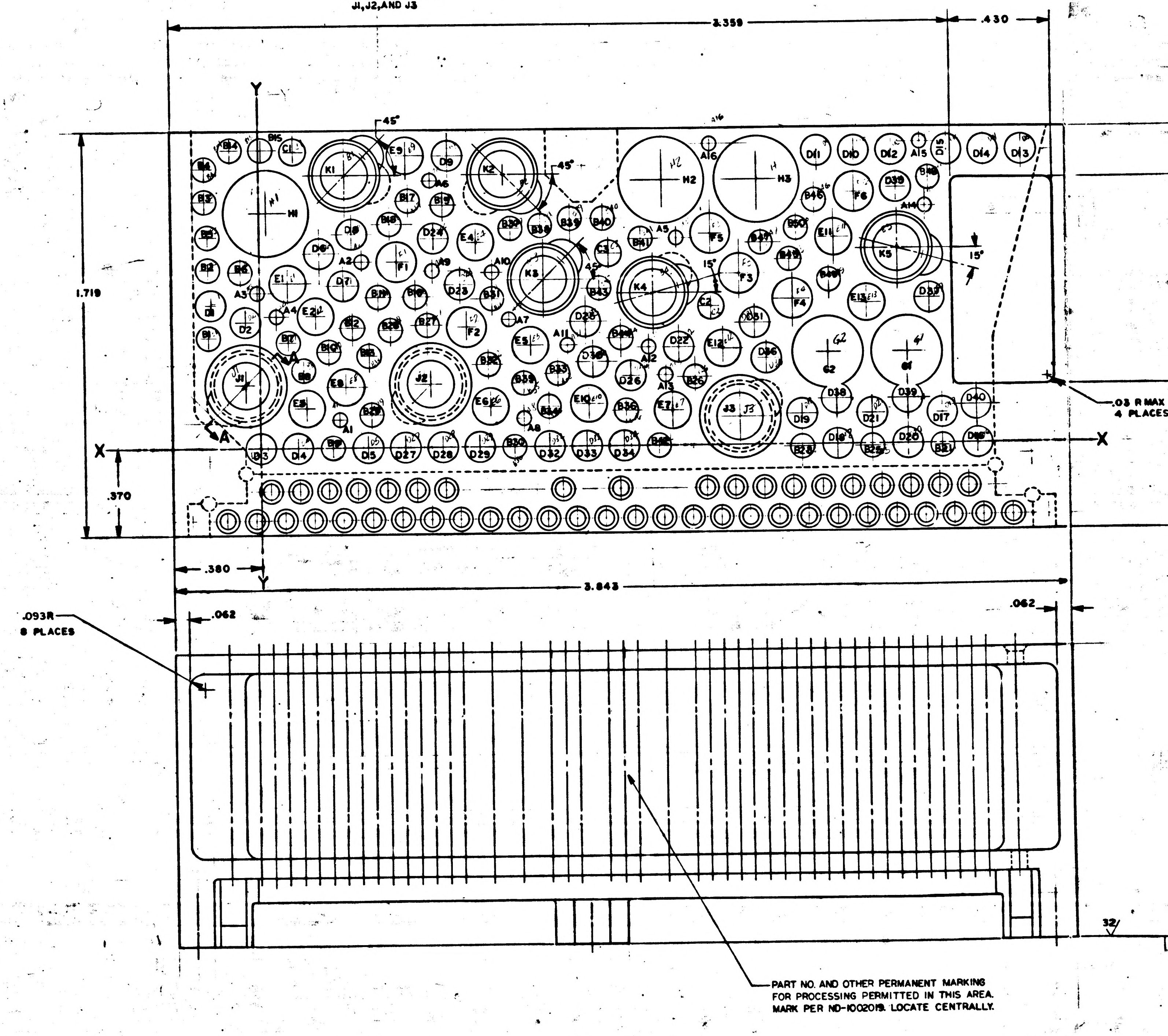
HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIM	HOLE DIA	QTY
A1	.340	.120	.006	.058 .062	16
A2	.440	.790			
A3	−.010	.660			
A4	.070	.560			
A5	1.790	.880			
A6	.730	1.130			
A7	1.070	.540			
A8	1.130	.120			
A9	.740	.750			
A10	1.000	.740			
A11	1.320	.430			
A12	1.670	.420			
A13	1.740	.300			
A14	2.860	1.010			
A15	2.840	1.280			
A16	1.940	1.280			
B1	−.220	.470	.006	.100 .104	47
B2	−.220	760			
B3	−.230	1.050			
B4	−.230	1.190			
B5	−.220	.900			
B6	−.080	.750			
B7	.120	.450			
B8	.190	.330			
B9	.310	0			
B10	.300	.410			
B11	.510	.640			
B12	.400	.510			
B13	.470	.390			
B14	−.120	1.270			
B15	.010	1.270			
B16	.670	.640			
B17	.640	1.050			
B18	.560	.950			
B19	.790	1.030			
~~B20~~	~~3.080~~	~~.150~~			
B21	2.930	−.010			
~~B22~~	~~2.480~~	~~.150~~			
B23	2.330	−.010			
~~B24~~	~~2.780~~	~~.150~~			
B25	2.630	−.010			
B26	1.870	.290			
B27	.720	.520			
B28	.560	.500			
B29	480	140			
B30	1.090	0			
B31	1.000	.630			
B32	.980	.350			
B33	1.280	.310			
B34	1.240	.170			
B35	1.130	.270			
B36	1.570	.150			
B37	1.080	.930			
B38	1.210	.940			
B39	1.340	.970			
B40	1.480	.970			
B41	1.640	.880			
B42	1.710	0			
B43	1.460	.670			
B44	1.550	.460			
B45	2.280	.790			
B46	2.390	1.040			
B47	2.160	.860			
B48	2.880	1.130			
B49	2.450	.700			
B50	2.310	.920			
C1	.150	1.260	.006	.106 .110	3
C2	1.940	.590			
C3	1.500	.820			
D1	−.210	.610	.006	.127 .131	37
D2	−.060	.540			
D3	0	0			
D4	.160	0			
D5	.460	0			
D6	.260	.830			
D7	.360	.690			

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIM	HOLE DIA	QTY
D8	.400	.910	.006	.127 .131	40
D9	.810	1.240			
D10	2.560	1.250			
D11	2.400	1.250			
D12	2.720	1.250			
D13	3.280	1.250			
D14	3.120	1.250			
D15	2.960	1.250			
D16	3.080	0			
D17	2.930	.130			
D18	2.480	0			
D19	2.330	.130			
D20	2.780	0			
D21	2.630	.130			
D22	1.800	.420			
D23	.860	.690			
D24	.750	.890			
D25	1.400	.530			
D26	1.590	.300			
D27	.620	0			
D28	.780	0			
D29	.940	0			
D30	1.430	.360			
D31	2.130	.520			
D32	1.240	0			
D33	1.400	0			
D34	1.560	0			
D35	2.740	1.090			
D36	2.180	.370			
D37	2.880	.620			
D38	2.480	.190			
D39	2.780	.190			
D40	3.080	.160			
E1	.120	.710	.006	.153 .157	13
E2	.240	.560			
E3	.200	.170			
E4	.930	.870			
E5	1.160	.430			
E6	.990	.170			
E7	1.770	.150			
E8	.370	.260			
E9	.630	1.240			
E10	1.410	.180			
E11	2.470	.880			
E12	1.990	.410			
E13	2.610	.600			
F1	.590	.790	.006	.165 .169	6
F2	.890	.510			
F3	2.060	.730			
F4	2.290	.620			
F5	1.940	.900			
F6	2.560	1.070			
G1	2.780	.390	.006	.306 .313	2
G2	2.440	.390			
H1	.030	1.000	.006	.368 .375	3
H2	1.730	1.130			
H3	2.140	1.130			
J1	−.060	.270	.006	SECTION A-A	3
J2	.730	.270			
J3	2.060	.120			
K1	.370	1.160	.006	SECTION E-E	5
K2	1.050	1.160			
K3	1.220	.710			
K4	1.690	.650			
K5	2.740	.830			

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31
3. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 TYPE IV
4. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIMENSION F TO BE .594, BREAK OFF TANG
5. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
7. TRUE POSITIONING AS SHOWN IN CHART
8. UNLESS OTHERWISE SPECIFIED .125 ALL OVER
9. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015



SECTION A-A
J1, J2, AND J3



PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND-1002019. LOCATE CENTRALLY.

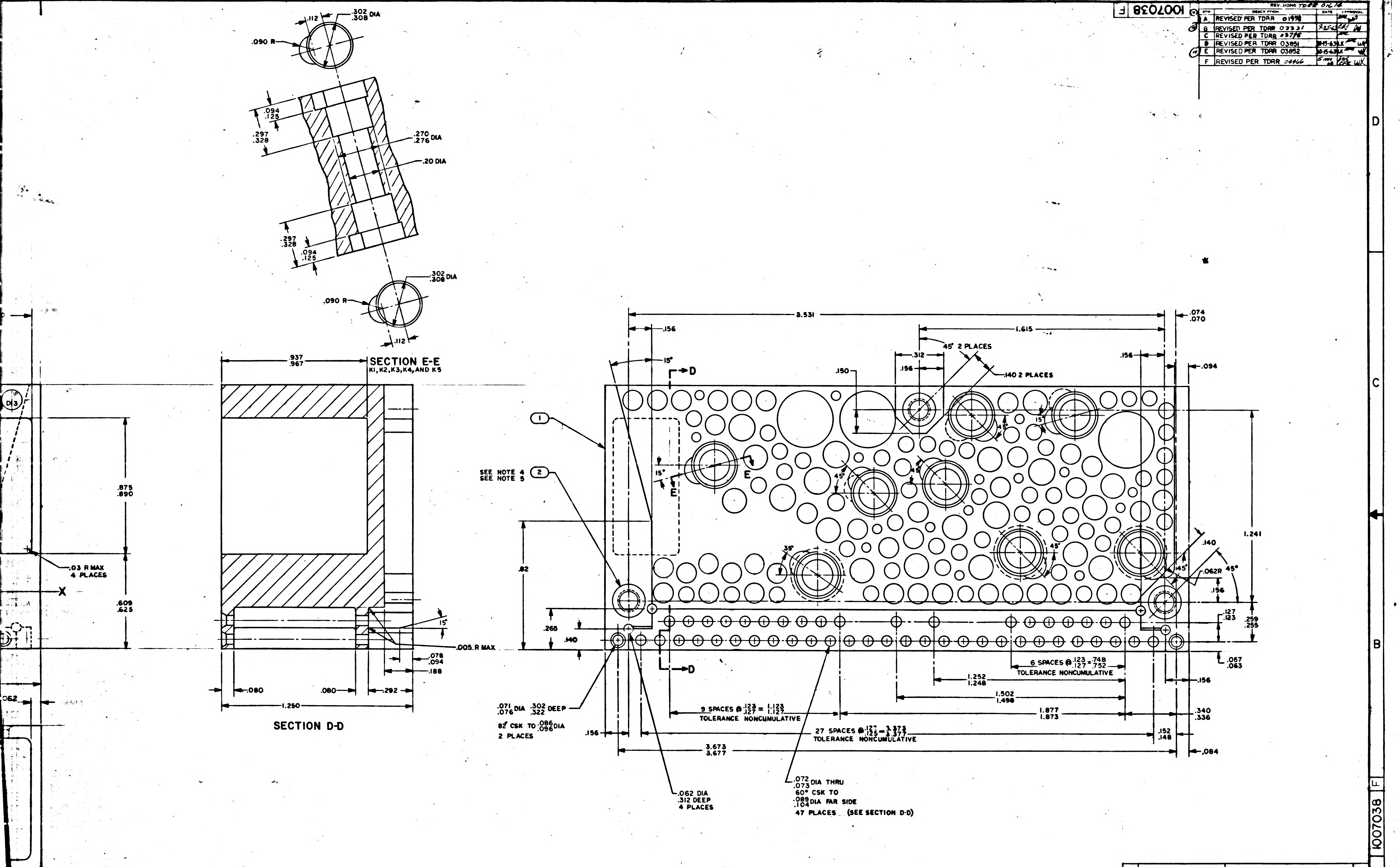
1007038 E

INCHES
PHOTOGRAPHIC SCALE ONLY

1007038 F

REVISIONS TDRR 01614

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01958		
B	REVISED PER TDRR 03331	9-25-63	
C	REVISED PER TDRR 03716		
D	REVISED PER TDRR 03851	10-15-63	LK WK
E	REVISED PER TDRR 03852	10-15-63	LK WK
F	REVISED PER TDRR 04466	5 NOV 63	WK



4
3
2
D
C
B
A
.112
.302 .308 DIA
.090 R
.094 .125
.297 .328
.270 .276 DIA
.20 DIA
.297 .328
.094 .125
.302 .308 DIA
.090 R
.112
SECTION E-E
K1, K2, K3, K4, AND K5
.937 .967
.875 .890
.03 R MAX 4 PLACES
X
.609 .625
15°
.005 R MAX
.078 .094
.188
.080
.080
.292
1.250
SECTION D-D
.062
.0008
32
D13
3.531
.156
.074 .070
1.615
15°
D
45° 2 PLACES
.312
.156
.150
.140 2 PLACES
.156
.094
1
SEE NOTE 4
SEE NOTE 5
2
15°
E
E
45°
45°
45°
15°
35°
45°
.140
1.241
45°
.062R 45°
.82
.156
.265
.140
.127 .123
.259 .255
6 SPACES @ .123 .127 = .748 .752
TOLERANCE NONCUMULATIVE
.067 .063
D
1.252 1.248
.156
1.502 1.498
.071 .076 DIA .302 .322 DEEP
82° CSK TO .086 .096 DIA
2 PLACES
9 SPACES @ .123 .127 = 1.123 1.127
TOLERANCE NONCUMULATIVE
1.877 1.873
.340 .336
.156
27 SPACES @ .121 .125 = 3.373 3.377
TOLERANCE NONCUMULATIVE
.152 .148
3.673 3.677
.084
.062 DIA
.312 DEEP
4 PLACES
.072 .073 DIA THRU
60° CSK TO
.089 .104 DIA FAR SIDE
47 PLACES (SEE SECTION D-D)

3	MS21209 - C0620	INSERT, SCREW-LOCKING	2
1	1007038 - 1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007051	
NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ±.02 XXX .005 ANGLES ±1°
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

HEAT TREATMENT

FINAL FINISH SEE NOTE 3

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Tetrault DATE 14 MAY 63
CHECKED 17 June 63
APPROVAL 17 June 63
APPROVAL
NASA APPROVAL 6-19-63
MIT APPROVAL 19 June 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK FAILURE INDICATOR

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007038
SCALE 5/1 | WT | SHEET 1 OF 1

1007038 F

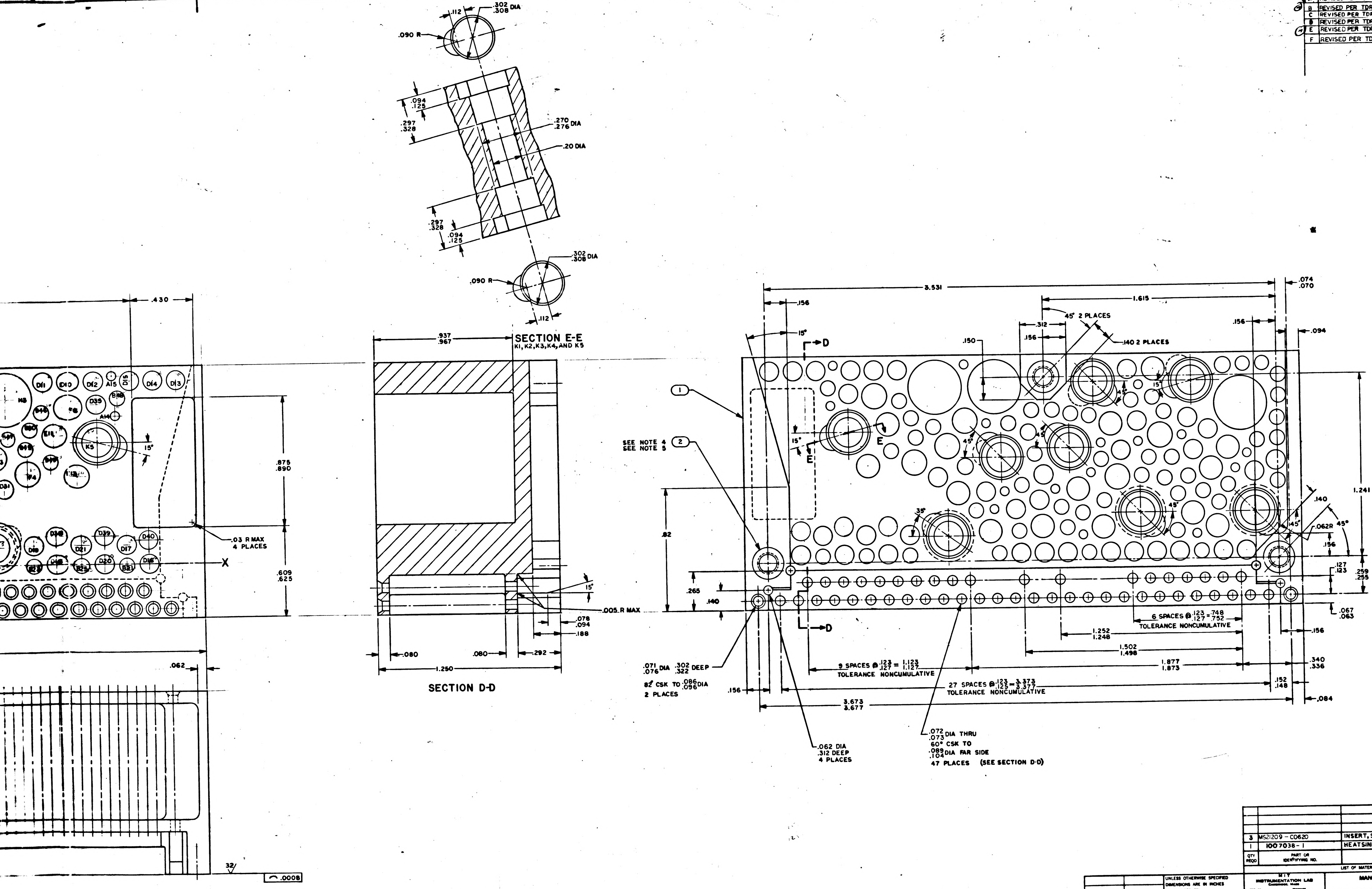
MASTER

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

F3

1007038 F

SYM	REVISIONS TDRR 01616 DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01998		
B	REVISED PER TDRR 03331	9-25-63	
C	REVISED PER TDRR 03716		
D	REVISED PER TDRR 03851	10-15-63	LK WK
E	REVISED PER TDRR 03852	10-15-63	LK WK
F	REVISED PER TDRR 4466	5 Nov 63	WK



.112
.302 .308 DIA
.090 R
.094 .125
.297 .328
.270 .276 DIA
.20 DIA
.297 .328
.094 .125
.302 .308 DIA
.090 R
.112
SECTION E-E
K1, K2, K3, K4, AND K5
.430
.937 .967
15°
.875 .890
.03 R MAX 4 PLACES
X
.609 .625
.005 R MAX
.078 .094
.188
.080
.080
.292
1.250
SECTION D-D
.062
32
.0008
3.531
.156
1.615
.074 .070
.312
.156
45° 2 PLACES
.140 2 PLACES
.150
.156
.094
15°
D
E
45°
E
1
SEE NOTE 4
SEE NOTE 5
2
1.241
.82
35°
45°
.140
.145
.062R
45°
.156
.127 .123
.259 .255
.265
.140
.067 .063
6 SPACES @ .123 .127 = .748 .752
TOLERANCE NONCUMULATIVE
.156
D
1.252 1.248
1.502 1.498
1.877 1.873
.340 .336
9 SPACES @ .123 .127 = 1.123 1.127
TOLERANCE NONCUMULATIVE
.071 .076 DIA .302 .322 DEEP
82° CSK TO .086 .096 DIA
2 PLACES
.156
27 SPACES @ .123 .127 = 3.373 3.377
TOLERANCE NONCUMULATIVE
.152 .148
.084
3.673 3.677
.062 DIA
.312 DEEP
4 PLACES
.072 .073 DIA THRU
60° CSK TO
.089 .104 DIA FAR SIDE
47 PLACES (SEE SECTION D-D)

NO AND OTHER PERMANENT MARKING
PROCESSING PERMITTED IN THIS AREA.
PER ND-1002019. LOCATE CENTRALLY.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS21209 - C0620	INSERT, SCREW-LOCKING	2
1	1007038 - 1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007051	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ± .02 XXX ± .005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

HEAT TREATMENT —

FINAL FINISH SEE NOTE 3

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Fitzgerald DATE 14 MAY 63
CHECKED 17 June 63
APPROVAL 17 June 63
APPROVAL
NASA APPROVAL 6-19-63
MIT APPROVAL 19 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK FAILURE INDICATOR

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007038

SCALE 5/1 WT SHEET 1 OF 1

MASTER

1007038 F

1007038 F

INCHES
PHOTOGRAPHIC SCALE ONLY

E2

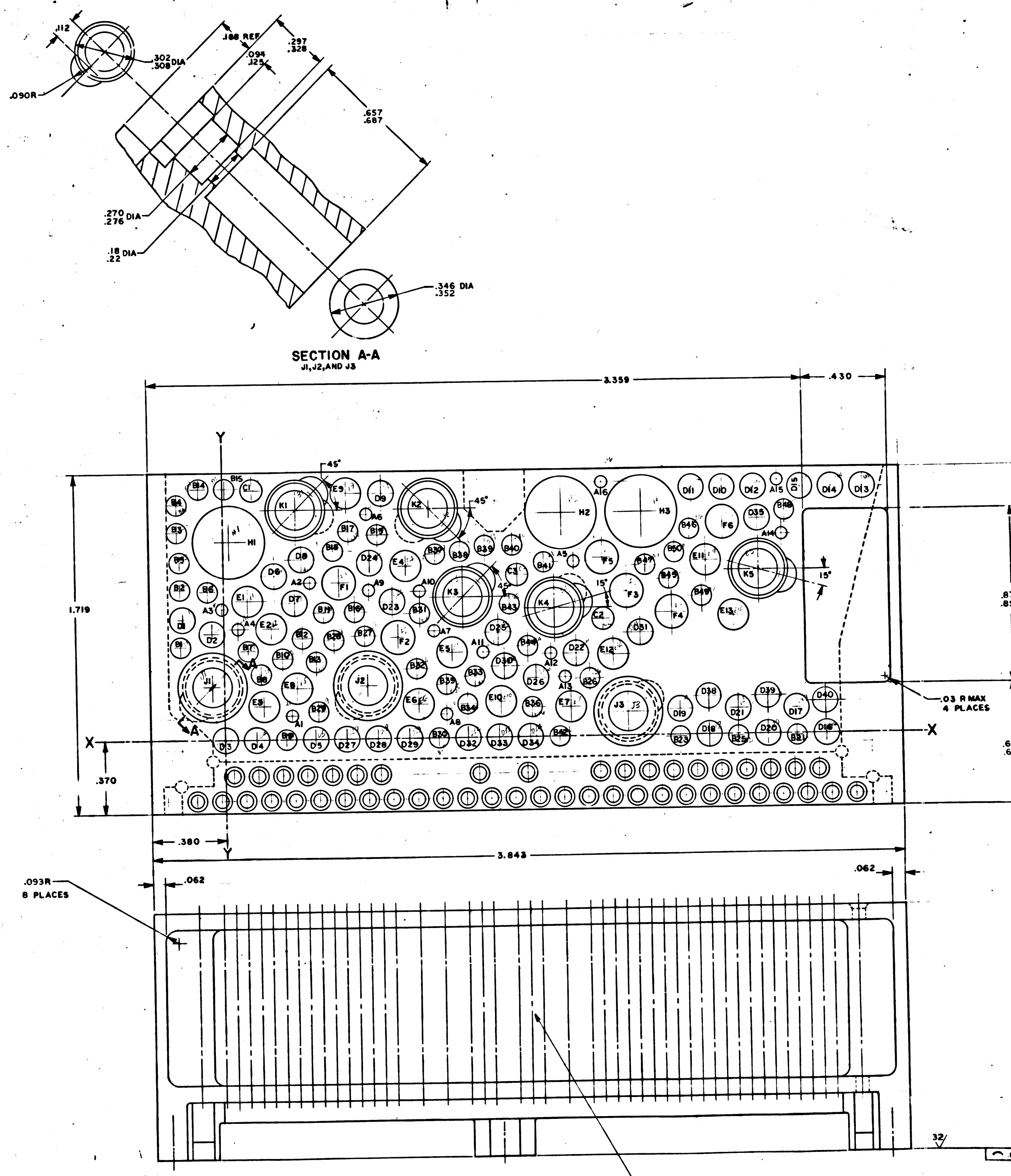
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIM	HOLE DIA	QTY
			.006	.058 .062	16
A1	.340	.120			
A2	.440	.790			
A3	−.010	.660			
A4	.070	.560			
A5	1.790	.880			
A6	.730	1.130			
A7	1.070	.540			
A8	1.130	.120			
A9	.740	.750			
A10	1.000	.740			
A11	1.320	.430			
A12	1.670	.420			
A13	1.740	.300			
A14	2.860	1.010			
A15	2.840	1.280			
A16	1.940	1.280			
			.006	.100 .104	47
B1	−.220	.470			
B2	−.220	760			
B3	−.230	1.050			
B4	−.230	1.190			
B5	−.220	.900			
B6	−.080	.750			
B7	.120	.450			
B8	.190	.330			
B9	.310	0			
B10	.300	.410			
B11	.510	.640			
B12	.400	.510			
B13	.470	.390			
B14	−.120	1.270			
B15	.010	1.270			
B16	.670	.640			
B17	.640	1.050			
B18	.560	.950			
B19	.790	1.030			
~~B20~~	~~3.080~~	~~.150~~			
B21	2.930	−.010			
~~B22~~	~~2.480~~	~~.150~~			
B23	2.330	−.010			
~~B24~~	~~2.780~~	~~.150~~			
B25	2.630	−.010			
B26	1.870	.290			
B27	.720	.520			
B28	.560	.500			
B29	480	140			
B30	1.090	0			
B31	1.000	.630			
B32	.980	.350			
B33	1.280	.310			
B34	1.240	.170			
B35	1.130	.270			
B36	1.570	.150			
B37	1.080	.930			
B38	1.210	.940			
B39	1.340	.970			
B40	1.480	.970			
B41	1.640	.880			
B42	1.710	0			
B43	1.460	.670			
B44	1.550	.460			
B45	2.280	.790			
B46	2.390	1.040			
B47	2.160	.860			
B48	2.880	1.130			
B49	2.450	.700			
B50	2.310	.920			
			.006	.106 .110	3
C1	.150	1.260			
C2	1.940	.590			
C3	1.500	.820			
			.006	.127 .131	37
D1	−.210	.610			
D2	−.060	.540			
D3	0	0			
D4	.160	0			
D5	.460	0			
D6	.260	.830			
D7	.360	.690			

HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIM	HOLE DIA	QTY
			.006	.127 .131	38
D8	.400	.910			
D9	.810	1.240			
D10	2.560	1.250			
D11	2.400	1.250			
D12	2.720	1.250			
D13	3.280	1.250			
D14	3.120	1.250			
D15	2.960	1.250			
D16	3.080	0			
D17	2.930	.130			
D18	2.480	0			
D19	2.330	.130			
D20	2.780	0			
D21	2.630	.130			
D22	1.800	.420			
D23	.860	.690			
D24	.750	.890			
D25	1.400	.530			
D26	1.590	.300			
D27	.620	0			
D28	.780	0			
D29	.940	0			
D30	1.430	.360			
D31	2.130	.520			
D32	1.240	0			
D33	1.400	0			
D34	1.560	0			
D35	2.740	1.090			
D38	2.480	.190			
D39	2.780	.190			
D40	3.080	.160			
			.006	.153 .157	13
E1	.120	.710			
E2	.240	.560			
E3	.200	.170			
E4	.930	.870			
E5	1.160	.430			
E6	.990	.170			
E7	1.770	.150			
E8	.370	.260			
E9	.630	1.240			
E10	1.410	.180			
E11	2.470	.880			
E12	1.990	.410			
E13	2.610	.600			
			.006	.165 .169	6
F1	.590	.790			
F2	.890	.510			
F3	2.060	.730			
F4	2.290	.620			
F5	1.940	.900			
F6	2.560	1.070			
			.006	.368 .375	3
H1	.030	1.000			
H2	1.730	1.130			
H3	2.140	1.130			
			.006	SECTION A-A	3
J1	−.060	.270			
J2	.730	.270			
J3	2.060	.120			
			.006	SECTION E-E	5
K1	.370	1.160			
K2	1.050	1.160			
K3	1.220	.710			
K4	1.690	.650			
K5	2.740	.830			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31
3. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 TYPE IV
4. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIMENSION F TO BE .594, BREAK OFF TANG
5. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
7. TRUE POSITIONING AS SHOWN IN CHART
8. UNLESS OTHERWISE SPECIFIED .125 ALL OVER
9. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015



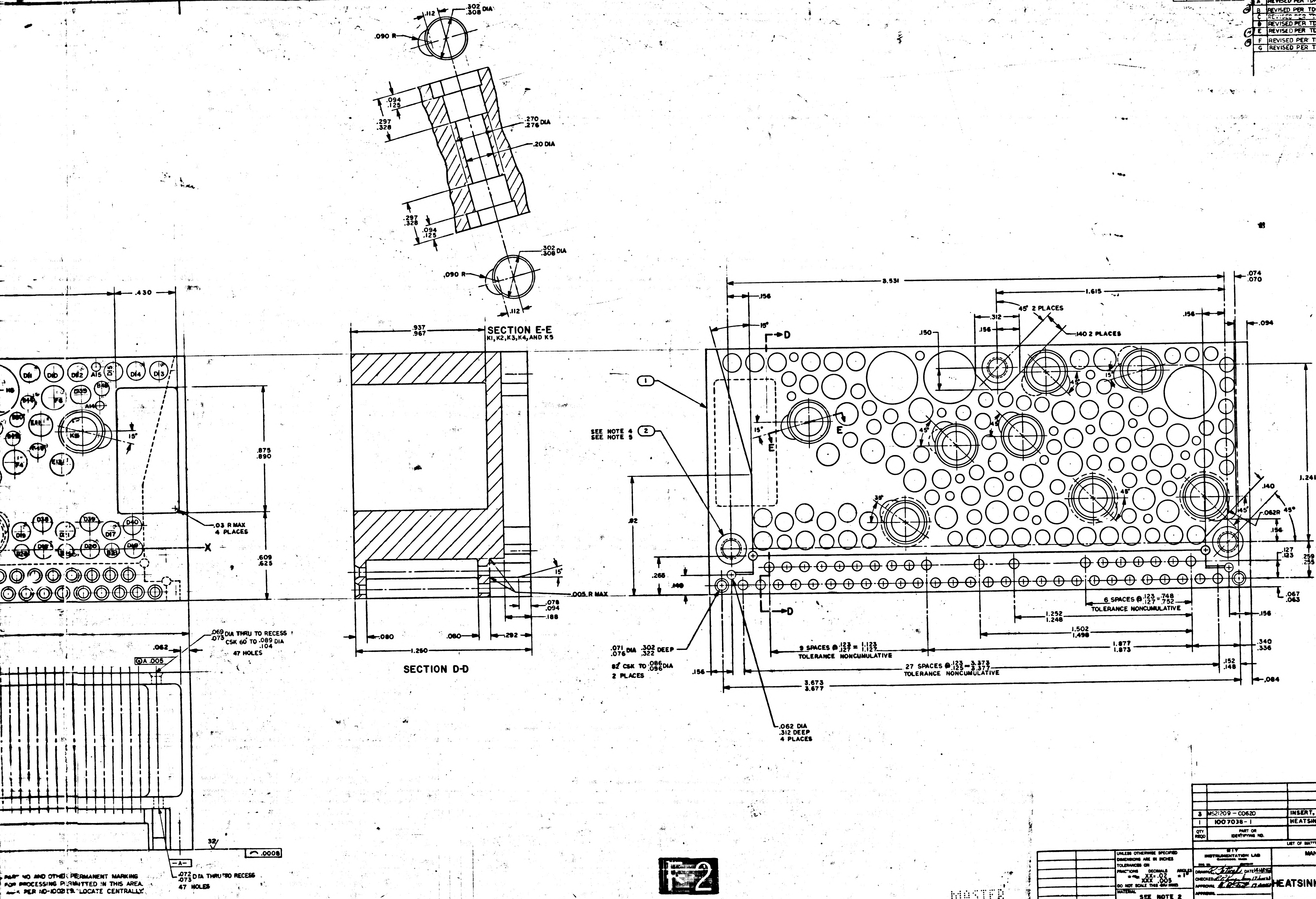
SECTION A-A
J1, J2, AND J3

PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND-1002019. LOCATE CENTRALLY.

1007038 G

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01938		
B	REVISED PER TDRR 03331	9-25-63	
C	REVISED PER TDRR 03798		
D	REVISED PER TDRR 03851		WK
E	REVISED PER TDRR 03852	10-15-63	WK
F	REVISED PER TDRR 04466	5 Nov 63	WK
G	REVISED PER TDRR 05471		WK

REVISIONS TDRR 01618


.112
.302
.308 DIA
.090 R
.094
.125
.297
.328
.270
.276 DIA
.20 DIA
.297
.328
.094
.125
.302
.308 DIA
.090 R
.112
SECTION E-E
K1, K2, K3, K4, AND K5
.937
.967
.430
15°
.875
.890
.03 R MAX
4 PLACES
X
.609
.625
.069
.073 DIA THRU TO RECESS
CSK 60° TO .089
.104 DIA
47 HOLES
.062
A .005
.080
.080
.292
1.250
15°
.005 R MAX
.078
.094
.188
SECTION D-D
3.531
.156
15°
D
1.615
45° 2 PLACES
.312
.156
.150
.140 2 PLACES
.156
.074
.070
.094
①
SEE NOTE 4
SEE NOTE 5
②
E
E
45°
15°
45°
45°
35°
45°
.140
.062R
45°
.156
1.241
.92
.268
.149
.127
.123
.259
.255
.067
.063
6 SPACES @ .123/.127 = .748/.752
TOLERANCE NONCUMULATIVE
1.252
1.248
.156
1.502
1.498
1.877
1.873
.340
.336
9 SPACES @ .123/.127 = 1.123/1.127
TOLERANCE NONCUMULATIVE
27 SPACES @ .123/.125 = 3.373/3.377
TOLERANCE NONCUMULATIVE
.152
.148
.071
.076 DIA .302
.322 DEEP
82° CSK TO .086
.096 DIA
2 PLACES
.156
3.673
3.677
.084
.062 DIA
.312 DEEP
4 PLACES
D
32
.0008
-A-
.072
.073 DIA THRU TO RECESS
47 HOLES
PART NO AND OTHER PERMANENT MARKING
FOR PROCESSING PERMITTED IN THIS AREA
PER NO-100213 "LOCATE CENTRALLY"
D11 D10 D12 A15 D15 D14 D13 H6 F6 D39 K6 D38 D40 D17 D18 D19 D20 D21 D22

F-2

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS21209 – C0620	INSERT, SCREW-LOCKING	2
1	1007038-1	HEATSINK	1

LIST OF MATERIALS

1007081	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± 1/64 DECIMALS XX ± .02 XXX ± .005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 3

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
DRAWN R. J. Strod DATE 14 MAY 63
CHECKED R. P. King 17 June 63
APPROVAL
APPROVAL
NASA APPROVAL 6-19-63
MIT APPROVAL 19 Jun 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK FAILURE INDICATOR

CODE IDENT NO. | SIZE J | NASA DRAWING NO. 1007038
SCALE 5/1 | WT | SHEET 1 OF 1

1007038 G

1007038 G

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

SEE NOTE 10

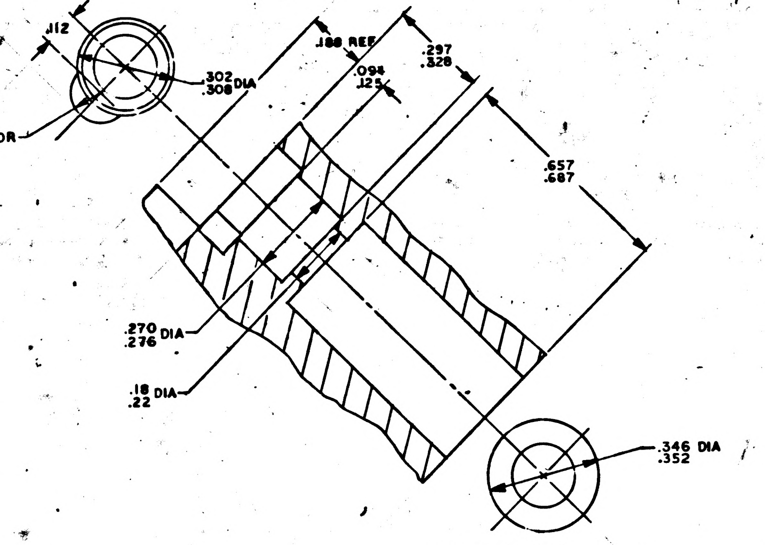
HOLE IDENT	"X" DIM	"Y" DIM		HOLE DIA	QTY
A1	.340	.120		.058 .062	16
A2	.440	.790			
A3	−.010	.660			
A4	.070	.560			
A5	1.790	.880			
A6	.730	1.130			
A7	1.070	.540			
A8	1.130	.120			
A9	.740	.750			
A10	1.000	.740			
A11	1.320	.430			
A12	1.670	.420			
A13	1.740	.300			
A14	2.860	1.010			
A15	2.840	1.280			
A16	1.940	1.280			
B1	−.220	.470		.100 .104	47
B2	−.220	760			
B3	−.230	1.050			
B4	−.230	1.190			
B5	−.220	.900			
B6	−.080	.750			
B7	.120	.450			
B8	.190	.330			
B9	.310	0			
B10	.300	.410			
B11	.510	.640			
B12	.400	.510			
B13	.470	.390			
B14	−.120	1.270			
B15	.010	1.270			
B16	.670	.640			
B17	.640	1.050			
B18	.560	.950			
B19	.790	1.030			
~~B20~~	~~3.080~~	~~.150~~			
B21	2.930	−.010			
~~B22~~	~~2.480~~	~~.150~~			
B23	2.330	−.010			
~~B24~~	~~2.780~~	~~.150~~			
B25	2.630	−.010			
B26	1.870	.290			
B27	.720	.520			
B28	.560	.500			
B29	480	140			
B30	1.090	0			
B31	1.000	.630			
B32	.980	.350			
B33	1.280	.310			
B34	1.240	.170			
B35	1.130	.270			
B36	1.570	.150			
B37	1.080	.330			
B38	1.210	.940			
B39	1.340	.970			
B40	1.480	.970			
B41	1.640	.880			
B42	1.710	0			
B43	1.460	.670			
B44	1.550	.460			
B45	2.280	.790			
B46	2.390	1.040			
B47	2.160	.860			
B48	2.880	1.130			
B49	2.450	.700			
B50	2.310	.920			
C1	.150	1.260		.106 .110	3
C2	1.940	.590			
C3	1.500	.820			
D1	−.210	.610		.127 .131	37
D2	−.060	.540			
D3	0	0			
D4	.160	0			
D5	.460	0			
D6	.260	.830			
D7	.360	.690			

SEE NOTE 10

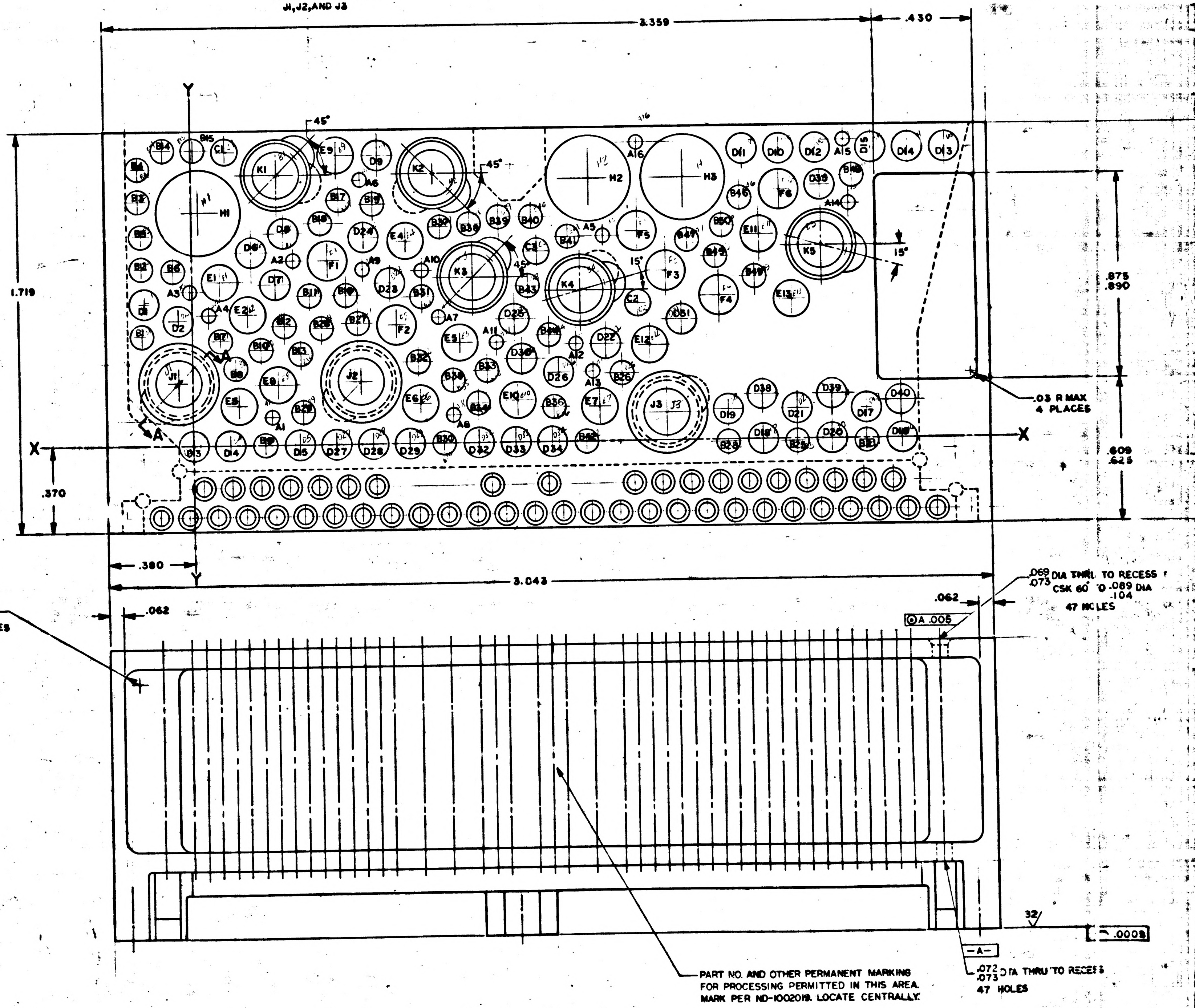
HOLE IDENT	"X" DIM	"Y" DIM		HOLE DIA	QTY
D8	.400	.910		.127 .131	38
D9	.810	1.240			
D10	2.560	1.250			
D11	2.400	1.250			
D12	2.720	1.250			
D13	3.280	1.250			
D14	3.120	1.250			
D15	2.960	1.250			
D16	3.080	0			
D17	2.930	.130			
D18	2.480	0			
D19	2.330	.130			
D20	2.780	0			
D21	2.630	.130			
D22	1.800	.420			
D23	.860	.690			
D24	.750	.890			
D25	1.400	.530			
D26	1.590	.300			
D27	.620	0			
D28	.780	0			
D29	.940	0			
D30	1.430	.360			
D31	2.130	.520			
D32	1.240	0			
D33	1.400	0			
D34	1.560	0			
D35	2.740	1.090			
D38	2.480	.190			
D39	2.780	.190			
D40	3.080	.160			
E1	.120	.710		.153 .157	13
E2	.240	.560			
E3	.200	.170			
E4	.930	.870			
E5	1.160	.430			
E6	.990	.170			
E7	1.770	.150			
E8	.370	.260			
E9	.630	1.240			
E10	1.410	.180			
E11	2.470	.880			
E12	1.990	.410			
E13	2.610	.600			
F1	.590	.790		.165 .169	6
F2	.890	.510			
F3	2.060	.730			
F4	2.290	.620			
F5	1.940	.900			
F6	2.560	1.070			
H1	.030	1.000		.368 .375	3
H2	1.730	1.130			
H3	2.140	1.130			
J1	−.060	.270		SECTION A-A	3
J2	.730	.270			
J3	2.060	.120			
K1	.370	1.160		SECTION E-E	5
K2	1.050	1.160			
K3	1.220	.710			
K4	1.690	.650			
K5	2.740	.830			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31
3. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 TYPE III
4. INSTALL FIND NO.2 PER MS 33646. BREAK OFF TANG
5. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
7. ~~TRUE POSITIONING AS SHOWN IN CHART~~
8. UNLESS OTHERWISE SPECIFIED 125 ALL OVER
9. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
10. THE DRILLING OF ANY COMPONENT HOLE, CAUSING VISIBLE DEFORMATION IN AN ADJACENT HOLE OR ON AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART


.112
.090R
.302 .308 DIA
.188 REF
.094 .125
.297 .328
.657 .687
.270 .276 DIA
.18 .22 DIA
.346 .352 DIA

SECTION A-A
J1, J2, AND J3


3.359
.430
Y
X
A
45°
15°
1.719
.875 .890
.609 .625
.370
.380
3.043
.062
.093R 8 PLACES
.03 R MAX 4 PLACES
.069 .073 DIA THRU TO RECESS CSK 60° TO .089 .104 DIA 47 HOLES
⊚ A .005
32
.0005
-A-
.072 .073 DIA THRU TO RECESS 47 HOLES
A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16
B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15 B16 B17 B18 B19 B21 B23 B25 B26 B27 B28 B29 B30 B31 B32 B33 B34 B35 B36 B37 B38 B39 B40 B41 B42 B43 B44 B45 B46 B47 B48 B49 B50
C1 C2 C3
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 D16 D17 D18 D19 D20 D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D38 D39 D40
E1 E2 E3 E4 E5 E6 E7 E8 E9 E10 E11 E12 E13
F1 F2 F3 F4 F5 F6
H1 H2 H3
J1 J2 J3
K1 K2 K3 K4 K5

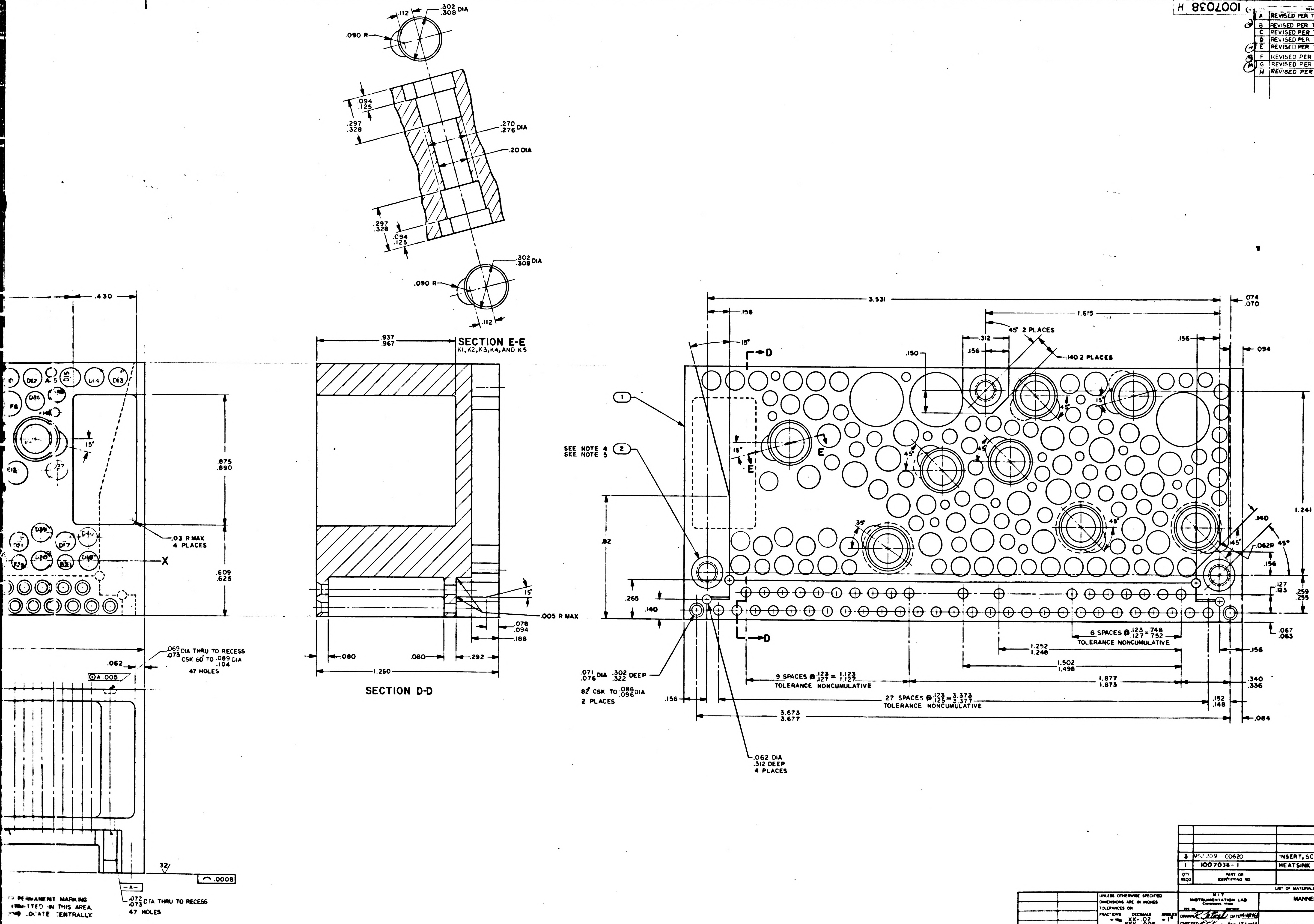
PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND-1002019. LOCATE CENTRALLY.

INCHES
PHOTOGRAPHIC SCALE ONLY

1007038 H

REVISIONS TDRR 01614

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 01958		
B	REVISED PER TDRR 03331	9-25-63	
C	REVISED PER TDRR 03796		
D	REVISED PER TDRR 03851	10-15-63	LK
E	REVISED PER TDRR 03852	10-15-63	LK
F	REVISED PER TDRR 04466	5 Nov 63	
G	REVISED PER TDRR 05471	27 Dec 63	
H	REVISED PER TDRR 3932	11-Nov-64	


.302 .308 DIA
.112
.090 R
.094 .125
.297 .328
.270 .276 DIA
.20 DIA
.297 .328
.094 .125
.302 .308 DIA
.090 R
.112
SECTION E-E
K1, K2, K3, K4, AND K5
.937 .967
.430
15°
.875 .890
.03 R MAX 4 PLACES
X
.609 .625
15°
.005 R MAX
.078 .094
.188
.080
.080
.292
1.250
SECTION D-D
.069 .073 DIA THRU TO RECESS CSK 60° TO .089 .104 DIA 47 HOLES
.062
A .005
32
.0008
-A-
.072 .073 DIA THRU TO RECESS 47 HOLES
PERMANENT MARKING PERMITTED IN THIS AREA. LOCATE CENTRALLY.
3.531
.156
1.615
.074 .070
15°
D
.312
.156
45° 2 PLACES
.140 2 PLACES
.150
.156
.094
1
SEE NOTE 4 SEE NOTE 5
2
15°
E
E
45°
45°
15°
45°
35°
45°
45°
1.241
.140
.062R 45°
.156
.82
.265
.140
.127 .123
.259 .255
.067 .063
6 SPACES @ .123 .127 = .748 .752 TOLERANCE NONCUMULATIVE
1.252 1.248
.156
1.502 1.498
.071 .076 DIA .302 .322 DEEP
82° CSK TO .086 .096 DIA 2 PLACES
9 SPACES @ .123 .127 = 1.123 1.127 TOLERANCE NONCUMULATIVE
1.877 1.873
.340 .336
.156
27 SPACES @ .123 .125 = 3.373 3.377 TOLERANCE NONCUMULATIVE
.152 .148
3.673 3.677
.084
.062 DIA .312 DEEP 4 PLACES
D

1007038 H

3	MS21209 - C0620	INSERT, SCREW-LOCKING	2
1	1007038 - 1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO

LIST OF MATERIALS

NEXT ASSY	USED ON
1007551	
1007051	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ± .02 XXX .005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING

MATERIAL SEE NOTE 2

HEAT TREATMENT —

FINAL FINISH SEE NOTE 3

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Fritzel DATE 14 MAY 63
CHECKED
APPROVAL
APPROVAL
NASA APPROVAL 6-19-63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK FAILURE INDICATOR

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007038
SCALE 5/1 WT SHEET 1 OF 1

1007038

2/1007038

[illegible]

SEE NOTE 10

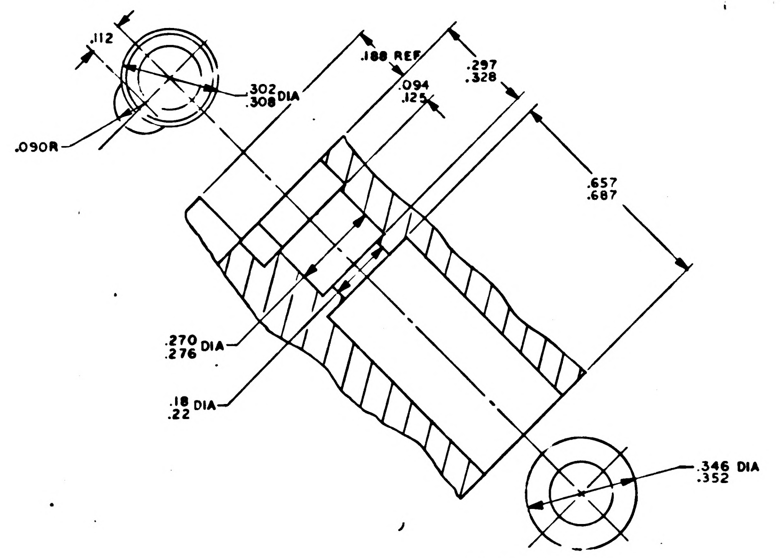
HOLE IDENT	"X" DIM	"Y" DIM		HOLE DIA	QTY
				.058 .062	16
A1	.340	.120			
A2	.440	.790			
A3	−.010	.660			
A4	.070	.560			
A5	1.790	.880			
A6	.730	1.130			
A7	1.070	.540			
A8	1.130	.120			
A9	.740	.750			
A10	1.000	.740			
A11	1.320	.430			
A12	1.670	.420			
A13	1.740	.300			
A14	2.860	1.010			
A15	2.840	1.280			
A16	1.940	1.280			
				.100 .104	47
B1	−.220	.470			
B2	−.220	.760			
B3	−.230	1.050			
B4	−.230	1.190			
B5	−.220	.300			
B6	−.080	.750			
B7	.120	.450			
B8	.190	.330			
B9	.310	0			
B10	.300	.410			
B11	.510	.640			
B12	.400	.510			
B13	.470	.390			
B14	−.120	1.270			
B15	.010	1.270			
B16	.670	.640			
B17	.640	1.050			
B18	.560	.950			
B19	.790	1.030			
~~B20~~	~~3.080~~	~~.150~~			
B21	2.930	−.010			
~~B22~~	~~2.480~~	~~.150~~			
B23	2.330	−.010			
~~B24~~	~~2.780~~	~~.150~~			
B25	2.630	−.010			
B26	1.870	.290			
B27	.720	.520			
B28	.560	.500			
B29	.480	.140			
B30	1.090	0			
B31	1.000	.630			
B32	.980	.350			
B33	1.280	.310			
B34	1.240	.170			
B35	1.130	.270			
B36	1.570	.150			
B37	1.080	.930			
B38	1.210	.940			
B39	1.340	.970			
B40	1.480	.970			
B41	1.640	.880			
B42	1.710	0			
B43	1.460	.670			
B44	1.550	.460			
B45	2.280	.790			
B46	2.390	1.040			
B47	2.160	.860			
B48	2.880	1.130			
B49	2.450	.700			
B50	2.310	.920			
				.106 .110	3
C1	.150	1.260			
C2	1.940	.590			
C3	1.500	.820			
				.127 .131	37
D1	−.210	.610			
D2	−.060	.540			
D3	0	0			
D4	.160	0			
D5	.460	0			
D6	.260	.830			
D7	.360	.690			

SEE NOTE 10

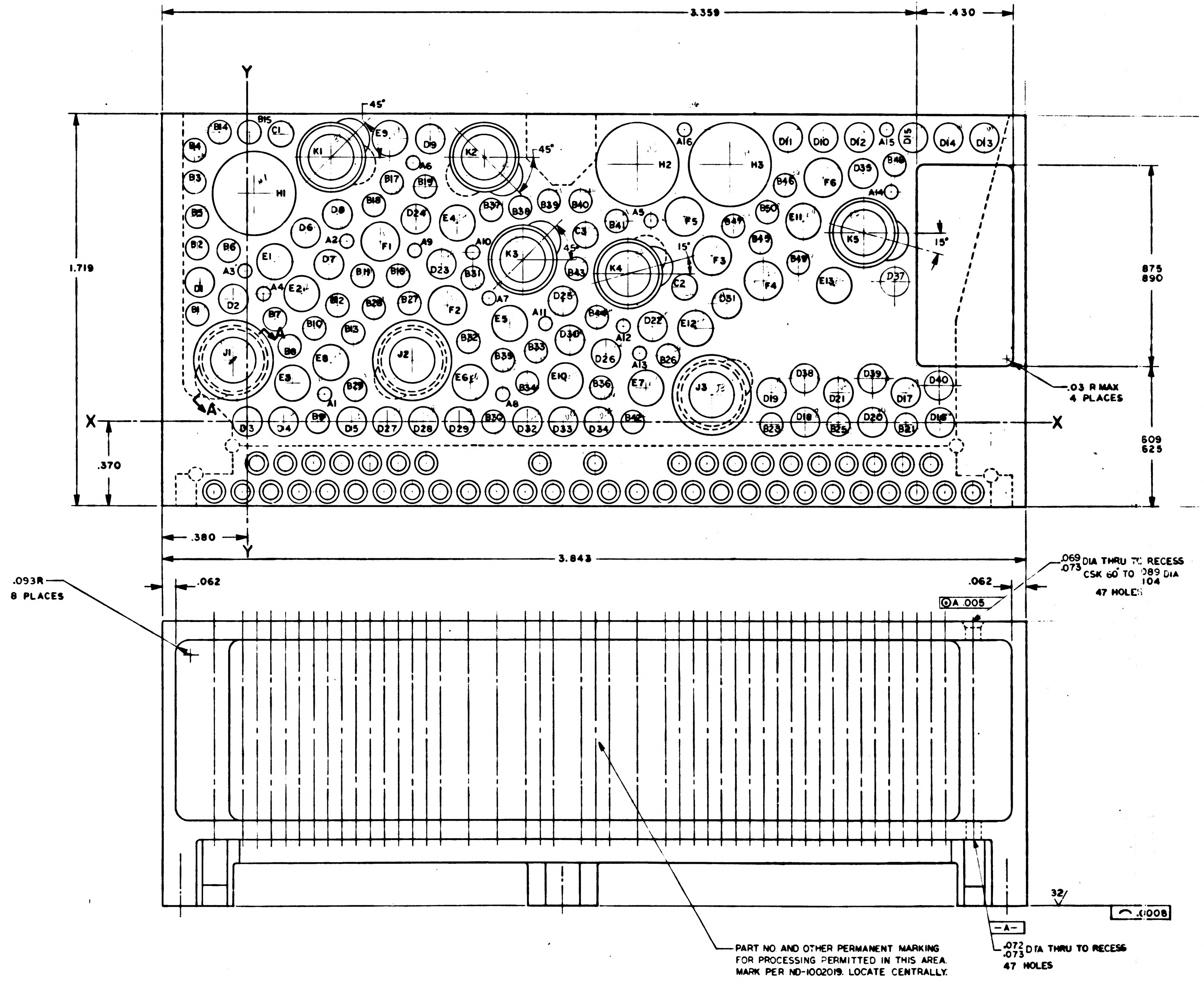
HOLE IDENT	"X" DIM	"Y" DIM		HOLE DIA	QTY
				.127 .131	39
D8	.400	.910			
D9	.810	1.240			
D10	2.560	1.250			
D11	2.400	1.250			
D12	2.720	1.250			
D13	3.280	1.250			
D14	3.120	1.250			
D15	2.960	1.250			
D16	3.080	0			
D17	2.930	.130			
D18	2.480	0			
D19	2.330	.130			
D20	2.780	0			
D21	2.630	.130			
D22	1.800	.420			
D23	.860	.690			
D24	.750	.890			
D25	1.400	.530			
D26	1.590	.300			
D27	.620	0			
D28	.780	0			
D29	.940	0			
D30	1.430	.360			
D31	2.130	.520			
D32	1.240	0			
D33	1.400	0			
D34	1.560	0			
D35	2.740	1.090			
D37	2.880	.620			
D38	2,480	.190			
D39	2.780	.190			
D40	3.080	.160			
				.153 .157	13
E1	.120	.710			
E2	.240	.560			
E3	.200	.170			
E4	.930	.870			
E5	1.160	.430			
E6	.990	.170			
E7	1.770	.150			
E8	.370	.260			
E9	.630	1.240			
E10	1.410	.180			
E11	2.470	.880			
E12	1.990	.410			
E13	2.610	.600			
				.165 .169	6
F1	.590	.790			
F2	.890	.510			
F3	2.060	.730			
F4	2.290	.620			
F5	1.940	.900			
F6	2.560	1.070			
				.368 .375	3
H1	.030	1.000			
H2	1.730	1.130			
H3	2.140	1.130			
				SECTION A-A	3
J1	−.060	.270			
J2	.730	.270			
J3	2.060	.120			
				SECTION E-E	5
K1	.370	1.160			
K2	1.050	1.160			
K3	1.220	.710			
K4	1.690	.650			
K5	2.740	.830			

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31
3. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 TYPE IV
4. INSTALL FIND NO.2 PER MS 33646. BREAK OFF TANG
5. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
7. ~~TRUE POSITIONING AS SHOWN IN CHART~~
8. UNLESS OTHERWISE SPECIFIED .125 ALL OVER
9. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
10. THE DRILLING OF ANY COMPONENT HOLE CAUSING VISIBLE DEFORMATION IN AN ADJACENT HOLE OR ON AN EXTERNAL SURFACE OR ACTUAL BREAKOUT OF THE HOLE INTO ANOTHER HOLE OR EXTERNAL SURFACE SHALL BE CAUSE FOR REJECTION OF THIS PART



SECTION A-A
J1, J2, AND J3



PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND-1002019. LOCATE CENTRALLY.

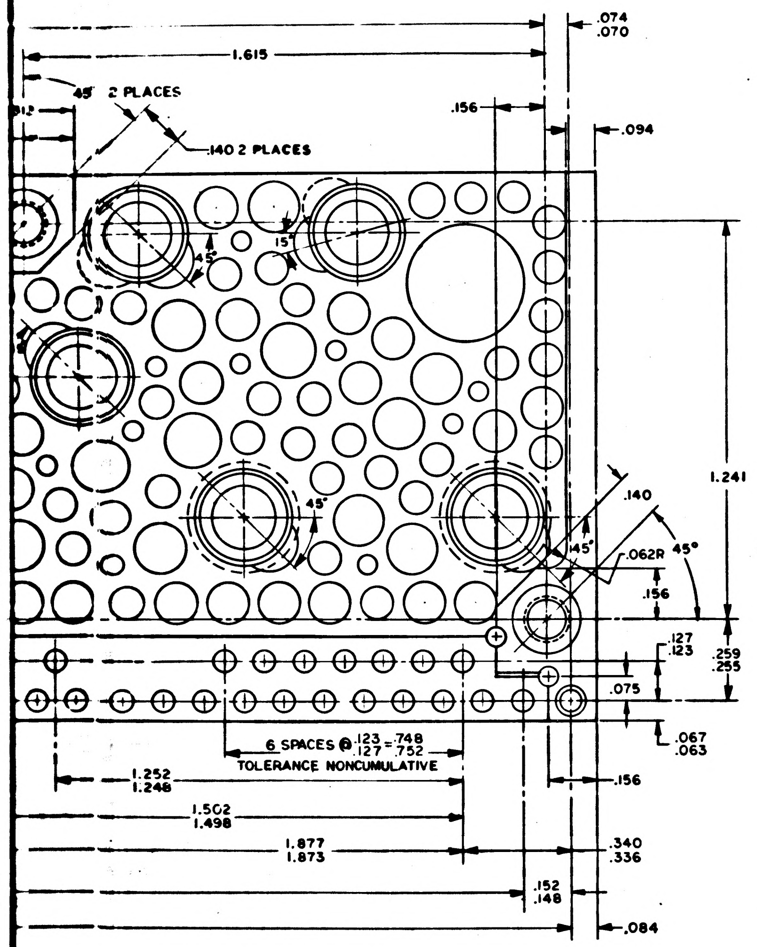
1007038 H

171007038

1007038

SYM	DESCRIPTION	DATE	APPROVAL

REVISIONS TORR 01614



1.615
.074
.070
45° 2 PLACES
.140 2 PLACES
.156
.094
15°
45°
45°
.140
45°
.062R
45°
.156
1.241
.127
.123
.259
.255
.075
.067
.063
6 SPACES @ .123/.127 = .748/.752
TOLERANCE NONCUMULATIVE
1.252
1.248
.156
1.502
1.498
1.877
1.873
.340
.336
.152
.148
.084

D

C

B

A

1007038

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
3	NAS1222-06E	INSERT, SCREW-LOCKING	2
1	1008072-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007081	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS XX ±.02 XXX .005 ANGLES ±1°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT

FINAL FINISH
SEE NOTE 3

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS

DRAWN R. Talbot DATE 14 MAY 63
CHECKED 17 June 63
APPROVAL 17 June 63
APPROVAL

NASA APPROVAL 6-19-63
MIT APPROVAL 19 June 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK FAILURE INDICATOR

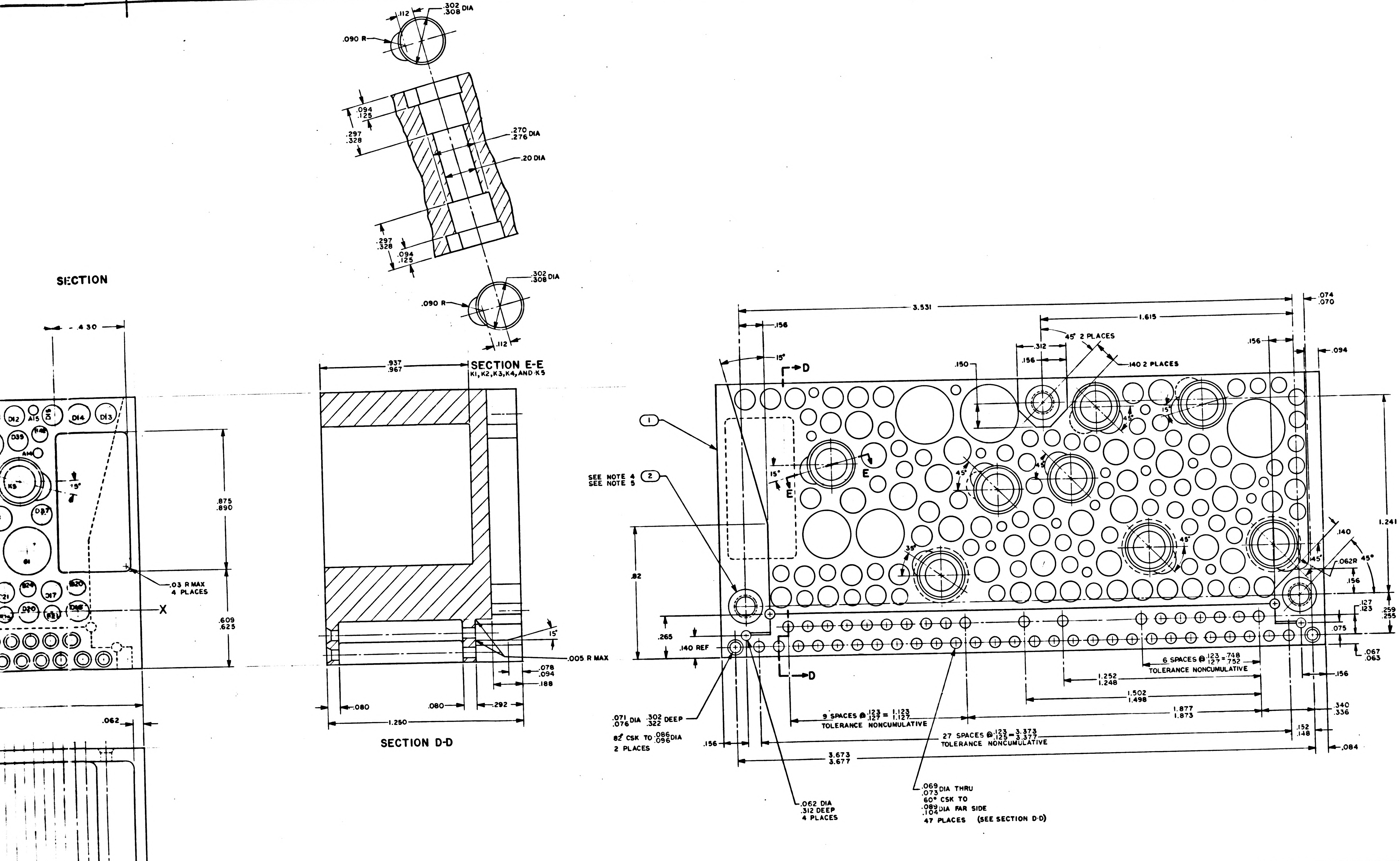
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007038
SCALE 5/1
WT
SHEET 1 OF 1

3H

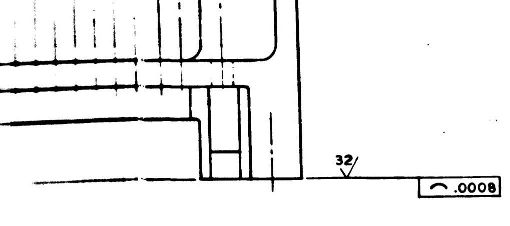
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007038

REVISIONS



.112
.302 .308 DIA
.090 R
.094 .125
.297 .328
.270 .276 DIA
.20 DIA
SECTION
.430
SECTION E-E
K1, K2, K3, K4, AND K5
.937 .967
D12
A15
D14
D13
D39
K5
15°
D37
.875 .890
.03 R MAX 4 PLACES
X
.609 .625
15°
.005 R MAX
.078 .094
.188
.080
.292
1.250
SECTION D-D
.062
3.531
1.615
.156
.074 .070
.312
45° 2 PLACES
.140 2 PLACES
.150
.094
D
E
SEE NOTE 4
SEE NOTE 5
1
2
1.241
.140
.062R
45°
.82
.265
.140 REF
.127 .123
.259 .255
.075
.067 .063
6 SPACES @ .123 .127 = .748 .752
TOLERANCE NONCUMULATIVE
1.252 1.248
1.502 1.498
1.877 1.873
.340 .336
9 SPACES @ .123 .127 = 1.123 1.127
27 SPACES @ .123 .125 = 3.373 3.377
.152 .148
.084
3.673 3.677
.071 .076 DIA .302 .322 DEEP
82° CSK TO .086 .096 DIA
2 PLACES
.062 DIA
.312 DEEP
4 PLACES
.069 .073 DIA THRU
60° CSK TO
.089 .104 DIA FAR SIDE
47 PLACES (SEE SECTION D-D)



3	NAS1222-06E	INSERT, SCREW-LOCKING	2
1	1008072-1	HEATSINK	1
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

1007091	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XX ± .02 XXX .005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT
FINAL FINISH SEE NOTE 3

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN R. Fritcol DATE 3-18-63
CHECKED 17 June 63
APPROVAL 17 June 63
APPROVAL
NASA APPROVAL 6-11-63
MIT APPROVAL

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK FAILURE INDICATOR

CODE IDENT NO. SIZE J NASA DRAWING NO. 1007038
SCALE 5/1 WT SHEET 1 OF 1

1008072

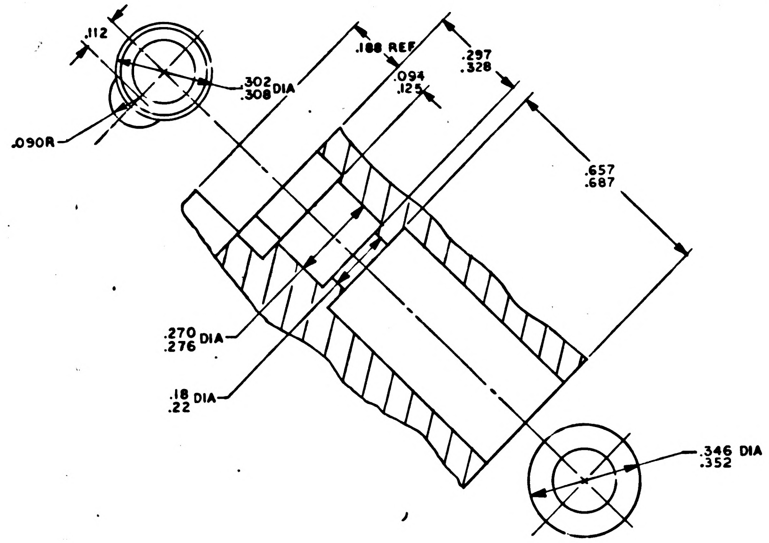
INCHES
PHOTOGRAPHIC SCALE ONLY

E-2

HOLE IDENT	"X" BASIC DIM.	"Y" BASIC DIM.	⌖ DIM	HOLE DIA	QTY
A1	.340	.120	.006	.058 .062	16
A2	.440	.790			
A3	−.010	.660			
A4	.070	.560			
A5	1.790	.880			
A6	.730	1.130			
A7	.070	.540			
A8	1.130	.120			
A9	.740	.750			
A10	1.000	.740			
A11	1.320	.430			
A12	1.670	.420			
A13	740	.300			
A14	2.860	1.010			
A15	2.840	1.280			
A16	1.940	1.280			
B1	−.220	.470	.006	.100 .104	50
B2	−.220	760			
B3	−.230	1.050			
B4	−.230	1.190			
B5	−.220	.900			
B6	−080	.750			
B7	.120	.450			
B8	.190	.330			
B9	.310	0			
B10	.300	.410			
B11	.510	.640			
B12	.400	.510			
B13	.470	.390			
B14	−.120	1.270			
B15	.010	1.270			
B16	.670	.640			
B17	.640	1.050			
B18	.560	.950			
B19	.790	1.030			
B20	3.080	.150			
B21	2.930	−.010			
B22	2.480	.150			
B23	2.330	−.010			
B24	2.780	.150			
B25	2.630	−.010			
B26	1.870	.290			
B27	.720	.520			
B28	.560	.500			
B29	480	140			
B30	1.090	0			
B31	1.000	.630			
B32	.980	.350			
B33	1.280	.310			
B34	1.240	.170			
B35	1.130	.270			
B36	1.570	.150			
B37	1.080	.930			
B38	1.210	.940			
B39	1.340	.970			
B40	1.480	.970			
B41	1.640	.880			
B42	1.710	0			
B43	1.460	.670			
B44	1.550	.460			
B45	2.280	.790			
B46	2.390	1.040			
B47	2.160	.860			
B48	2.880	1.130			
B49	2.450	.700			
B50	2.310	.920			
C1	150	1.260	.006	.106 .110	3
C2	1.940	.590			
C3	1.500	.820			
D1	−.210	.610	.006	.127 .131	37
D2	−.060	.540			
D3	0	0			
D4	.160	0			
D5	.460	0			
D6	.260	.830			
D7	.360	.690			

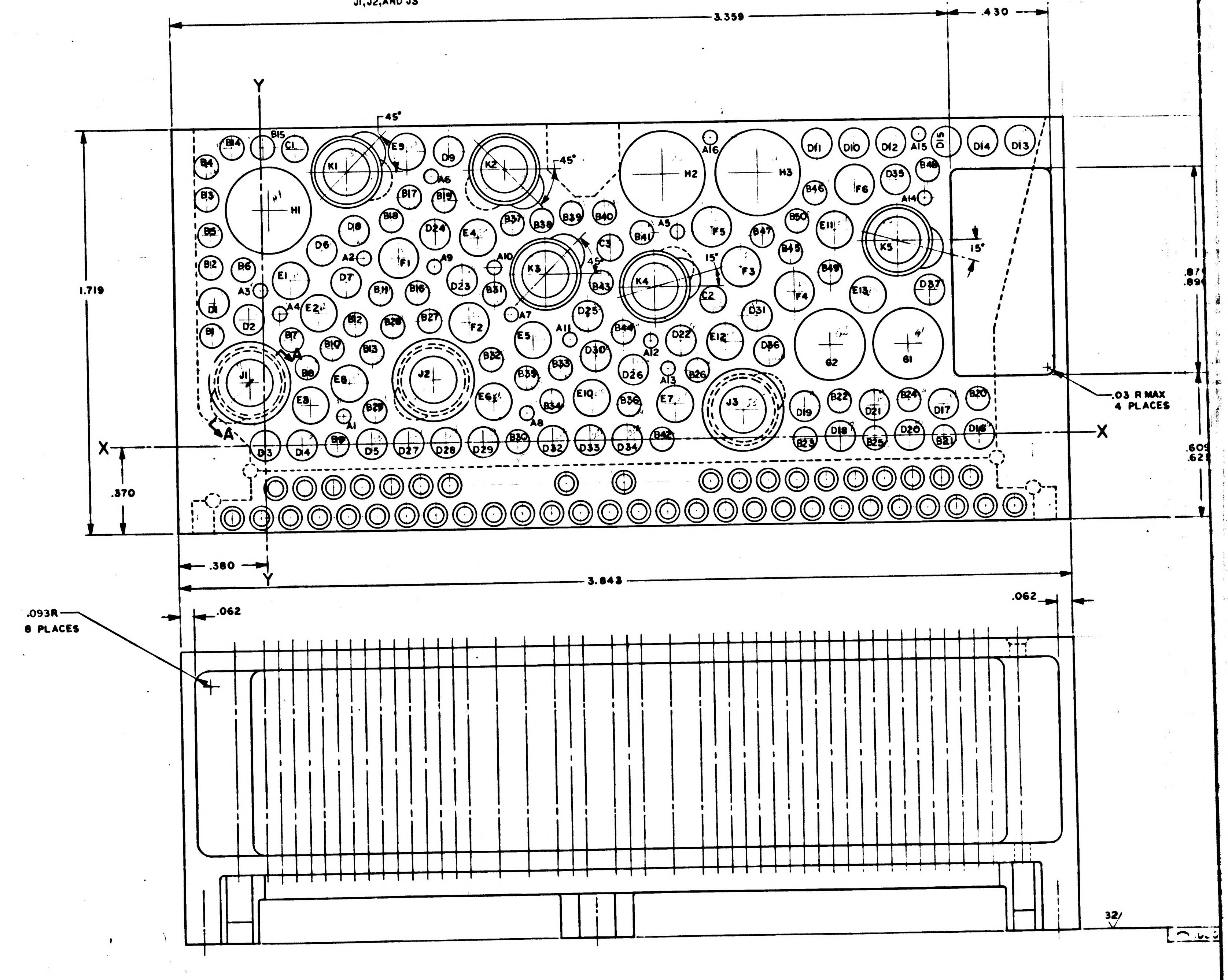
HOLE IDENT	X BASIC DIM.	Y BASIC DIM.	⌖ DIM	HOLE DIA	QTY
D8	.400	.910	.006	.127 .131	37
D9	.810	1.240			
D10	2.560	1.250			
D11	2.400	1.250			
D12	2.720	1.250			
D13	3.280	1.250			
D14	3.120	1.250			
D15	2.960	1.250			
D16	3.080	0			
D17	2.930	.130			
D18	2.480	0			
D19	2.330	.130			
D20	2.780	0			
D21	2.630	.130			
D22	1.800	.420			
D23	.860	.690			
D24	.750	.890			
D25	1.400	.530			
D26	1.590	.300			
D27	.620	0			
D28	.780	0			
D29	.940	0			
D30	1.430	.360			
D31	2.130	.520			
D32	1.240	0			
D33	1.400	0			
D34	1.560	0			
D35	2.740	1.090			
D36	2.180	.370			
D37	2.880	.620			
E1	.120	.710	.006	.153 .157	13
E2	.240	.560			
E3	.200	.170			
E4	.930	.870			
E5	1.160	.430			
E6	.990	.170			
E7	1.770	.150			
E8	.370	.260			
E9	.630	1.240			
E10	1.410	.180			
E11	2.470	.880			
E12	1.990	.410			
E13	2.610	.600			
F1	.590	.790	.006	.165 .169	6
F2	.890	.510			
F3	2.060	.730			
F4	2.290	.620			
F5	1.940	.900			
F6	2.560	1.070			
G1	2.780	.390	.006	.306 .313	2
G2	2.440	.390			
H1	.030	1.000	.006	.368 .375	3
H2	1.730	1.130			
H3	2.140	1.130			
J1	−.060	.270	.006	SECTION A-A	3
J2	.730	.270			
J3	2.060	.120			
K1	.370	1.160	.006	SECTION E-E	5
K2	1.050	1.160			
K3	1.220	.710			
K4	1.690	.650			
K5	2.740	.830			

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31
3. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 TYPE IV
4. INSTALL FIND NO.2 PER MS 33646 EXCEPT DIMENSION F TO BE .594, BREAK OFF TANG
5. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
6. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
7. TRUE POSITIONING AS SHOWN IN CHART
8. UNLESS OTHERWISE SPECIFIED .125 ALL OVER
9. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015



SECTION A-A
J1, J2, AND J3

SECTION

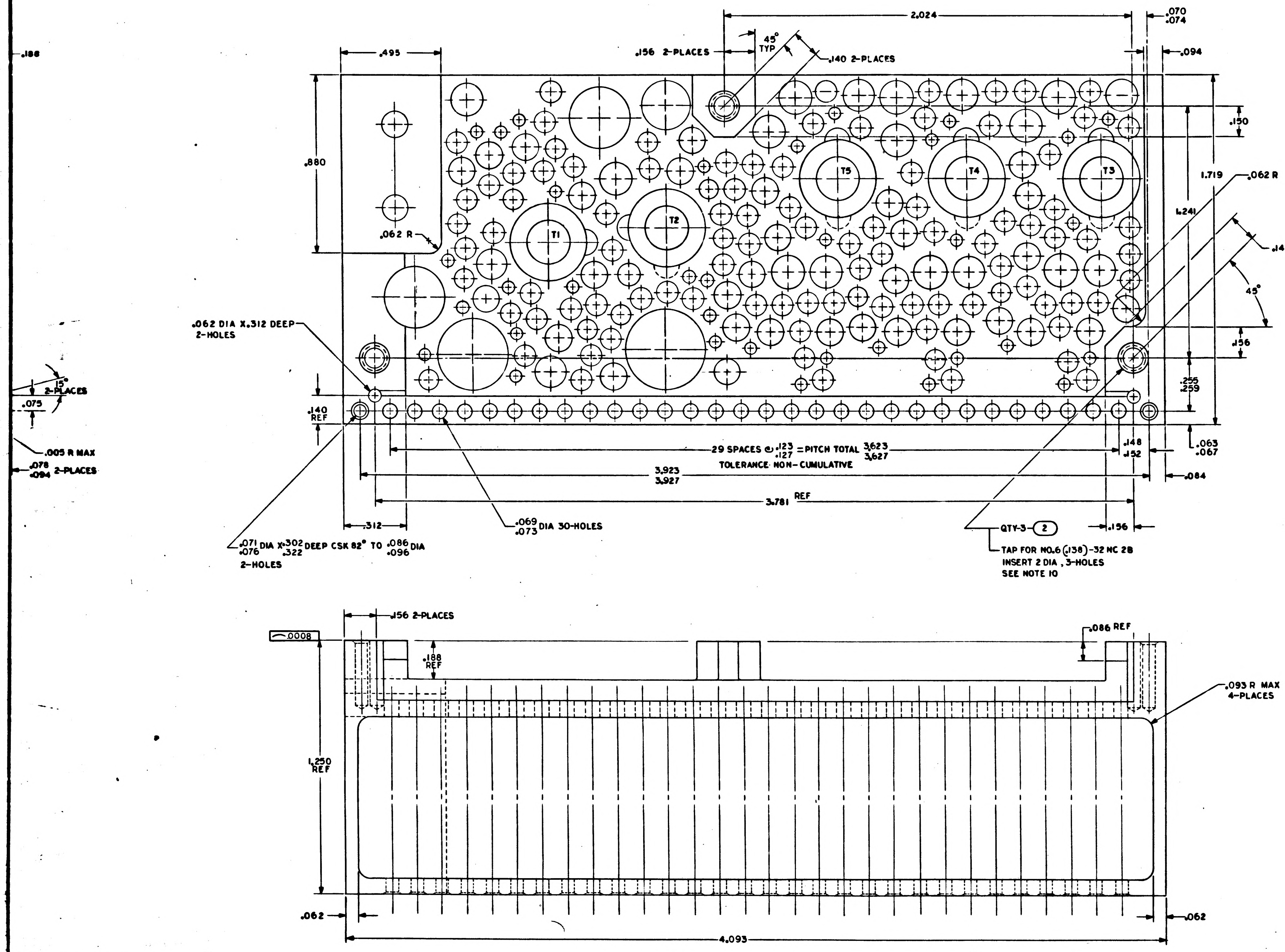


1008072

1007039 A

REVISIONS TO ER 01848

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03787	9 Jul 63	WK



.188
.495
.156 2-PLACES
45° TYP
.140 2-PLACES
2.024
.070
.074
.094
.150
.880
1.719
.062 R
1.241
.140
45°
.062 R
T1
T2
T3
T4
T5
.156
.255
.259
.062 DIA X.312 DEEP 2-HOLES
15° 2-PLACES
.075
.005 R MAX
.078
.094 2-PLACES
.140 REF
29 SPACES @ .123 .127 = PITCH TOTAL 3.623 3.627
TOLERANCE NON-CUMULATIVE
.148
.152
.063
.067
3.923
3.927
.084
3.781 REF
.312
.156
.069 .073 DIA 30-HOLES
.071 .076 DIA X .302 .322 DEEP CSK 82° TO .086 .096 DIA 2-HOLES
QTY-3-(2)
TAP FOR NO.6 (.138)-32 NC 2B INSERT 2 DIA, 3-HOLES SEE NOTE 10
.156 2-PLACES
.0008
.188 REF
.086 REF
.093 R MAX 4-PLACES
1.250 REF
.062
.062
4.093

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS 1222 — 06 E	INSERT, SCREW LOCKING	2
1	1007039-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007057	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± —//—   DECIMALS ±.005   ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —//—
FINAL FINISH SEE NOTE 11

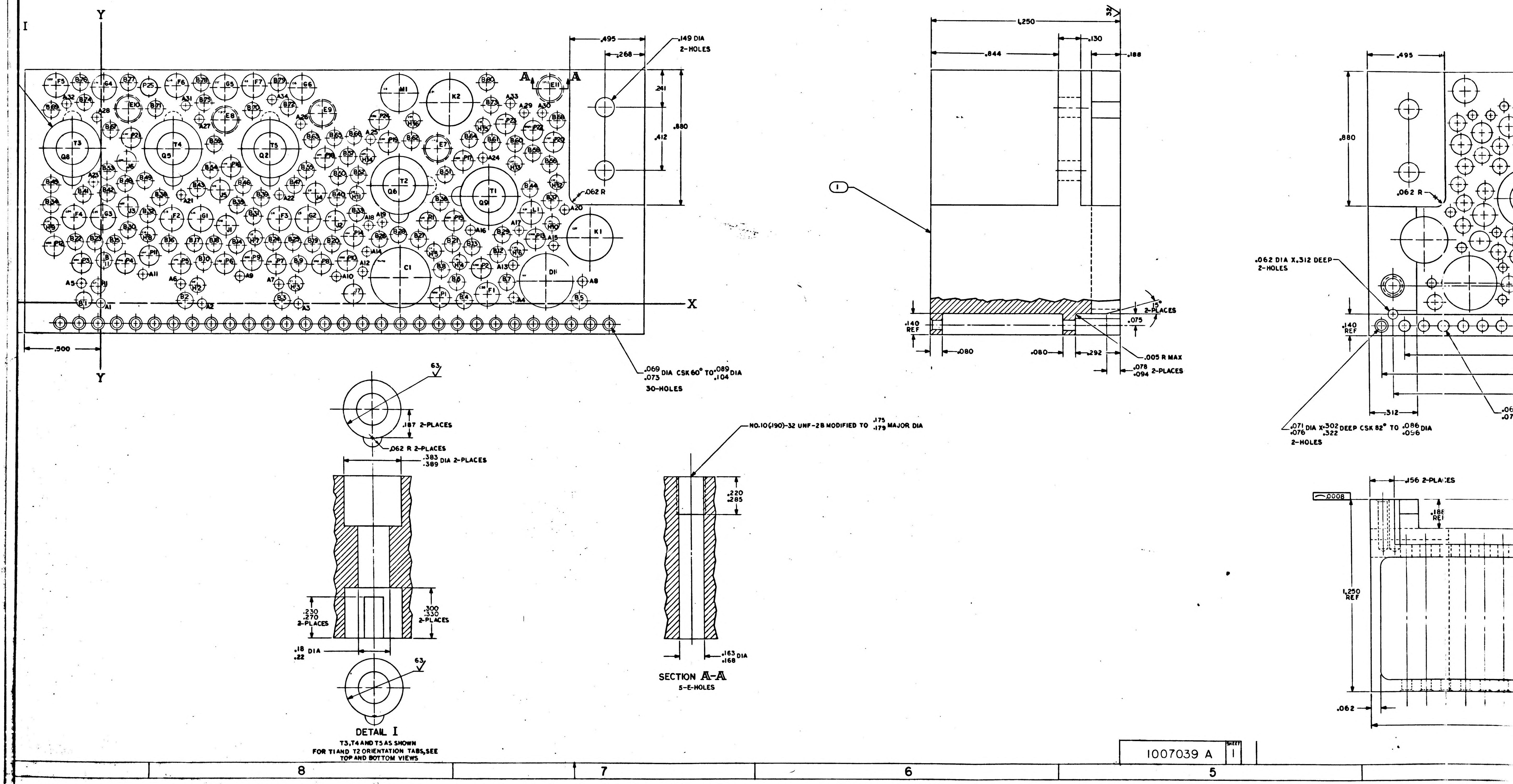
MIT INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN [illegible] DATE [illegible]
CHECKED [illegible] [illegible] 63
APPROVAL [illegible] 21 [illegible] 63
APPROVAL
NASA APPROVAL [illegible] 7/2/63
MIT APPROVAL [illegible] 2 Jul 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK BACK-UP MODE ELECTRONICS PIPA-GYRO

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007039
SCALE 5/1
WT
SHEET 1 OF 1

1007039 A	SHEET 1


I
Y
Y
X
.495
.268
.149 DIA
2-HOLES
.241
.412
.880
.062 R
.500
A
A
T1
T2
T3
T4
T5
Q2
Q5
Q6
Q8
Q9
M1
K1
K2
C1
D1
E7
E8
E9
E10
E11
.069 DIA CSK 60° TO .089 DIA
.073 .104
30-HOLES
1.250
.844
.130
.188
32
①
.140
REF
.080
.080
.292
.075
15°
2-PLACES
.005 R MAX
.078
.094 2-PLACES
63
.187 2-PLACES
.062 R 2-PLACES
.383
.389 DIA 2-PLACES
.230
.270
2-PLACES
.300
.330
2-PLACES
.18
.22 DIA
63
NO.10(.190)-32 UNF-2B MODIFIED TO .175
.179 MAJOR DIA
.220
.285
.163
.168 DIA
.062 DIA X.312 DEEP
2-HOLES
.880
.062 R
.312
.071 DIA X.302 DEEP CSK 82° TO .086 DIA
.076 .322 .096
2-HOLES
.156 2-PLACES
.0008
.188
REF
1.250
REF
.062

DETAIL I

T3,T4 AND T5 AS SHOWN
FOR T1 AND T2 ORIENTATION TABS, SEE
TOP AND BOTTOM VIEWS

SECTION A-A

5-E-HOLES

	SHEET
1007039 A	1

INCHES
PHOTOGRAPHIC SCALE ONLY

E-2

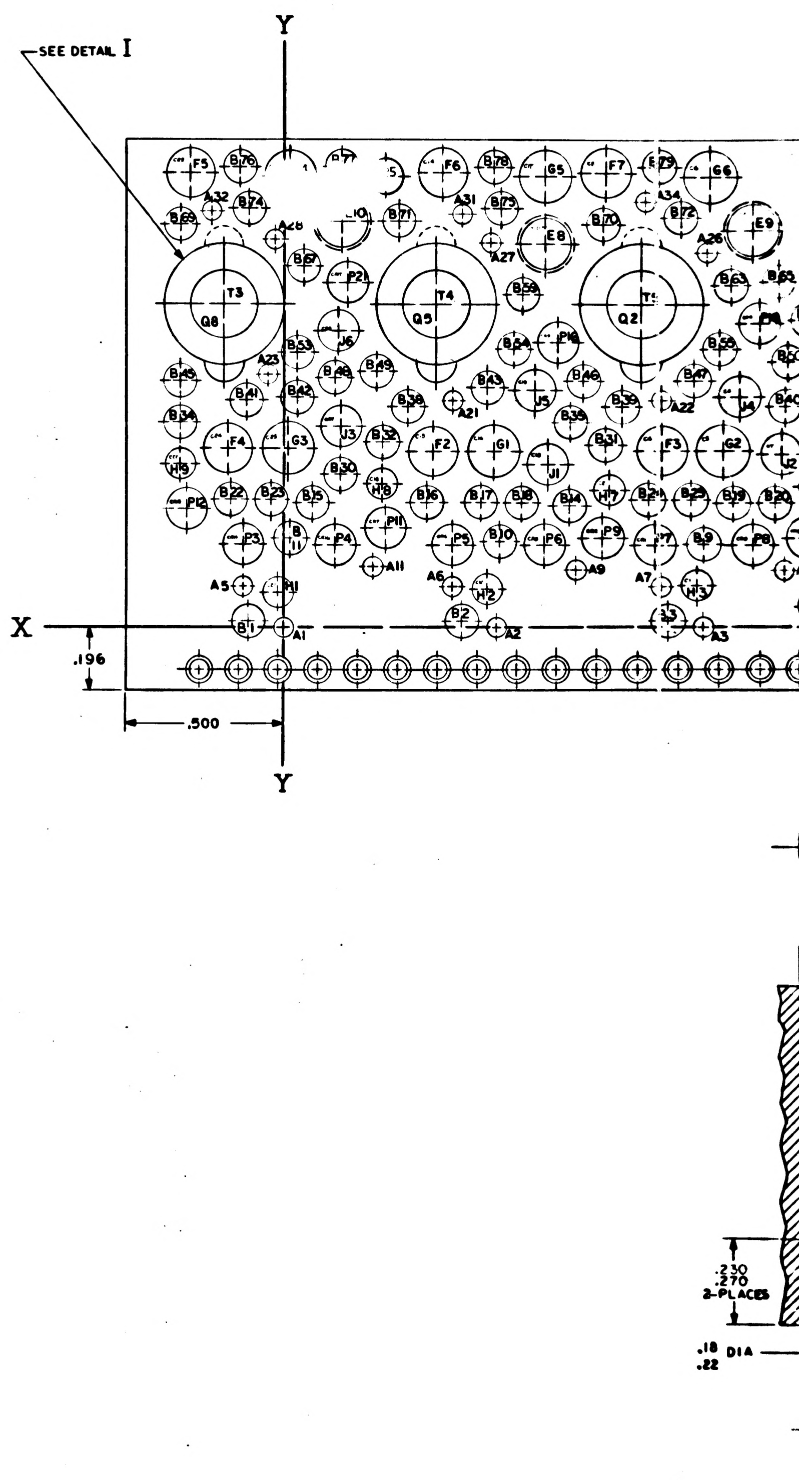
NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

HOLE IDENT	X BASIC DIM	Y BASIC DIM	⊕ DIA	HOLE DIA	QTY
A 1	.000	.000	.006	.058 .062	34
A 2	.670	.000			
A 3	1.310	.000			
A 4	2.730	.040			
A 5	-.130	.130			
A 6	.530	.130			
A 7	1.180	.130			
A 8	3.180	.150			
A 9	.920	.180			
A 10	1.560	.180			
A 11	.280	.190			
A 12	1.730	.210			
A 13	2.720	.250			
A 14	1.760	.340			
A 15	2.990	.380			
A 16	2.440	480			
A 17	2.760	.480			
A 18	1.770	.510			
A 19	1.860	.530			
A 20	3.060	610			
A 21	0.530	.710			
A 22	1.180	.710			
A 23	-0.050	.790			
A 24	2.520	.950			
A 25	1.780	1.070			
A 26	1.320	1.170			
A 27	.650	1.200			
A 28	-.030	1.210			
A 29	2.790	1.240			
A 30	2.910	1.240			
A 31	.560	1.290			
A 32	-.230	1.300			
A 33	2.700	1.300			
A 34	1.130	1.330			
B1	-.110	.020	.006	.100 .104	80
B2	.560	.020			
B3	1.200	.020			
B4	2.400	.020			
B5	3.160	.020			
B6	2.350	.140			
B7	2.680	.140			
B8	2.250	.220			
B9	1.310	.260			
B10	.680	.270			
B11	.020	.280			
B12	2.620	.320			
B13	2.450	.370			
B14	.900	.380			
B15	.090	.390			
B16	.450	.390			
B17	.620	.390			
B18	.750	.390			
B19	1.400	.390			
B20	1.530	.390			
B21	2.320	.390			
B22	-.170	.400			
B23	-.040	.400			
B24	1.140	.400			
B25	1.270	.400			
B26	1.840	.420			
B27	2.100	.420			
B28	1.970	.450			
B29	2.650	.450			
B30	.180	.480			
B31	1.010	.570			
B32	.310	.580			
B33	1.690	.590			
B34	-.330	.640			
B35	.900	.640			
B36	2.240	.660			
B37	2.970	.670			
B38	.390	.690			
B39	1.060	.690			
B40	1.560	.690			
B41	-.120	.710			
B42	.040	.720			
B43	.640	.750			
B44	2.830	.750			
B45	-.330	.770			
B46	.940	.770			
B47	1.280	.770			
B48	.160	.780			
B49	.290	.800			
B50	1.570	.830			
B51	2.270	.840			
B52	1.700	.850			
B53	.040	.860			
B54	.720	.870			
B55	1.360	.870			
B56	2.960	.910			
B57	1.630	.960			
B58	2.850	.980			
B59	.750	1.040			
B60	2.730	1.040			
B61	2.580	1.050			
B62	2.050	1.060			
B63	1.390	1.070			
B64	2.430	1.070			
B65	1.540	1.080			
B66	1.670	1.090			
B67	.060	1.130			
B68	3.010	1.190			
B69	-.330	1.260			
B70	1.000	1.260			
B71	.360	1.270			
B72	1.240	1.280			
B73	2.570	1.290			
B74	-.110	1.310			
B75	.680	1.310			
B76	-.140	1.440			
B77	.180	1.440			
B78	.660	1.440			
B79	1.170	1.440			
B80	2.540	1.440			

HOLE IDENT	X BASIC DIM	Y BASIC DIM	⊕ DIA	HOLE DIA	QTY
C1	1.980	.170	.006	.383 .391	1
D1	2.940	.150	.006	.345 .353	1
			.006	SEE SECTION A-A	5
E7	2.220	1.010			
E8	.820	1.200			
E9	1.460	1.240			
E10	.180	1.270			
E11	2.960	1.400			
F1	2.550	.060	.006	.153 .157	7
F2	.470	.550			
F3	1.180	.550			
F4	-.180	.580			
F5	-.300	1.420			
F6	.500	1.420			
F7	1.010	1.420			
G1	.660	.550	.006	.165 .169	6
G2	1.370	.550			
G3	.010	.560			
G4	.020	1.410			
G5	.820	1.410			
G6	1.330	1.410			
H1	-.020	.110	.006	.092 .096	16
H2	.640	.120			
H3	1.290	.130			
H4	2.370	.270			
H5	2.200	.340			
H6	2.750	.350			
H7	1.020	.430			
H8	.310	.450			
H9	-.330	.510			
H10	2.980	.520			
H11	1.690	.720			
H12	3.010	.790			
H13	2.730	.910			
H14	1.760	.960			
H15	2.520	1.160			
H16	2.060	1.190			
J1	.830	.510	.006	.124 .128	7
J2	1.550	.540			
J3	.170	.630			
J4	1.420	.720			
J5	.790	.740			
J6	.170	.930			
J7	1.675	.065			
K1	3.230	.430	.006	.301 .309	2
K2	2.300	1.310			
L1	2.840	.590	.006	.146 .150	1
M1	1.970	1.370	.006	.241 .245	1
P1	2.240	.040	.006	.127 .131	25
P2	2.510	.230			
P3	-.130	.260			
P4	.160	.260			
P5	.530	.260			
P6	.820	.260			
P7	1.160	.260			
P8	1.460	.260			
P9	1.000	.280			
P10	1.630	.280			
P11	.320	.310			
P12	- 310	.370			
P13	2.870	.420			
P14	1.670	.440			
P15	2.330	.540			
P16	.860	.890			
P17	2.390	.930			
P18	1.480	.950			
P19	1.900	1.050			
P20	2.990	1.050			
P21	.200	1.080			
P22	2.850	1.130			
P23	2.670	1.170			
P24	1.840	1.200			
P25	.320	1.410			
R1	2.160	.540	.006	.095 .099	1
T1	2.560	.700	.006	SEE DETAIL I	5
T2	1.970	.770			
T3	-.190	1.010			
T4	.480	1.010			
T5	1.120	1.010			

NOTES:

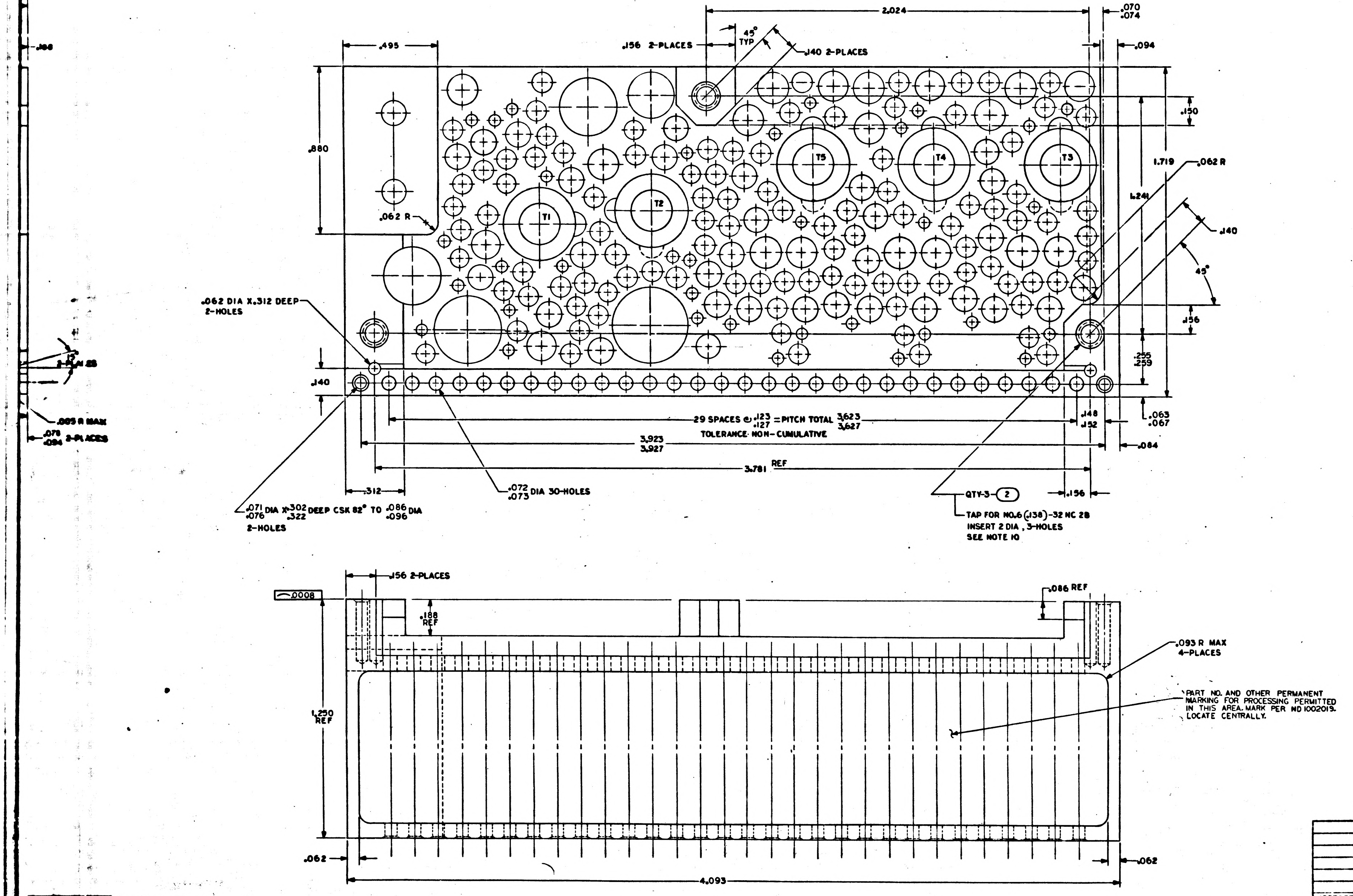
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED $\overset{125}{\surd}$ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO.2 PER MS 35646 EXCEPT DIM.F TO BE .594. BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 A TYPE IV



1007039 C

SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03787	[illegible]	wk
B	REVISED PER TDRR 03051		
C	REVISED PER TDRR 03753	10/23/63	wk.

REVISIONS TO 88 01F



2.024
.070
.074
.495
.156 2-PLACES
45° TYP
.140 2-PLACES
.094
.150
.880
1.719
.062 R
1.241
.140
45°
.062 R
T1
T2
T3
T4
T5
.156
.255
.259
.062 DIA X .312 DEEP 2-HOLES
.140
29 SPACES @ .123/.127 = PITCH TOTAL 3.623/3.627
TOLERANCE NON-CUMULATIVE
.148
.152
.063
.067
3.923
3.927
.084
3.781 REF
.312
.072/.073 DIA 30-HOLES
QTY-3-②
.156
.071/.076 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA
2-HOLES
TAP FOR NO.6 (.138)-32 NC 2B
INSERT 2 DIA, 3-HOLES
SEE NOTE 10
.156 2-PLACES
.0008
.086 REF
.188 REF
.093 R MAX
4-PLACES
1.250 REF
.062
4.093
.062
.188
.093 R MAX
.078
.094 2-PLACES

PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND 1002019. LOCATE CENTRALLY.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS21209-C0620	INSERT, SCREW LOCKING	2
1	1007039-1	HEATSINK	1

LIST OF MATERIALS

MASTER

NEXT ASSY	USED ON
1007057	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± //
DECIMALS ±.005
ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT //
FINAL FINISH SEE NOTE 11

MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN
CHECKED
APPROVAL 21 Jan 63
APPROVAL
NASA APPROVAL 7/2/63
MIT APPROVAL 2 Jul 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

HEATSINK
BACK-UP MODE ELECTRONICS
PIPA-GYRO

CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007039
SCALE 5/1
WT
SHEET 1 OF 1

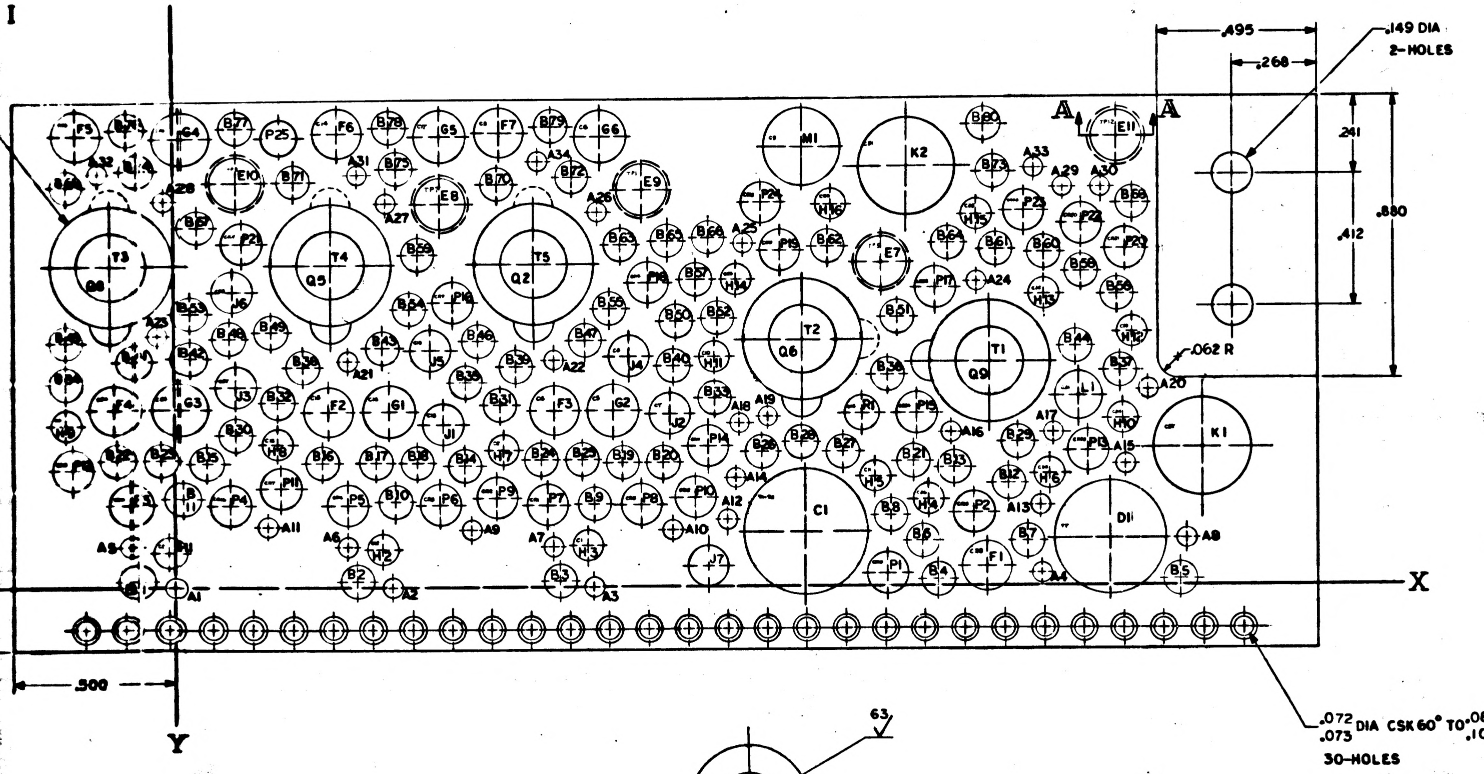
1007039 C | SHEET 1

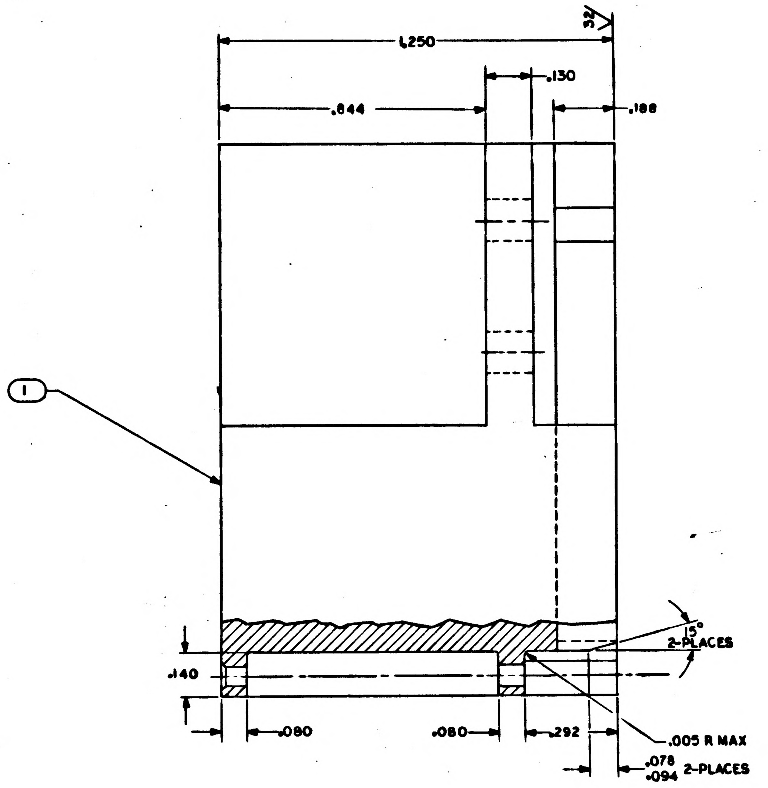
1007039 C

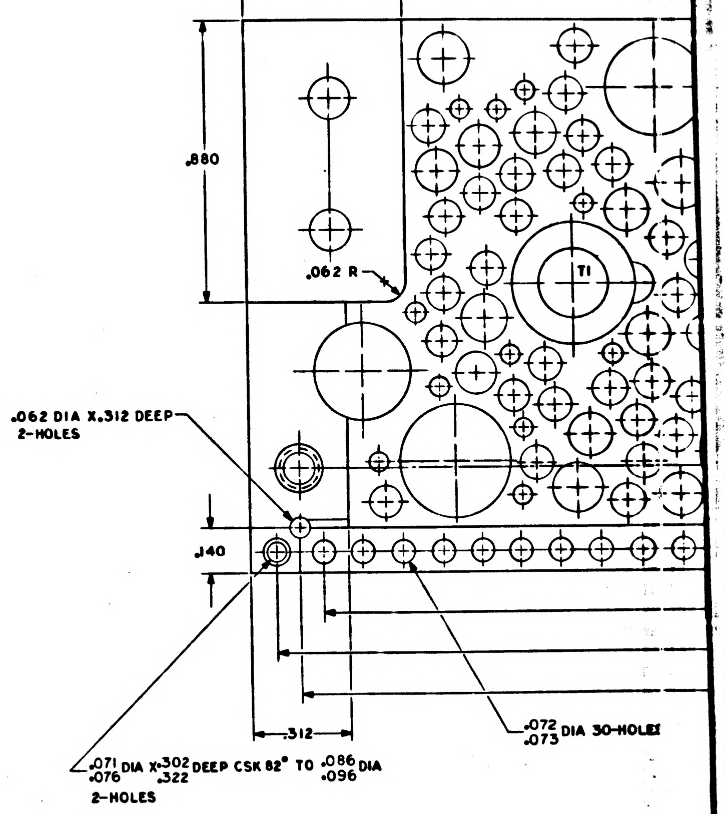
1007039

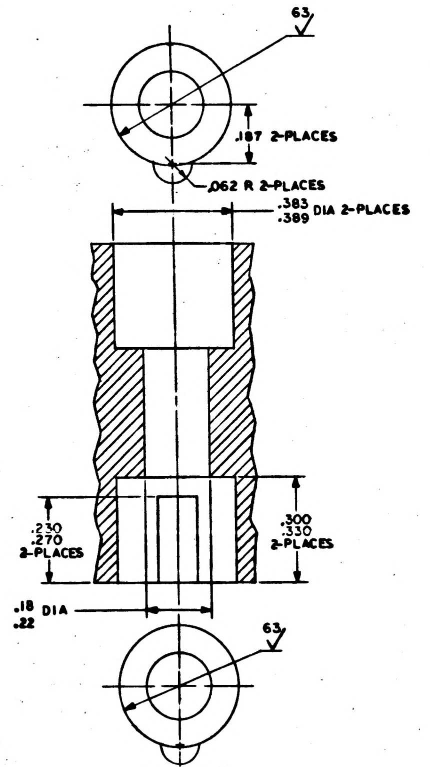
INCHES
PHOTOGRAPHIC SCALE ONLY

F-3


I
Y
Y
X
.495
.268
.149 DIA
2-HOLES
.241
.412
.880
.062 R
A
A
.500
.072/.073 DIA CSK 60° TO .089/.104 DIA
30-HOLES
T3
T4
T5
T1
T2
Q5
Q2
Q6
Q9
M1
K1
K2
C1
D1
E9
E10
E11

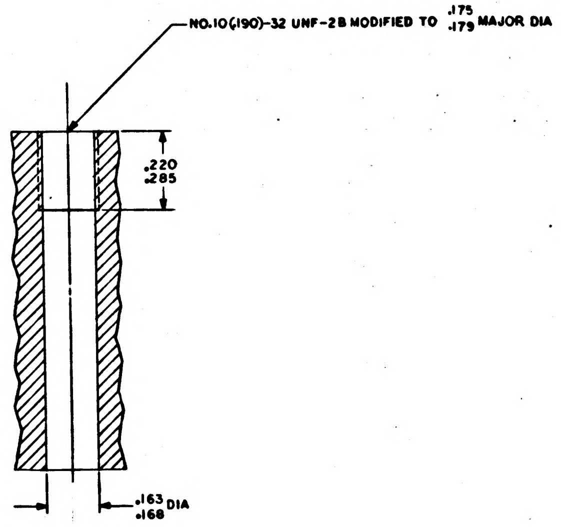

1.250
32
.844
.130
.188
1
.140
15°
2-PLACES
.080
.080
.292
.005 R MAX
.078/.094 2-PLACES


.495
.880
.062 R
T1
.062 DIA X .312 DEEP
2-HOLES
.140
.312
.071/.076 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA
2-HOLES
.072/.073 DIA 30-HOLES


63
.187 2-PLACES
.062 R 2-PLACES
.383/.389 DIA 2-PLACES
.230/.270
2-PLACES
.300/.330
2-PLACES
.18/.22 DIA
63

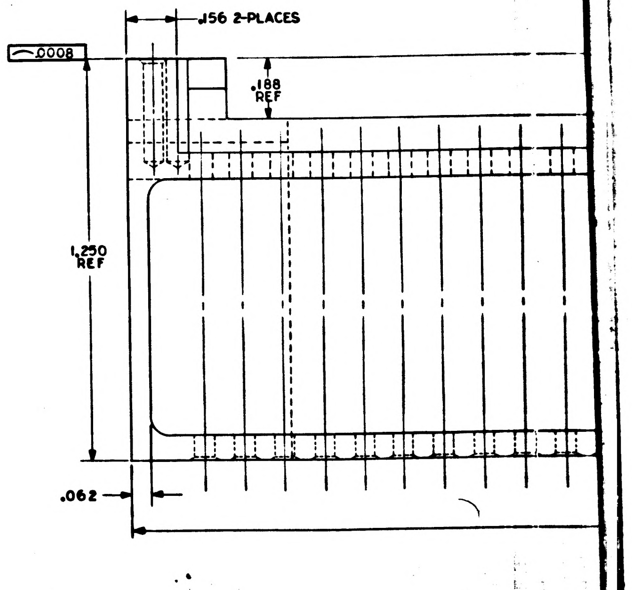
DETAIL I

T3,T4 AND T5 AS SHOWN
FOR T1 AND T2 ORIENTATION TABS,SEE
TOP AND BOTTOM VIEWS


NO.10(190)-32 UNF-2B MODIFIED TO .175/.179 MAJOR DIA
.220/.285
.163/.168 DIA

SECTION A-A

5-E-HOLES


.156 2-PLACES
.0008
.188 REF
1.250 REF
.062

1007039 C SHEET 1

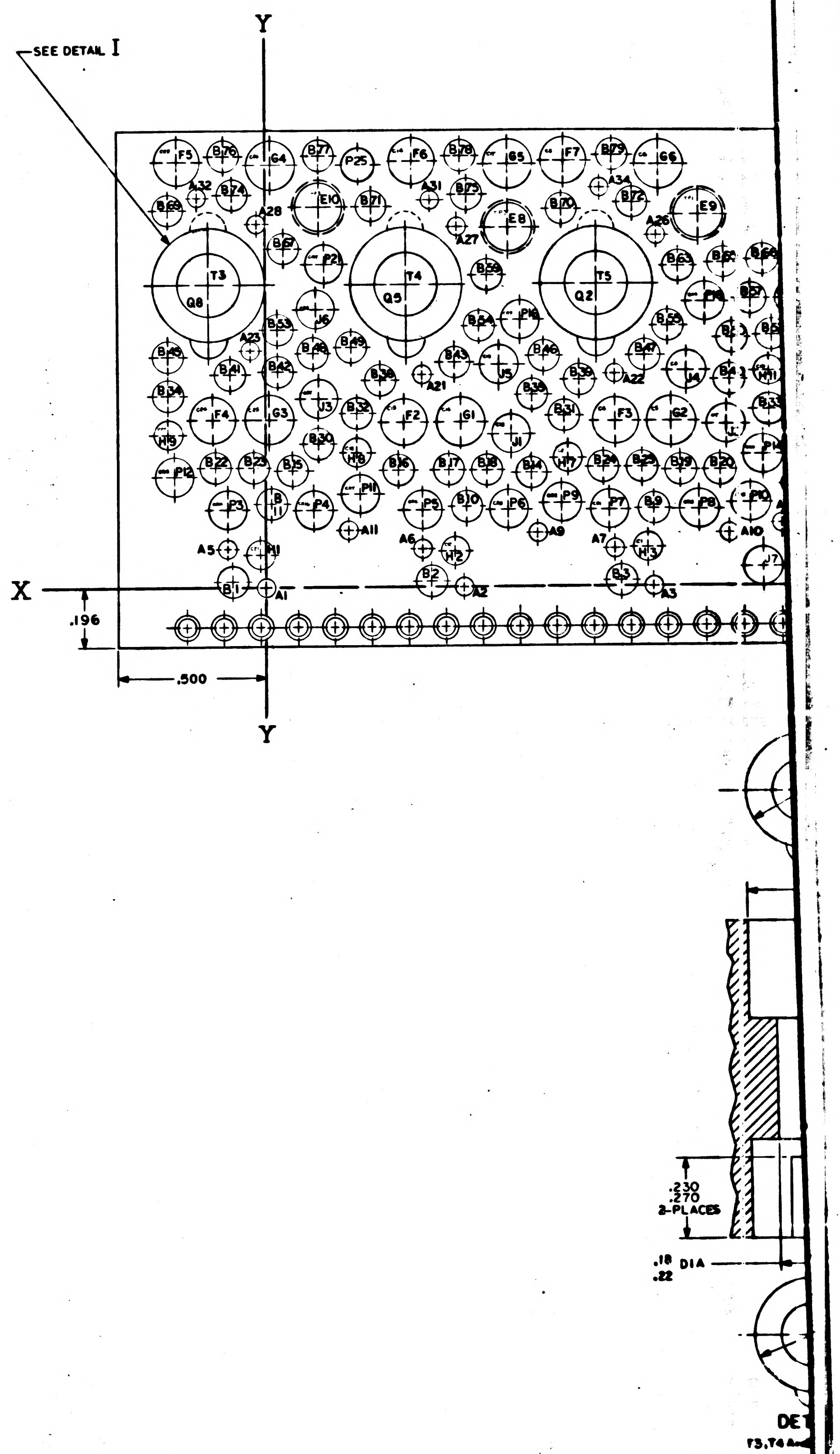
INCHES
PHOTOGRAPHIC SCALE ONLY

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED $\sqrt{}$ 125 ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO.2 PER MS 35646 EXCEPT DIM.F TO BE .594. BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 A. TYPE IV

HOLE IDENT	X BASIC DIM	Y BASIC DIM	⊕ DIA	HOLE DIA	QTY
A 1	.000	.000	.006	.058 .062	34
A 2	.670	.000			
A 3	1.310	.000			
A 4	2.730	.040			
A 5	-.130	.130			
A 6	.530	.130			
A 7	1.180	.130			
A 8	3.180	.150			
A 9	.920	.180			
A 10	1.560	.180			
A 11	.280	.190			
A 12	1.730	.210			
A 13	2.720	.250			
A 14	1.760	.340			
A 15	2.990	.380			
A 16	2.440	480			
A 17	2.760	.480			
A 18	1.770	.510			
A 19	1.860	.530			
A 20	3.060	610			
A 21	0.530	.710			
A 22	1.180	.710			
A 23	-0.050	.790			
A 24	2.520	.950			
A 25	1.780	1.070			
A 26	1.320	1.170			
A 27	.650	1.200			
A 28	- .030	1.210			
A 29	2.790	1.240			
A 30	2.910	1.240			
A 31	.560	1.290			
A 32	- .230	1.300			
A 33	2.700	1.300			
A 34	1.130	1.330			
B1	- .110	.020	.006	.100 .104	80
B2	.560	.020			
B3	1.200	.020			
B4	2.400	.020			
B5	3.160	.020			
B6	2.350	.140			
B7	2.680	.140			
B8	2.250	.220			
B9	1.310	.260			
B10	.680	.270			
B11	.020	.280			
B12	2.620	.320			
B13	2.450	.370			
B14	.900	.380			
B15	.090	.390			
B16	.450	.390			
B17	.620	.390			
B18	.750	.390			
B19	1.400	.390			
B20	1.530	.390			
B21	2.320	.390			
B22	- .170	.400			
B23	- .040	.400			
B24	1.140	.400			
B25	1.270	.400			
B26	1.840	.420			
B27	2.100	.420			
B28	1.970	.450			
B29	2.650	.450			
B30	.180	.480			
B31	1.010	.570			
B32	.310	.580			
B33	1.690	.590			
B34	- .330	.640			
B35	.900	.640			
B36	2.240	.660			
B37	2.970	.670			
B38	.390	.690			
B39	1.060	.690			
B40	1.560	.690			
B41	- .120	.710			
B42	.040	.720			
B43	.640	.750			
B44	2.830	.750			
B45	- .330	.770			
B46	.940	.770			
B47	1.280	.770			
B48	.160	.780			
B49	.290	.800			
B50	1.570	.830			
B51	2.270	.840			
B52	1.700	.850			
B53	.040	.860			
B54	.720	.870			
B55	1.360	.870			
B56	2.960	.910			
B57	1.630	.960			
B58	2.850	.980			
B59	.750	1.040			
B60	2.730	1.040			
B61	2.580	1.050			
B62	2.050	1.060			
B63	1.390	1.070			
B64	2.430	1.070			
B65	1.540	1.080			
B66	1.670	1.090			
B67	.060	1.130			
B68	3.010	1.190			
B69	- .330	1.260			
B70	1.000	1.260			
B71	.360	1.270			
B72	1.240	1.280			
B73	2.570	1.290			
B74	- .110	1.310			
B75	.680	1.310			
B76	- .140	1.440			
B77	.180	1.440			
B78	.660	1.440			
B79	1.170	1.440			
B80	2.540	1.440			

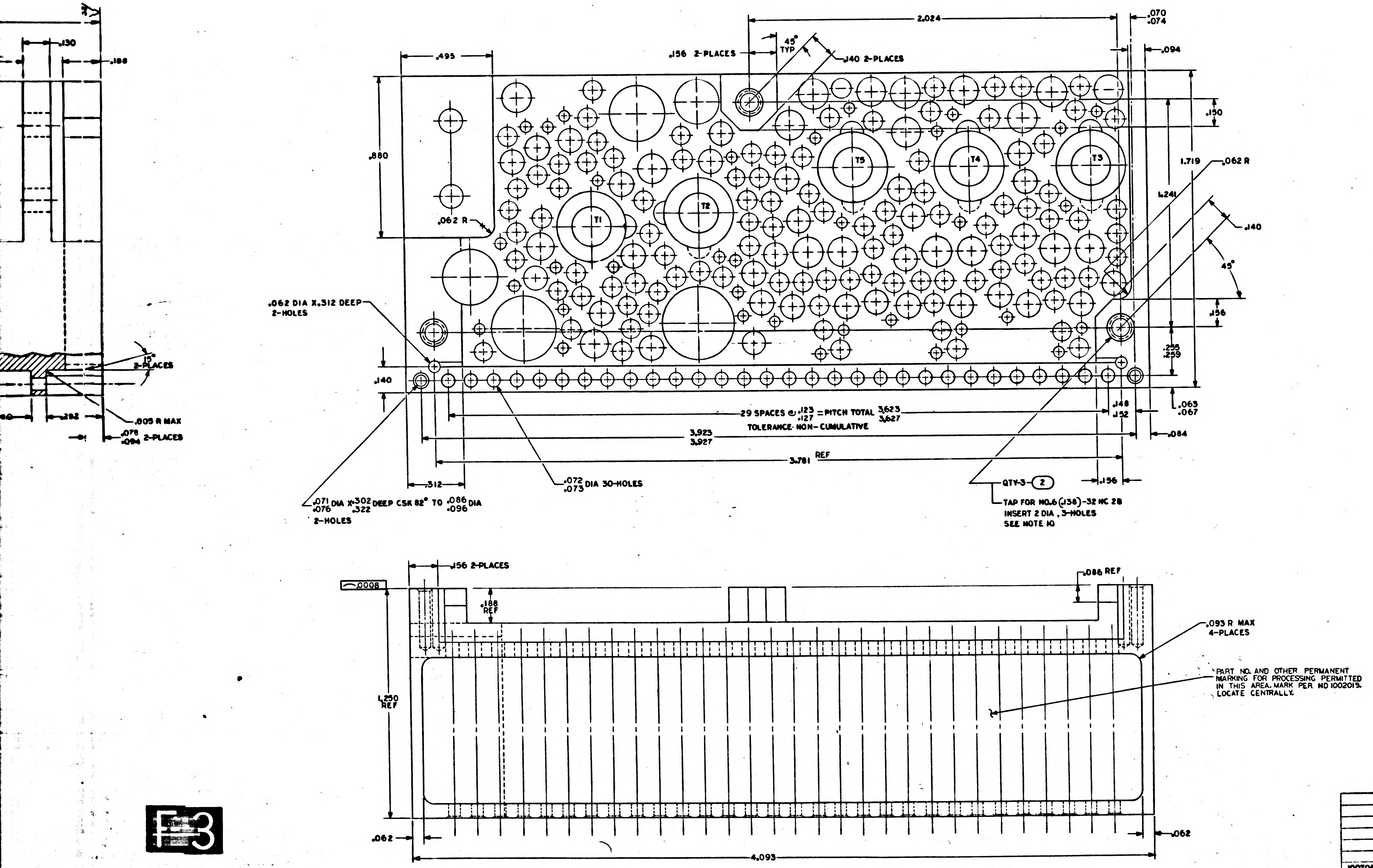
HOLE IDENT	X BASIC DIM	Y BASIC DIM	⊕ DIA	HOLE DIA	QTY
C1	1.980	.170	.006	.383 .391	1
D1	2.940	.150	.006	.345 .353	1
			.006	SEE SECTION A-A	5
E7	2.220	1.010			
E8	.820	1.200			
E9	1.460	1.240			
E10	.180	1.270			
E11	2.960	1.400			
F1	2.550	.060	.006	.153 .157	7
F2	.470	.550			
F3	1.180	.550			
F4	- .180	.560			
F5	- .300	1.420			
F6	.500	1.420			
F7	1.010	1.420			
G1	.660	.550	.006	.165 .169	6
G2	1.370	.550			
G3	.010	.560			
G4	.020	1.410			
G5	.820	1.410			
G6	1.330	1.410			
H1	- .020	.110	.006	.092 .096	16
H2	.640	.120			
H3	1.290	.130			
H4	2.370	.270			
H5	2.200	.340			
H6	2.750	.350			
H7	1.020	.430			
H8	.310	.450			
H9	- .330	.510			
H10	2.980	.520			
H11	1.690	.720			
H12	3.010	.790			
H13	2.730	.910			
H14	1.760	.960			
H15	2.520	1.160			
H16	2.060	1.190			
J1	.830	.510	.006	.124 .128	7
J2	1.550	.540			
J3	.170	.630			
J4	1.420	.720			
J5	.790	.740			
J6	.170	.930			
J7	1,675	.065			
K1	3.230	.430	.006	.301 .309	2
K2	2.300	1.310			
L1	2.840	.590	.006	.146 .150	1
M1	1.970	1.370	.006	.241 .245	1
P1	2,240	.040	.006	.127 .131	25
P2	2.510	.230			
P3	- .130	.260			
P4	.160	.260			
P5	.530	.260			
P6	.820	.260			
P7	1.160	.260			
P8	1.460	.260			
P9	1.000	.280			
P10	1.630	.280			
P11	.320	.310			
P12	- 310	.370			
P13	2.870	.420			
P14	1.670	.440			
P15	2.330	.540			
P16	.860	.890			
P17	2.390	.930			
P18	1.480	.950			
P19	1.900	1.050			
P20	2.990	1.050			
P21	.200	1.080			
P22	2.850	1.130			
P23	2.670	1.170			
P24	1.840	1.200			
P25	.320	1.410			
R1	2.160	.540	.006	.095 .099	1
T1	2.560	.700	.006	SEE DETAIL I	5
T2	1.970	.770			
T3	- .190	1.010			
T4	.480	1.010			
T5	1.120	1.010			



1007039 SHEET 1 C

1007039 C

SYM	REVISIONS TO BE ON-L DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 03787	9 Jan 63	WK
B	REVISED PER TDRR 03051		
C	REVISED PER TDRR 03753	11/2/63	WK.
D	REVISED PER TDRR 04663	11 Nov 63	



.130
.188
15°
2-PLACES
.005 R MAX
.078
.094 2-PLACES
.292
2.024
.070
.074
.495
.156 2-PLACES
45° TYP
.140 2-PLACES
.094
.150
.880
T5
T4
T3
T1
T2
1.719
.062 R
1.241
.062 R
.140
45°
.156
.255
.259
.062 DIA X .312 DEEP 2-HOLES
.140
29 SPACES @ .123/.127 = PITCH TOTAL 3.623/3.627
TOLERANCE NON-CUMULATIVE
.148
.152
.063
.067
3.923
3.927
.084
3.781 REF
.312
.072/.073 DIA 30-HOLES
QTY-3-②
.156
.071/.076 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA
2-HOLES
TAP FOR NO.6 (.138)-32 NC 2B
INSERT 2 DIA, 3-HOLES
SEE NOTE 10
.156 2-PLACES
.0008
.188 REF
.086 REF
.093 R MAX
4-PLACES
1.250 REF
.062
.062
4.093

PART NO. AND OTHER PERMANENT MARKING FOR PROCESSING PERMITTED IN THIS AREA. MARK PER ND 1002019. LOCATE CENTRALLY.

F3

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	MS21209-C0620	INSERT, SCREW LOCKING	2
1	1007039-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007057	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING
MATERIAL SEE NOTE 2
HEAT TREATMENT —
FINAL FINISH SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible] 21 Jan 63
APPROVAL
NASA APPROVAL [illegible] 7/8/63
MIT APPROVAL [illegible] 2 Feb 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

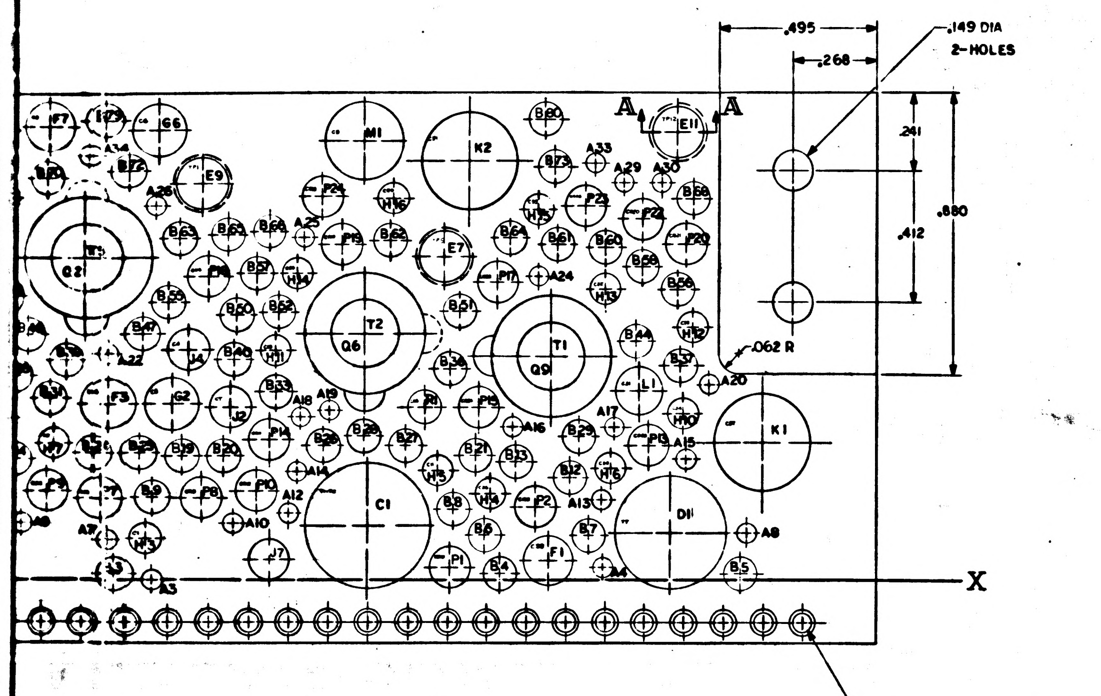
HEATSINK
BACK-UP MODE ELECTRONICS
PIPA-GYRO

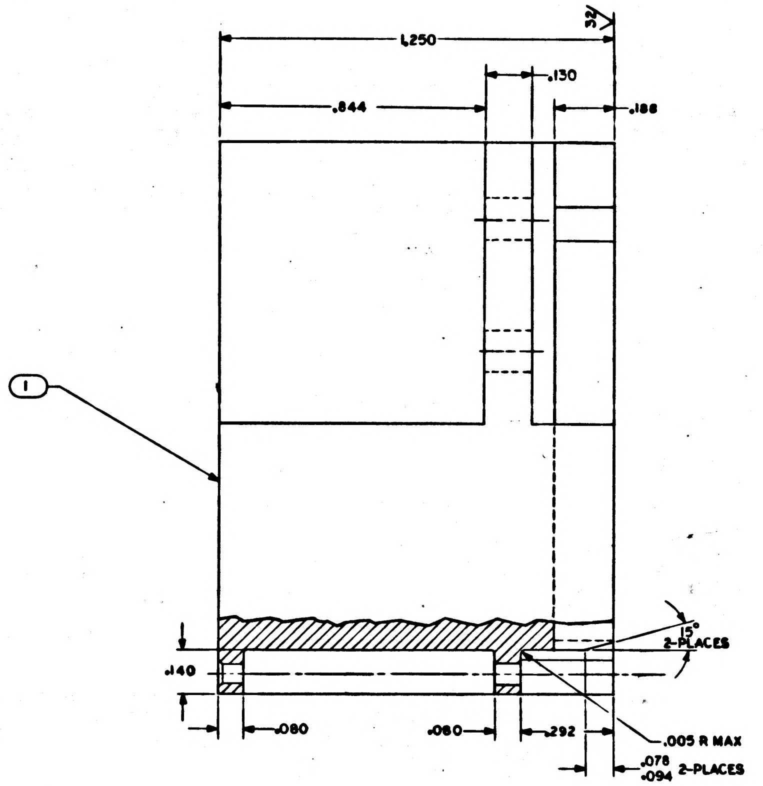
CODE IDENT NO. — SIZE J — NASA DRAWING NO. 1007039
SCALE 5/1 — WT — SHEET 1 OF 1

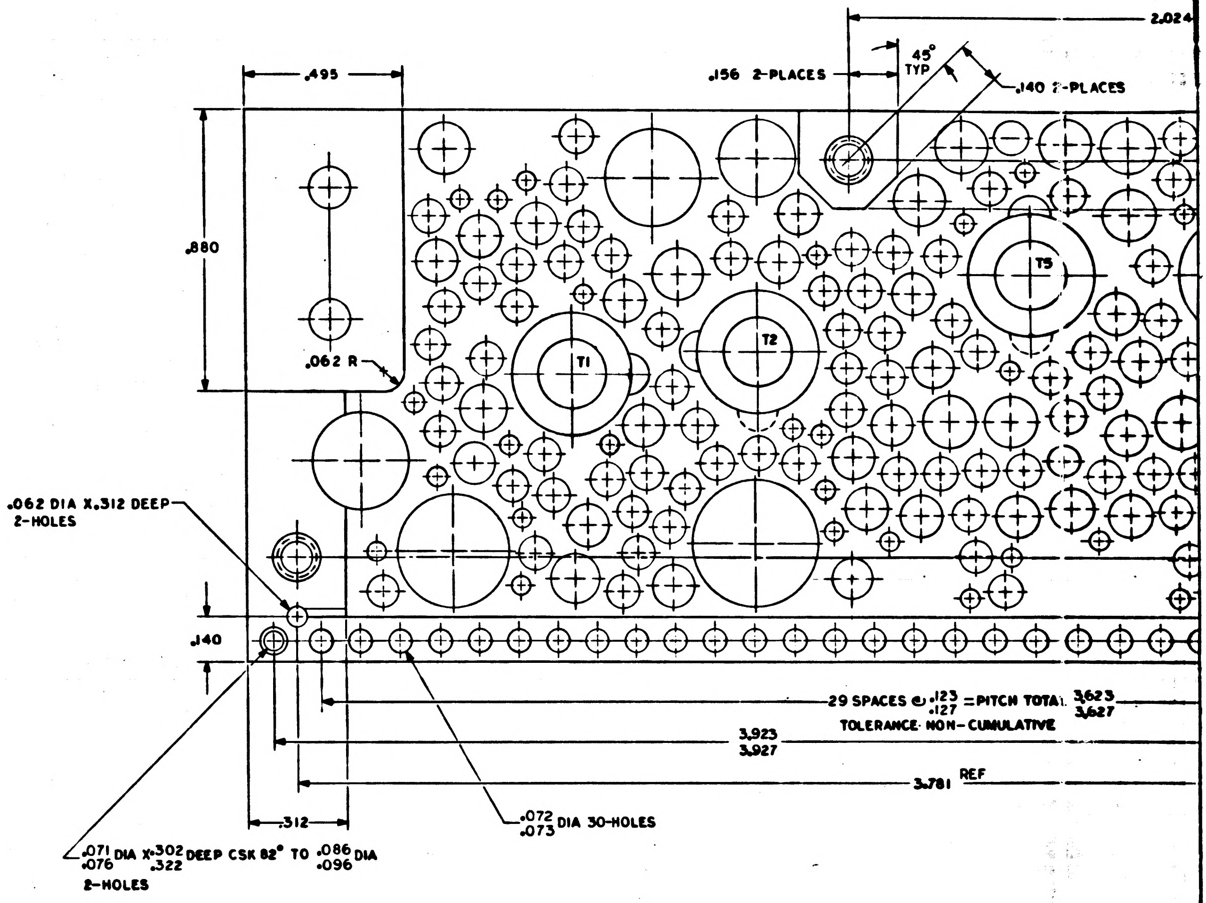
1007039 D

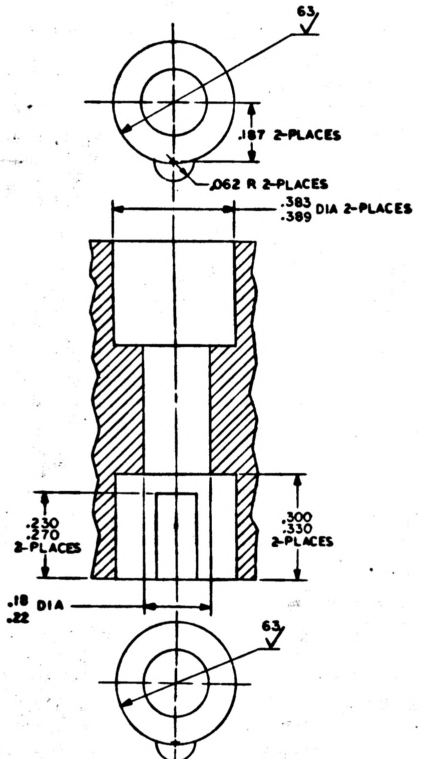
007039 D SHEET 1

INCHES
PHOTOGRAPHIC SCALE ONLY


.495
.268
.149 DIA
2-HOLES
.241
.412
.880
.062 R
A
A
X
.072
.073 DIA CSK 60° TO .089
.104 DIA
30-HOLES
M1
K2
E11
T2
Q6
T1
Q9
C1
D1
K1
E9
E7
G6
G2
F1
F3
P1
A20

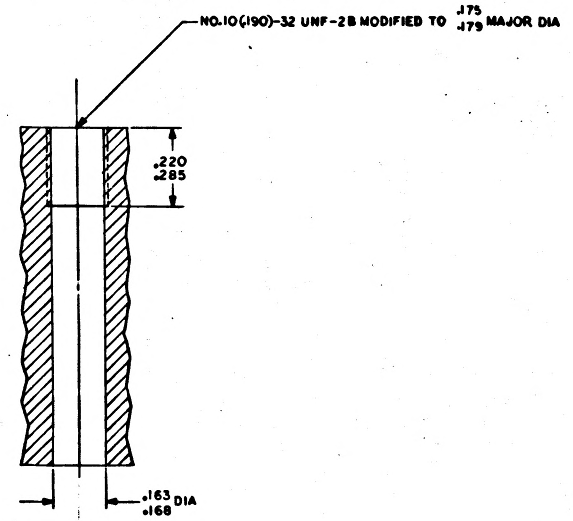

1.250
.844
.130
.188
32
1
.140
.080
.080
.292
15°
2-PLACES
.005 R MAX
.078
.094 2-PLACES


2.024
.495
.156 2-PLACES
45°
TYP
.140 2-PLACES
.880
.062 R
T1
T2
T5
.062 DIA X .312 DEEP
2-HOLES
.140
29 SPACES @ .123
.127 = PITCH TOTAL 3.623
3.627
TOLERANCE NON-CUMULATIVE
3.923
3.927
3.781 REF
.312
.072
.073 DIA 30-HOLES
.071
.076 DIA X .302
.322 DEEP CSK 82° TO .086
.096 DIA
2-HOLES


63
.187 2-PLACES
.062 R 2-PLACES
.383
.389 DIA 2-PLACES
.230
.270
2-PLACES
.300
.330
2-PLACES
.18
.22 DIA
63

DETAIL I

T3, T4 AND T5 AS SHOWN
FOR T1 AND T2 ORIENTATION TABS, SEE
TOP AND BOTTOM VIEWS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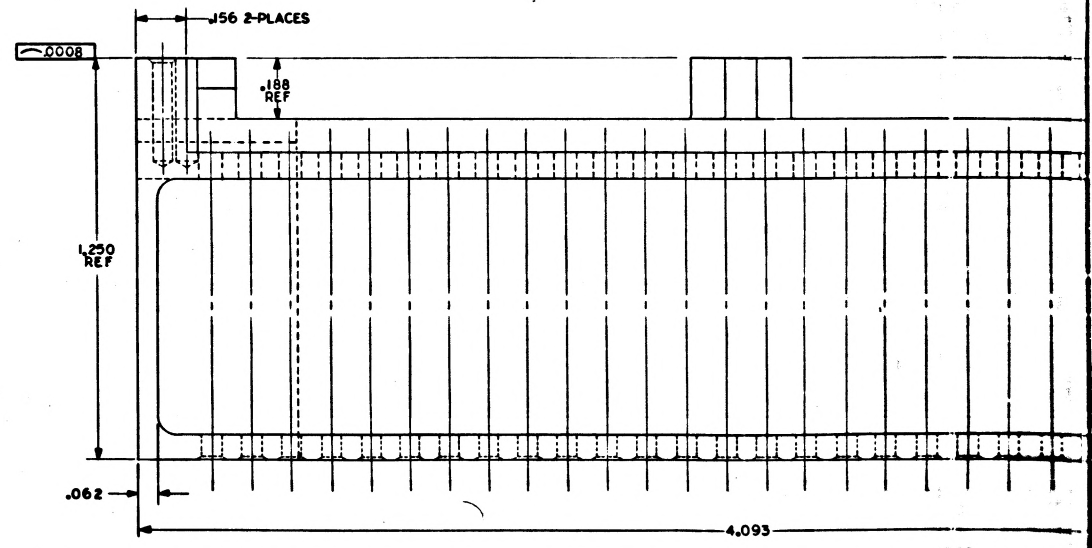
.179 MAJOR DIA
.220
.285
.163
.168 DIA

SECTION A-A

6-E-HOLES

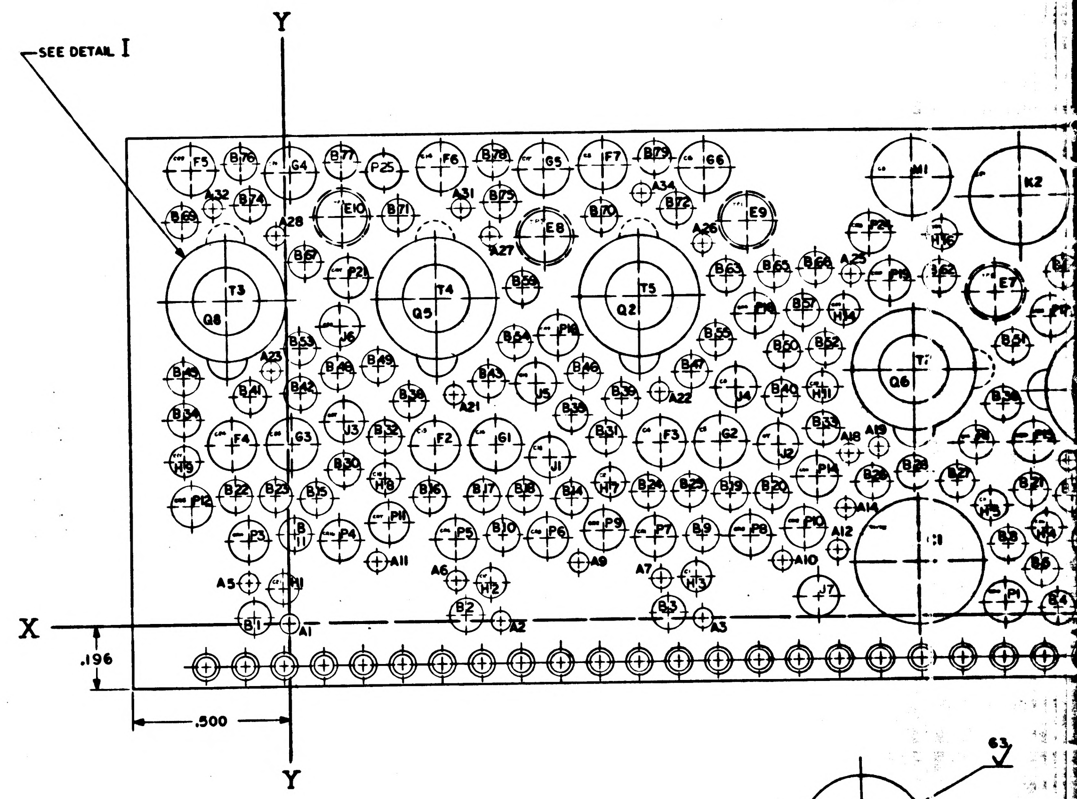

.156 2-PLACES
.0008
.188
REF
1.250
REF
.062
4.093

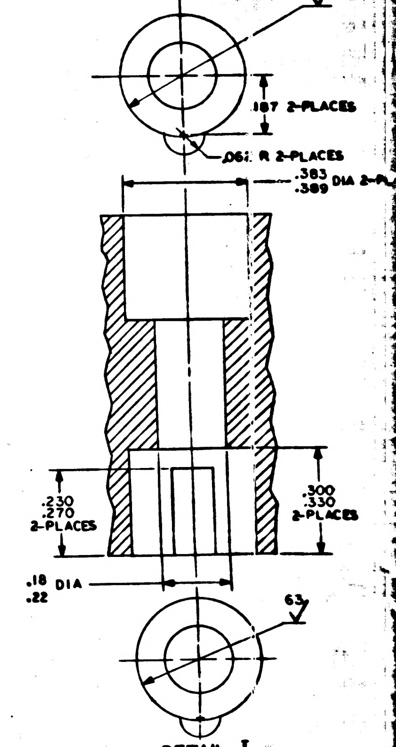
F2

1007039 D	SHEET 1

HOLE IDENT	X BASIC DIM	Y BASIC DIM	⊕ DIA	HOLE DIA	QTY
A 1	.000	.000	.006	.058 .062	34
A 2	.670	.000			
A 3	1.310	.000			
A 4	2.730	.040			
A 5	-.130	.130			
A 6	.530	.130			
A 7	1.180	.130			
A 8	3.180	.150			
A 9	.920	.180			
A 10	1.560	.180			
A 11	.280	.190			
A 12	1.730	.210			
A 13	2.720	.250			
A 14	1.760	.340			
A 15	2.990	.380			
A 16	2.440	480			
A 17	2.760	.480			
A 18	1.770	.510			
A 19	1.860	.530			
A 20	3.060	610			
A 21	0.530	.710			
A 22	1.180	.710			
A 23	-0.050	.790			
A 24	2.520	.950			
A 25	1.780	1.070			
A 26	1.320	1.170			
A 27	.650	1.200			
A 28	- .030	1.210			
A 29	2.790	1.240			
A 30	2.910	1.240			
A 31	.560	1.290			
A 32	- .230	1.300			
A 33	2.700	1.300			
A 34	1.130	1.330			
B1	- .110	.020	.006	.100 .104	80
B2	.560	.020			
B3	1.200	.020			
B4	2.400	.020			
B5	3.160	.020			
B6	2.350	.140			
B7	2.680	.140			
B8	2.250	.220			
B9	1.310	.260			
B10	.680	.270			
B11	.020	.280			
B12	2.620	.320			
B13	2.450	.370			
B14	.900	.380			
B15	.090	.390			
B16	.450	.390			
B17	.620	.390			
B18	.750	.390			
B19	1.400	.390			
B20	1.530	.390			
B21	2.320	.390			
B22	- .170	.400			
B23	- .040	.400			
B24	1.140	.400			
B25	1.270	.400			
B26	1.840	.420			
B27	2.100	.420			
B28	1.970	.450			
B29	2.650	.450			
B30	.180	.480			
B31	1.010	.570			
B32	.310	.580			
B33	1.690	.590			
B34	- .330	.640			
B35	.900	.640			
B36	2.240	.660			
B37	2.970	.670			
B38	.390	.690			
B39	1.060	.690			
B40	1.560	.690			
B41	- .120	.710			
B42	.040	.720			
B43	.640	.750			
B44	2.830	.750			
B45	- .330	.770			
B46	.940	.770			
B47	1.280	.770			
B48	.160	.780			
B49	.290	.800			
B50	1.570	.830			
B51	2.270	.840			
B52	1.700	.850			
B53	.040	.860			
B54	.720	.870			
B55	1.360	.870			
B56	2.960	.910			
B57	1.630	.960			
B58	2.850	.980			
B59	.750	1.040			
B60	2.730	1.040			
B61	2.580	1.050			
B62	2.050	1.060			
B63	1.390	1.070			
B64	2.430	1.070			
B65	1.540	1.080			
B66	1.670	1.090			
B67	.060	1.130			
B68	3.010	1.190			
B69	- .330	1.260			
B70	1.000	1.260			
B71	.360	1.270			
B72	1.240	1.280			
B73	2.570	1.290			
B74	- .110	1.310			
B75	.680	1.310			
B76	- .140	1.440			
B77	.180	1.440			
B78	.660	1.440			
B79	1.170	1.440			
B80	2.540	1.440			

HOLE IDENT	X BASIC DIM	Y BASIC DIM	⊕ DIA	HOLE DIA	QTY
C1	1.980	.170	.006	.383 .391	1
D1	2.940	.150	.006	.345 .353	1
			.006	SEE SECTION A-A	5
E7	2.220	1.010			
E8	.820	1.200			
E9	1.460	1.240			
E10	.180	1.270			
E11	2.960	1.400			
F1	2.550	.060	.006	.153 .157	7
F2	.470	.550			
F3	1.180	.550			
F4	- .180	.560			
F5	- .300	1.420			
F6	.500	1.420			
F7	1.010	1.420			
G1	.660	.550	.006	.165 .169	6
G2	1.370	.550			
G3	.010	.560			
G4	.020	1.410			
G5	.820	1.410			
G6	1.330	1.410			
H1	- .020	.110	.006	.092 .096	16
H2	.640	.120			
H3	1.290	.130			
H4	2.370	.270			
H5	2.200	.340			
H6	2.750	.350			
H7	1.020	.430			
H8	.310	.450			
H9	- .330	.510			
H10	2.980	.520			
H11	1.690	.720			
H12	3.010	.790			
H13	2.730	.910			
H14	1.760	.960			
H15	2.520	1.160			
H16	2.060	1.190			
J1	.830	.510	.006	.124 .128	7
J2	1.550	.540			
J3	.170	.630			
J4	1.420	.720			
J5	.790	.740			
J6	.170	.930			
J7	1,675	.065			
K1	3.230	.430	.006	.301 .309	2
K2	2.300	1.310			
L1	2.840	.590	.006	.146 .150	1
M1	1.970	1.370	.006	.241 .245	1
P1	2,240	.040	.006	.127 .131	25
P2	2.510	.230			
P3	- .130	.260			
P4	.160	.260			
P5	.530	.260			
P6	.820	.260			
P7	1.160	.260			
P8	1.460	.260			
P9	1.000	.280			
P10	1.630	.280			
P11	.320	.310			
P12	- 310	.370			
P13	2.870	.420			
P14	1.670	.440			
P15	2.330	.540			
P16	.860	.890			
P17	2.390	.930			
P18	1.480	.950			
P19	1.900	1.050			
P20	2.990	1.050			
P21	.200	1.080			
P22	2.850	1.130			
P23	2.670	1.170			
P24	1.840	1.200			
P25	.320	1.410			
R1	2.160	.540	.006	.106 .110	1
T1	2.560	.700	.006	SEE DETAIL I	5
T2	1.970	.770			
T3	- .190	1.010			
T4	.480	1.010			
T5	1.120	1.010			





DETAIL I

T3,T4 AND T5 AS SHOWN
FOR T1 AND T2 ORIENTATION TABS, SEE
TOP AND BOTTOM VIEWS

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED 125/√ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO.2 PER MS 35646 EXCEPT DIM.F TO BE .594. BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 A TYPE IV

E1

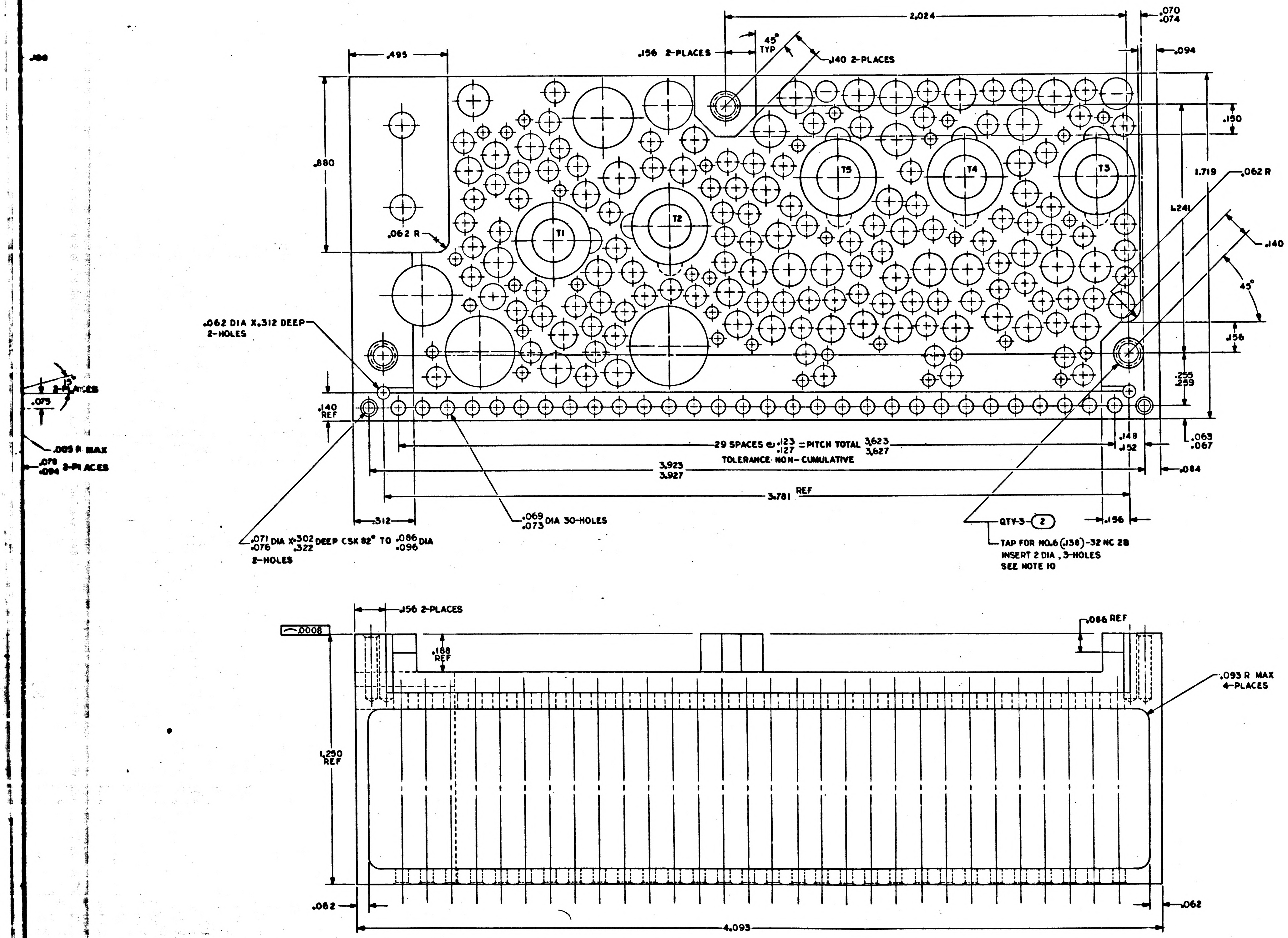
1007039

1007039	SHEET 1	D

INCHES
PHOTOGRAPHIC SCALE ONLY

REVISIONS

DESCRIPTION	DATE	APPROVAL


2.024
.070
.074
.495
.156 2-PLACES
45° TYP
.140 2-PLACES
.094
.150
.880
1.719
.062 R
1.241
.062 R
.140
45°
T1
T2
T3
T4
T5
.156
.255
.259
.062 DIA X .312 DEEP 2-HOLES
.140 REF
.063
.067
29 SPACES @ .123/.127 = PITCH TOTAL 3.623/3.627
TOLERANCE NON-CUMULATIVE
.148
.152
3.923
3.927
.084
3.781 REF
.312
.069/.073 DIA 30-HOLES
QTY-3-②
.156
.071/.076 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA
2-HOLES
TAP FOR NO.6 (.138)-32 NC 2B
INSERT 2 DIA, 3-HOLES
SEE NOTE 10
.156 2-PLACES
.0008
.086 REF
.188 REF
.093 R MAX 4-PLACES
1.250 REF
.062
.062
4.093
.075
2-PLACES
.089 R MAX
.078
.094 2-PLACES

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
3	NAS 1222 — 06E	INSERT, SCREW LOCKING	2
1	1007039-1	HEATSINK	1

LIST OF MATERIALS

NEXT ASSY	USED ON
1007057	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± — DECIMALS ±.005 ANGLES ± 1°
DO NOT SCALE THIS DRAWING

MATERIAL
SEE NOTE 2

HEAT TREATMENT
—

FINAL FINISH
SEE NOTE 11

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.

DRAWN DATE 1963
CHECKED 1963
APPROVAL 21 Jan 63
APPROVAL

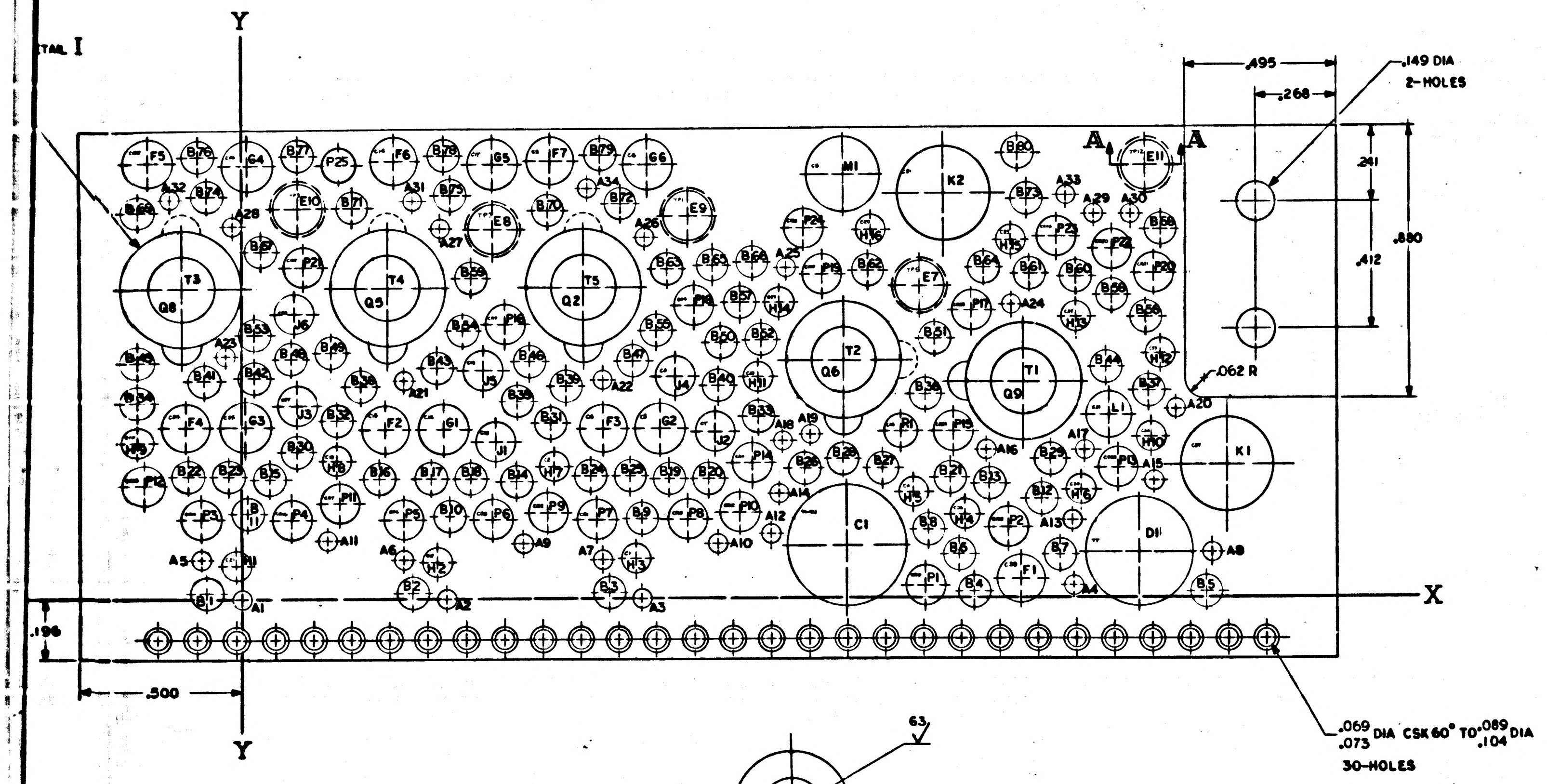
NASA APPROVAL
MIT APPROVAL 2 Feb 63

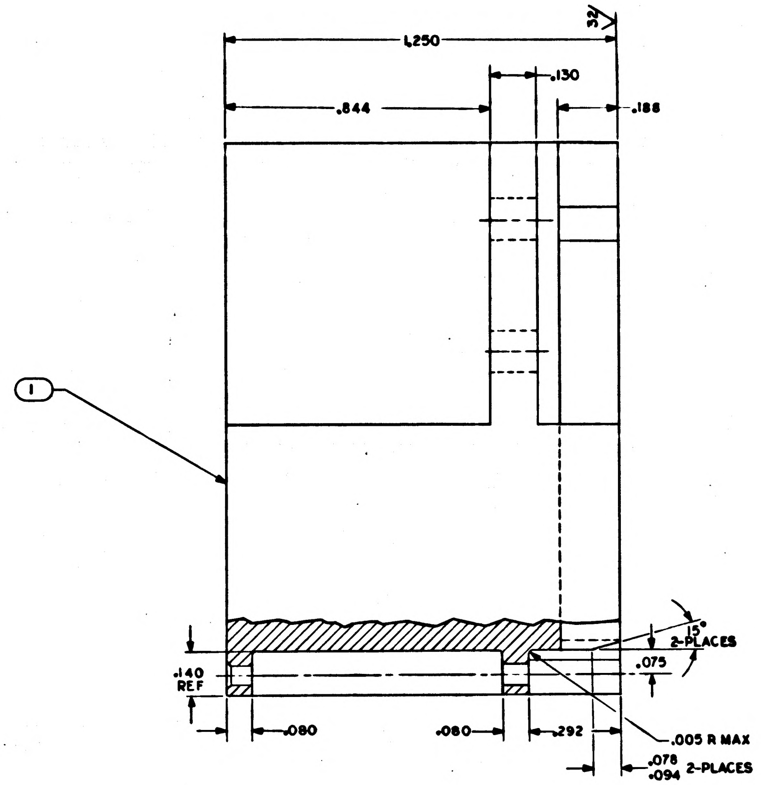
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

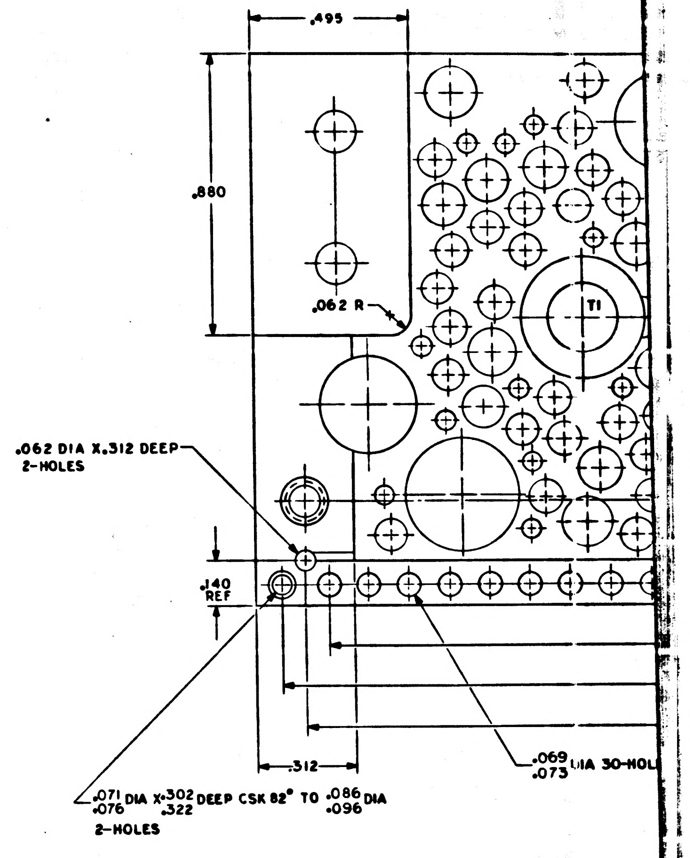
HEATSINK
BACK-UP MODE ELECTRONICS
PIPA-GYRO

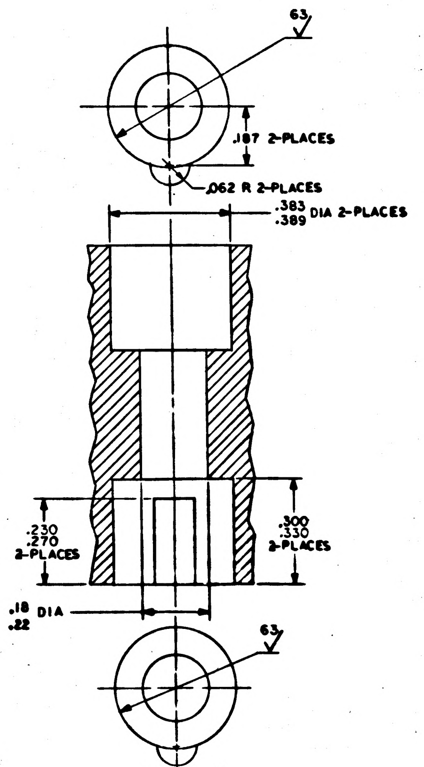
CODE IDENT NO.
SIZE J
NASA DRAWING NO. 1007039
SCALE 5/1
WT
SHEET 1 OF 1

F-3

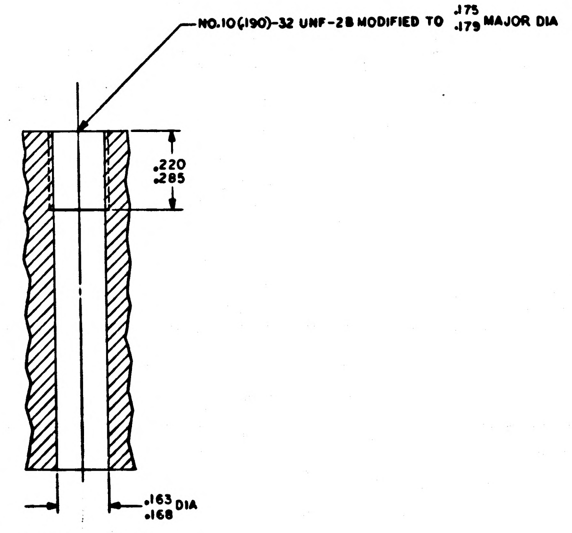

DETAIL I
Y
Y
X
A
A
.495
.268
.149 DIA
2-HOLES
.241
.412
.880
.062 R
.190
.500
.069/.073 DIA CSK 60° TO .089/.104 DIA
30-HOLES
T3
T4
T5
T2
T1
Q8
Q5
Q2
Q6
Q9
M1
K2
K1
C1
D1
E11


1,250
.844
.130
.188
32
①
15°
2-PLACES
.075
.140
REF
.080
.080
.292
.005 R MAX
.078/.094 2-PLACES

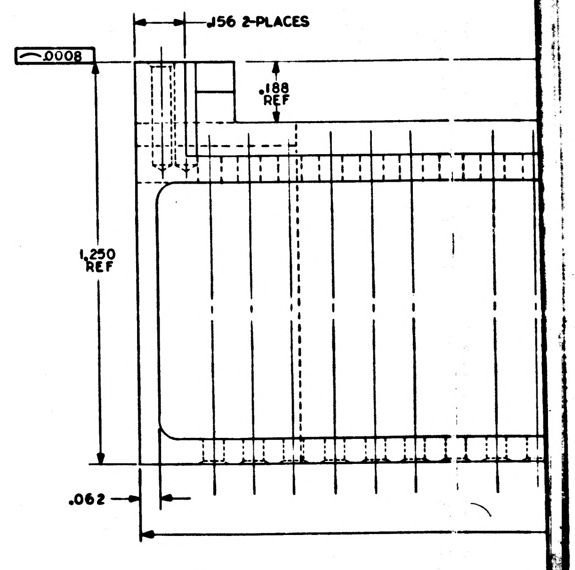

.495
.880
.062 R
.062 DIA X .312 DEEP
2-HOLES
T1
.140
REF
.312
.069/.073 DIA 30-HOL
.071/.076 DIA X .302/.322 DEEP CSK 82° TO .086/.096 DIA
2-HOLES


63
.187 2-PLACES
.062 R 2-PLACES
.383/.389 DIA 2-PLACES
.230/.270
2-PLACES
.300/.330
2-PLACES
.18/.22 DIA
63

DETAIL I
T3,T4 AND T5 AS SHOWN
FOR T1 AND T2 ORIENTATION TABS, SEE
TOP AND BOTTOM VIEWS


NO.10(.190)-32 UNF-2B MODIFIED TO .175/.179 MAJOR DIA
.220/.285
.163/.168 DIA

SECTION A-A
5-E-HOLES


.156 2-PLACES
.0008
.188
REF
1,250
REF
.062

1007039 SHEET 1

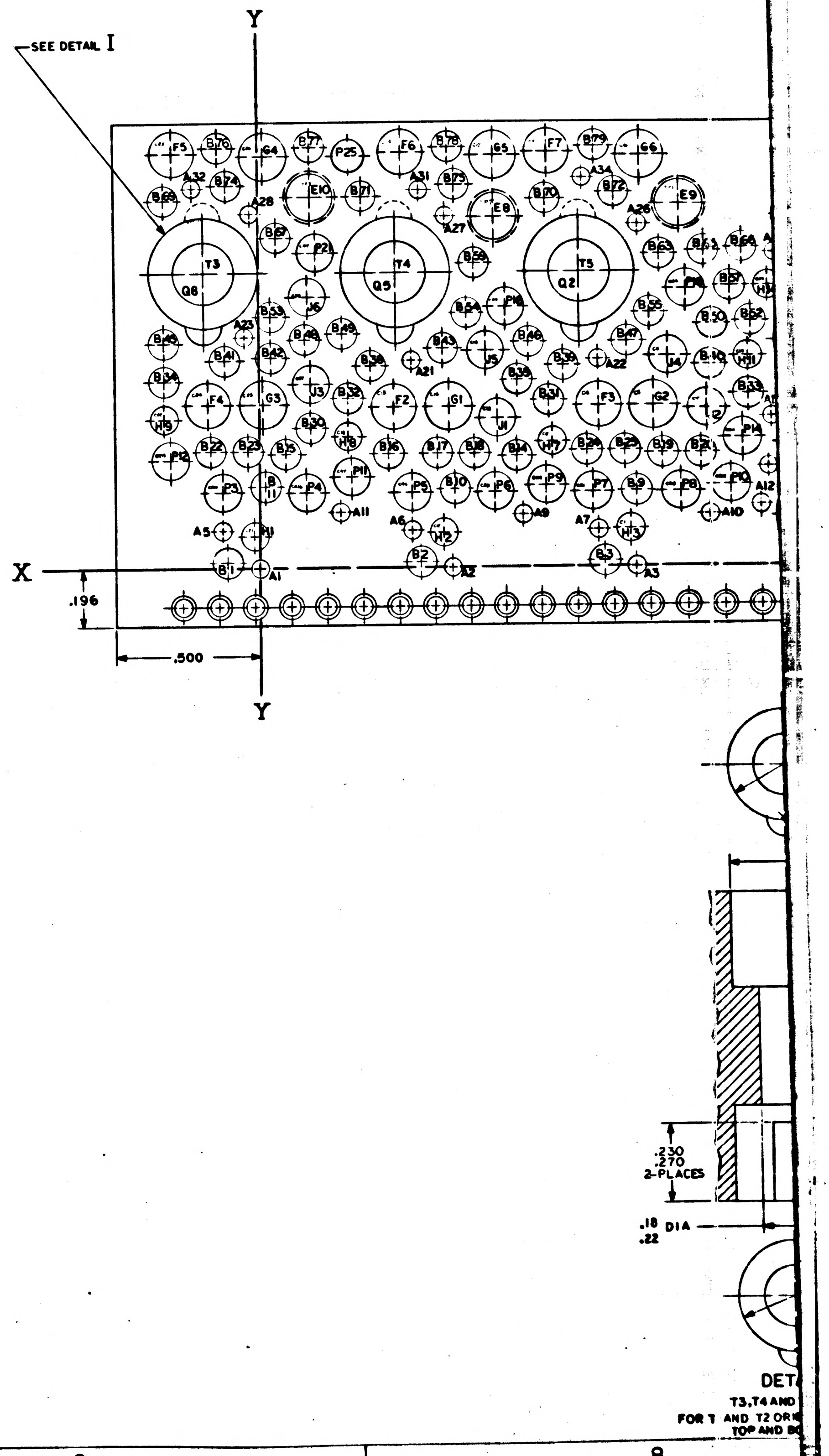
E-2

HOLE IDENT	X BASIC DIM	Y BASIC DIM	⊕ DIA	HOLE DIA	QTY
A 1	.000	.000	.006	.058 .062	34
A 2	.670	.000			
A 3	1.310	.000			
A 4	2.730	.040			
A 5	-.130	.130			
A 6	.530	.130			
A 7	1.180	.130			
A 8	3.180	.150			
A 9	.920	.180			
A 10	1.560	.180			
A 11	.280	.190			
A 12	1.730	.210			
A 13	2.720	.250			
A 14	1.760	.340			
A 15	2.990	.380			
A 16	2.440	480			
A 17	2.760	.480			
A 18	1.770	.510			
A 19	1.860	.530			
A 20	3.060	610			
A 21	0.530	.710			
A 22	1.180	.710			
A 23	-0.050	.790			
A 24	2.520	.950			
A 25	1.780	1.070			
A 26	1.320	1.170			
A 27	.650	1.200			
A 28	- .030	1.210			
A 29	2.790	1.240			
A 30	2.910	1.240			
A 31	.560	1.290			
A 32	- .230	1.300			
A 33	2.700	1.300			
A 34	1.130	1.330			
B1	-.110	.020	.006	.100 .104	80
B2	.560	.020			
B3	1.200	.020			
B4	2.400	.020			
B5	3.160	.020			
B6	2.350	.140			
B7	2.680	.140			
B8	2.250	.220			
B9	1.310	.260			
B10	.680	.270			
B11	.020	.280			
B12	2.620	.320			
B13	2.450	.370			
B14	.900	.380			
B15	.090	.390			
B16	.450	.390			
B17	.620	.390			
B18	.750	.390			
B19	1.400	.390			
B20	1.530	.390			
B21	2.320	.390			
B22	- .170	.400			
B23	- .040	.400			
B24	1.140	.400			
B25	1.270	.400			
B26	1.840	.420			
B27	2.100	.420			
B28	1.970	.450			
B29	2.650	.450			
B30	.180	.480			
B31	1.010	.570			
B32	.310	.580			
B33	1.690	.590			
B34	- .330	.640			
B35	.900	.640			
B36	2.240	.660			
B37	2.970	.670			
B38	.390	.690			
B39	1.060	.690			
B40	1.560	.690			
B41	- .120	.710			
B42	.040	.720			
B43	.640	.750			
B44	2.830	.750			
B45	- .330	.770			
B46	.940	.770			
B47	1.280	.770			
B48	.160	.780			
B49	.290	.800			
B50	1.570	.830			
B51	2.270	.840			
B52	1.700	.850			
B53	.040	.860			
B54	.720	.870			
B55	1.360	.870			
B56	2.960	.910			
B57	1.630	.960			
B58	2.850	.980			
B59	.750	1.040			
B60	2.730	1.040			
B61	2.580	1.050			
B62	2.050	1.060			
B63	1.390	1.070			
B64	2.430	1.070			
B65	1.540	1.080			
B66	1.670	1.090			
B67	.060	1.130			
B68	3.010	1.190			
B69	- .330	1.260			
B70	1.000	1.260			
B71	.360	1.270			
B72	1.240	1.280			
B73	2.570	1.290			
B74	- .110	1.310			
B75	.680	1.310			
B76	- .140	1.440			
B77	.180	1.440			
B78	.660	1.440			
B79	1.170	1.440			
B80	2.540	1.440			

HOLE IDENT	X BASIC DIM	Y BASIC DIM	⊕ DIA	HOLE DIA	QTY
C1	1.980	.170	.006	.383 .391	1
D1	2.940	.150	.006	.345 .353	1
			.006	SEE SECTION A-A	5
E7	2.220	1.010			
E8	.820	1.200			
E9	1.460	1.240			
E10	.180	1.270			
E11	2.960	1.400			
F1	2.550	.060	.006	.153 .157	7
F2	.470	.550			
F3	1.180	.550			
F4	- .180	.560			
F5	- .300	1.420			
F6	.500	1.420			
F7	1.010	1.420			
G1	.660	.550	.006	.165 .169	6
G2	1.370	.550			
G3	.010	.560			
G4	.020	1.410			
G5	.820	1.410			
G6	1.330	1.410			
H1	- .020	.110	.006	.092 .096	16
H2	.640	.120			
H3	1.290	.130			
H4	2.370	.270			
H5	2.200	.340			
H6	2.750	.350			
H7	1.020	.430			
H8	.310	.450			
H9	- .330	.510			
H10	2.980	.520			
H11	1.690	.720			
H12	3.010	.790			
H13	2.730	.910			
H14	1.760	.960			
H15	2.520	1.160			
H16	2.060	1.190			
J1	.830	.510	.006	.124 .128	6
J2	1.550	.540			
J3	.170	.630			
J4	1.420	.720			
J5	.790	.740			
J6	.170	.930			
K1	3.230	.430	.006	.301 .309	2
K2	2.300	1.310			
L1	2.840	.590	.006	.146 .150	1
M1	1.970	1.370	.006	.241 .245	1
P1	2.240	.040	.006	.127 .131	25
P2	2.510	.230			
P3	- .130	.260			
P4	.160	.260			
P5	.530	.260			
P6	.820	.260			
P7	1.160	.260			
P8	1.460	.260			
P9	1.000	.280			
P10	1.630	.280			
P11	.320	.310			
P12	- 310	.370			
P13	2.870	.420			
P14	1.670	.440			
P15	2.330	.540			
P16	.860	.890			
P17	2.390	.930			
P18	1.480	.950			
P19	1.900	1.050			
P20	2.990	1.050			
P21	.200	1.080			
P22	2.850	1.130			
P23	2.670	1.170			
P24	1.840	1.200			
P25	.320	1.410			
R1	2.160	.540	.006	.095 .099	1
T1	2.560	.700	.006	SEE DETAIL I	5
T2	1.970	.770			
T3	- .190	1.010			
T4	.480	1.010			
T5	1.120	1.010			

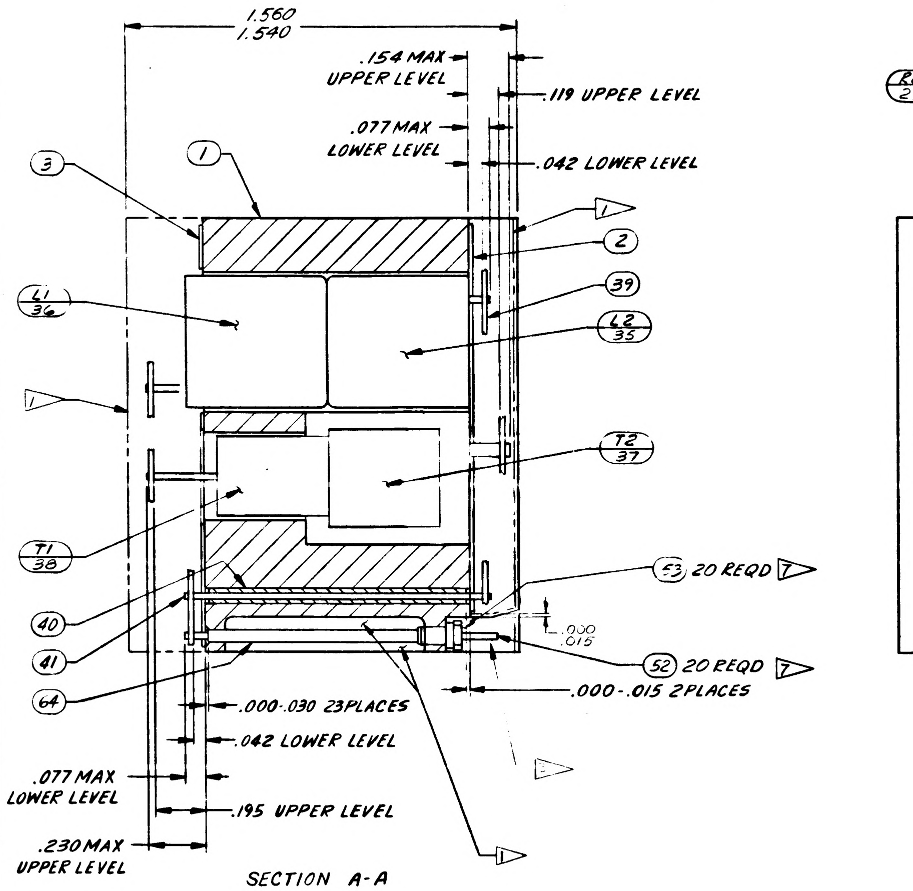
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. MATERIAL: MAGNESIUM ALLOY ZK-60A-T5 PER QQ-M-31A
3. UNLESS OTHERWISE SPECIFIED ALL FILLETS AND RADII .010 MAX
4. TRUE POSITIONING AS SHOWN IN CHART
5. FLATNESS TO BE WITHIN .010
6. UNLESS OTHERWISE SPECIFIED $\sqrt[125]{}$ ALL OVER
7. ALL FLAT SURFACES TO BE SQUARE AND/OR PARALLEL WITHIN .010
8. REMOVE ALL BURRS AND BREAK SHARP EDGES .005-.015
9. COAT THREADS AND FIND NO.2 WITH MIL-P-8585 WET ZINC CHROMATE PRIMER
10. INSTALL FIND NO.2 PER MS 35646 EXCEPT DIM.F TO BE .594. BREAK OFF DRIVING TANG
11. FINISH: PLUG INSERT HOLES AND ANODIZE PER MIL-M-3171 A TYPE IV

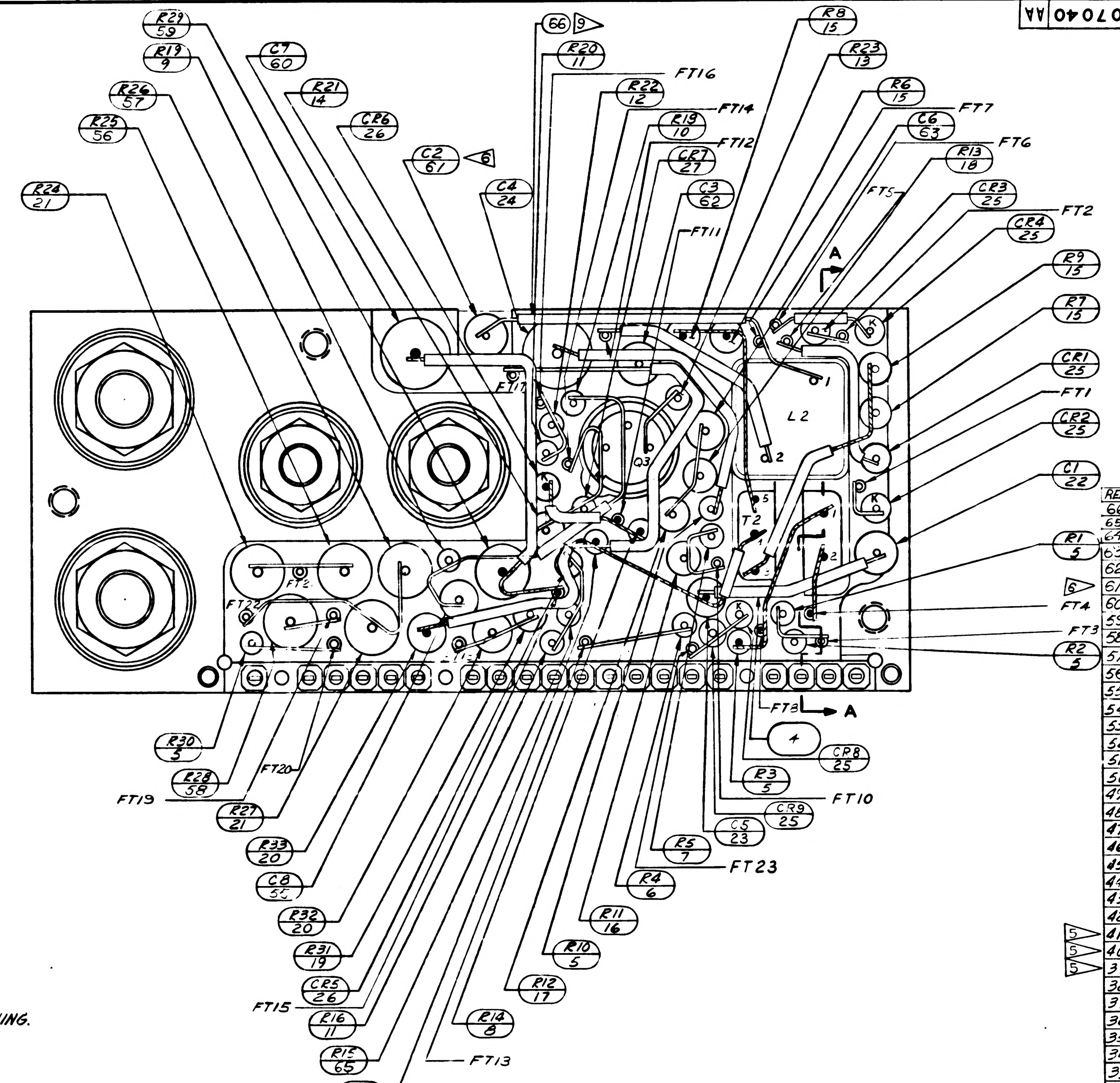


1007039 SHEET 1

1007040 AA



SECTION A-A



1 ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH & LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAX. DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

9 USE MIL-I-631, TYPE F, FORM U, GRADE C, CLASS I, CATEGORY I, IN 2 PLACES ONLY - SECURE IN PLACE PER ND 1002004.

SOLDER LEADS OF FIND NOS. 31, 32, 33 AND 34 PER ND 1002071.

2 MARK PIN NUMBERS .08 HIGH (WHITE) & SERIALIZE & MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023 CENTRALIZE AS SHOWN ABBREVIATIONS PERMISSIBLE

5 AR DENOTES AS REQUIRED

7 ASSEMBLE PER ND1002136 ~~SOLDER PER ND1002~~

3 AREAS TO BE FREE OF ENCAPSULATING COMPOUND

STAKE ALL COMPONENTS PER ND1008009 METHOD H.

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

~~UNLESS OTHERWISE SPECIFIED:~~
~~1 ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.~~

ON ITEMS ② & ③
FT( ) INDICATES FEED THRU.
K INDICATES CATHODE SIDE OF DIODE.
C INDICATES COLLECTOR LEAD OF TRANSISTOR
B " BASE " " "
E " EMITTER " " "
C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR
B_2 " BASE " " " " "
E_2 " EMITTER " " " " "

6 AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-
PROCURE PER PS 1007040

6

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

10 BOND CR8 AND CR9 TO L1 PER ND1002004 TYPE I.
11 SLEEVE IF NECESSARY TO AVOID SHORT.
12 BRIDGE WELD.

~~BOND A .25 MIN WIDE PERIMETER OF THE TOP AND BOTTOM INSULATOR TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~

~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~

TABLE I

~~CONFIGURATION~~	~~BOND BETWEEN WAFER AND HEATSINK~~	~~TOP OF WAFER~~	~~HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE~~
~~WAFER AND FLAT HEATSINK~~	~~100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~WAFER AND ADJACENT VERTICAL HEAT-SINK SURFACE~~	~~CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03±.03 OF EXTERNAL SURFACE~~	~~100% OF AREA .25 FROM EXTERNAL MODULE SURFACE~~	~~N/A~~
~~HEATSINK FOAM CONTACT SURFACE PERIMETER~~	~~N/A~~	~~N/A~~	~~.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ± .03 OF EXTERNAL EDGE~~

CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.

EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND1002110 TYPE II AFTER ENCAPSULATION, USING BLACK PAINT PER 1010729-4. CURE AT 140°F FOR EIGHT HOURS. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE FROM PAINT.

REV D REPLACES REV C

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
D		REVISED PER TDRR [illegible]			
E		REVISED PER TDRR 01448		[illegible]	[illegible]
F		REVISED PER TDRR [illegible]4		[illegible]	
G		REVISED PER TDRR [illegible]		7-1-63	
H		REVISED PER TDRR [illegible]			
J		REVISED PER TDRR 03091		[illegible]	
K		REVISED PER TDRR 04115		[illegible]	
L		REVISED PER TDRR 05327		[illegible]	
M		REVISED PER TDRR 05408			
N		REVISED PER TDRR 06271		[illegible]	
P		REVISED PER TDRR 06893			
R		REVISED PER TDRR 07277		9 APR	
S		REVISED PER TDRR 07285		[illegible]	
T		REVISED PER TDRR 07304		16 APR 64	
U		REVISED PER TDRR 09650		[illegible] 64	
V		REVISED PER TDRR 11638		28 AUG 64	
W		REVISED PER TDRR 11632		[illegible]	
Y		REVISED PER TDRR [illegible]		[illegible]	
Z		REVISED PER TDRR 19462		[illegible]	
AA		REVISED PER TDRR 19478		[illegible]	

ITEM NO	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF	X	1010024	SCHEMATIC
66	AR	MIL-I-631	INSULATION SLEEVING #2[illegible]
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-9	CAPACITOR
62	1	1010264-12	CAPACITOR
61	1	1010264-6	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	20	1006775	INSULATOR
52	20	1006782-5	CONTACT
51	2	[illegible]416B	NUT
50	2	MS20341-10B	NUT
49	2	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
41	AR	1006757-8	WIRE, ELECTRICAL
40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-9	REACTOR
35	1	1010277-8	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010345-1	TRANSISTOR
28	1	1010252-1	TRANSISTOR
27	1	1010830-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	6	1010392-1	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-44	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

1007151	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ XXX ±.005 +
- XX ±.02 -
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN [illegible] DATE 3/27/63
CHECKED [illegible] 3 APR 63
APPROVAL A KODEL J. M BLYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL [illegible] 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO 80230
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

MIL 1077E-P

1007040 AA

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
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G		REVISED PER TDRR [illegible]		[illegible]	[illegible]
H		REVISED PER TDRR 02727		[illegible]	[illegible]
J		REVISED PER TDRR [illegible]		[illegible]	[illegible]
K		REVISED PER TDRR 04115		[illegible]	[illegible]
L		REVISED PER TDRR 05327		12-9-63	[illegible]
M		REVISED PER TDRR 05408		[illegible]	[illegible]
N		REVISED PER TDRR 06271		[illegible]	[illegible]
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T		REVISED PER TDRR 07304		[illegible]	[illegible]
U		REVISED PER TDRR [illegible]		[illegible]	[illegible]
V		REVISED PER TDRR 11638		[illegible]	[illegible]
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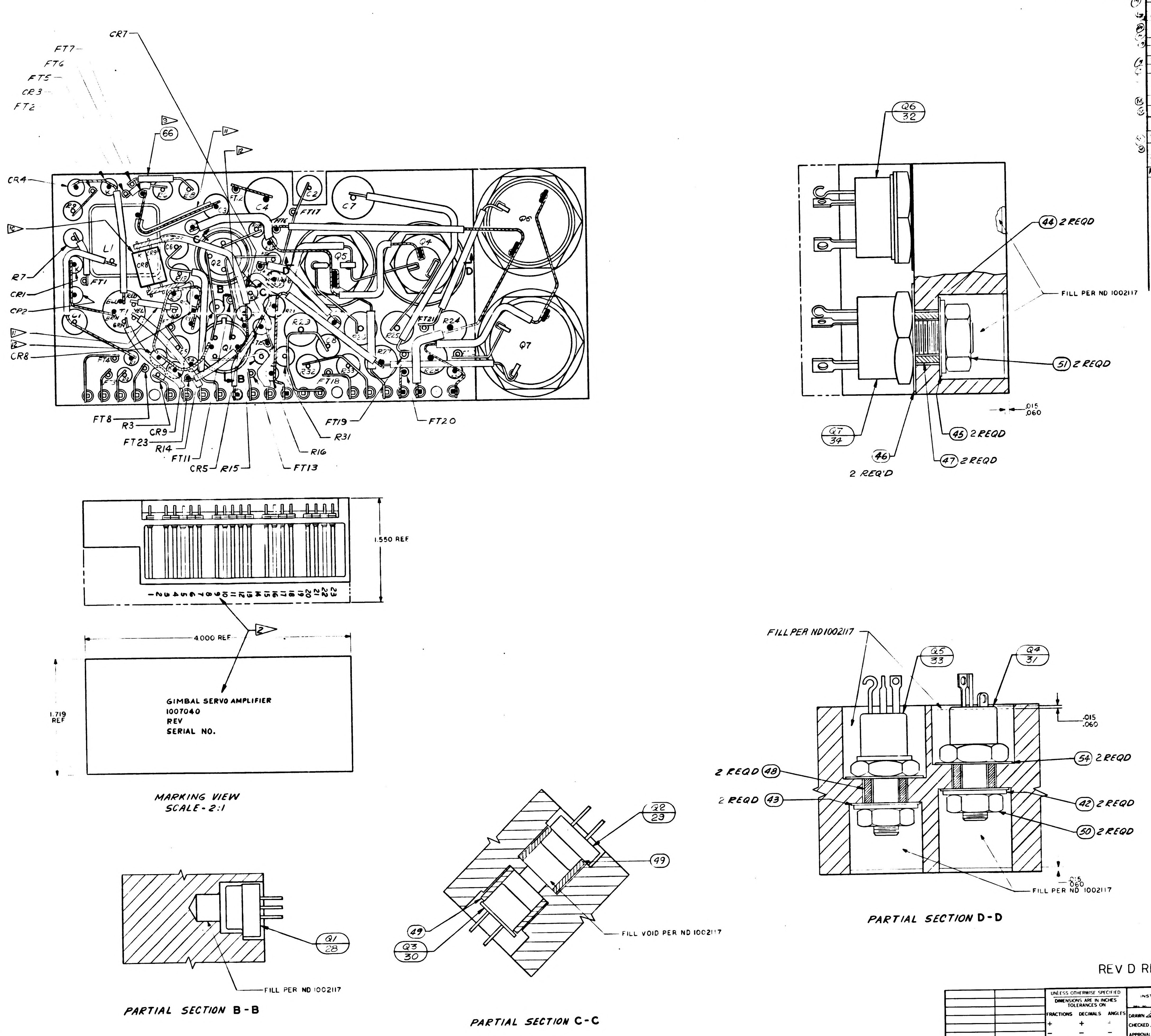
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FT5
CR3
FT2
66
CR4
R7
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CR2
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Q6
Q7
C2
C4
C7
FT17
FT21
R24
R23
R25
Q1
FT18
FT8
R3
CR9
FT23
R14
FT11
CR5
R15
FT13
R16
R31
FT19
FT20
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
4.000 REF
1.719 REF
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.
MARKING VIEW
SCALE - 2:1
Q6 32
44 2 REQD
FILL PER ND 1002117
51 2 REQD
.015
.060
Q7 34
45 2 REQD
46 2 REQ'D
47 2 REQD
FILL PER ND1002117
Q5 33
Q4 31
.015
.060
54 2 REQD
2 REQD 48
2 REQD 43
42 2 REQD
50 2 REQD
.015
.060
FILL PER ND 1002117
PARTIAL SECTION D-D
Q2 29
49
FILL VOID PER ND 1002117
49
Q3 30
PARTIAL SECTION C-C
Q1 28
FILL PER ND 1002117
PARTIAL SECTION B-B

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ + ±
− − −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS9-497

M I T
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN [illegible] DATE 3/27/63
CHECKED [illegible] 3 APR 63
APPROVAL A KOSE M ELYSHAK
APPROVAL
NASA APPROVAL [illegible] 5-22-63
MIT APPROVAL [illegible] 22 May 67

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HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO 80230
SIZE E
1007040
SCALE 4:1
SHEET 2 OF 2

1007040 AB

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
D		REVISED PER TDRR [illegible]		[illegible]	[illegible]
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F		REVISED PER TDRR 01714		[illegible]	[illegible]
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J		REVISED PER TDRR 03091		[illegible]	[illegible]
K		REVISED PER TDRR 04115		[illegible]	[illegible]
L		REVISED PER TDRR 05327		2-9-63	[illegible]
M		REVISED PER TDRR 05408		[illegible]	[illegible]
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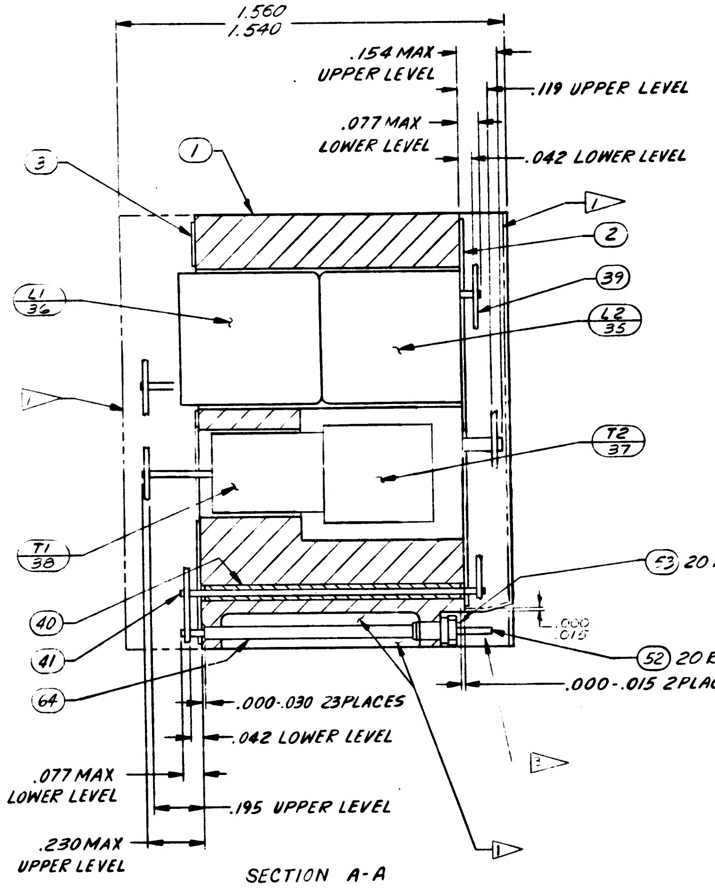
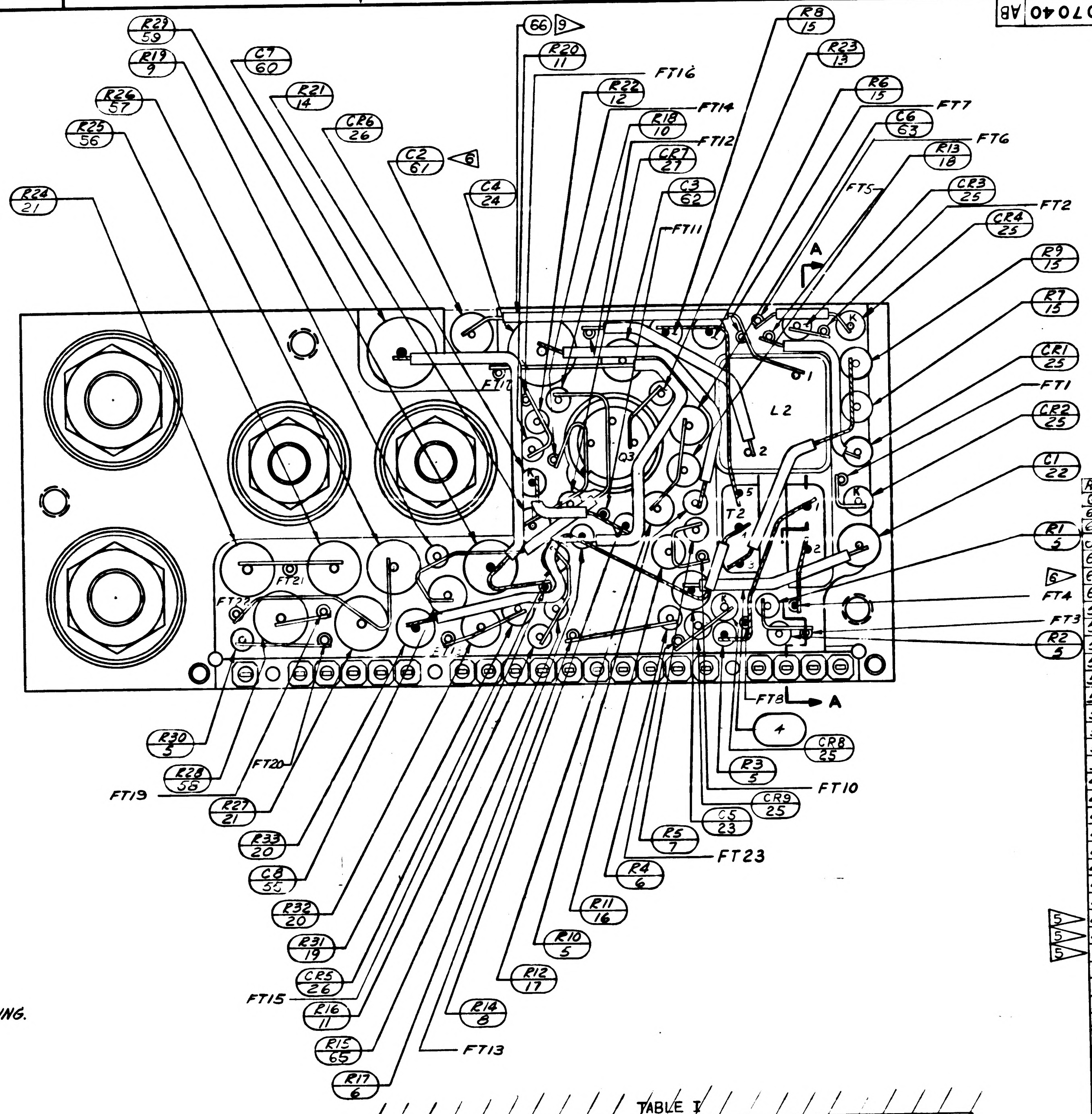
S		REVISED PER TDRR 07285		[illegible]	[illegible]
T		REVISED PER TDRR 07304		6 APR	[illegible]
U		REVISED PER TDRR 09650		[illegible]	[illegible]
V		REVISED PER TDRR 11638		28 AUG 64	[illegible]
W		REVISED PER TDRR 11632		[illegible]	[illegible]
Y		REVISED PER TDRR 17306		[illegible]	[illegible]
Z		REVISED PER TDRR 19462		65	[illegible]
AA		REVISED PER TDRR 19478		[illegible]	[illegible]
AB		REVISED PER TDRR 22977		[illegible]	[illegible]



SECTION A-A



1▷ ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM). UNLESS OTHERWISE SPECIFIED, PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH & LENGTH DIMENSIONS BY A MAXIMUM OF .005. WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAX. DIMENSION BETWEEN ANY HEATSINK SURFACE AND ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015. REMOVE ALL FLASHING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

9▷ USE MIL-I-631, TYPE F, FORM U, GRADE C, CLASS I, CATEGORY I, IN 2 PLACES ONLY - SECURE IN PLACE PER ND1002004.

SOLDER LEADS OF FIND NOS. 31, 32, 33 AND 34 PER ND1002071.

2▷ MARK PIN NUMBERS .08 HIGH (WHITE) ~~& SERIALIZE~~ & MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002019 CENTRALIZE AS SHOWN ABBREVIATIONS PERMISSIBLE SERIALIZE PER ND1002023.

5▷ AR DENOTES AS REQUIRED

7▷ ASSEMBLE PER ND1002136 ~~SOLDER PER ND1002~~

3▷ AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER ND1002009 METHOD J.

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

~~UNLESS OTHERWISE SPECIFIED:~~
~~1▷ ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.~~

ON ITEMS ② & ③
FT( ) INDICATES FEED THRU.
K INDICATES CATHODE SIDE OF DIODE.
C INDICATES COLLECTOR LEAD OF TRANSISTOR
B " BASE " " "
E " EMITTER " " "
C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR
B_2 " BASE " " " " "
E_2 " EMITTER " " " " "

6▷ AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

PROCURE PER PS 1007040

6▷

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

10▷ BOND CR8 AND CR9 TO L1 PER ND1002004 TYPE I.
11▷ SLEEVE IF NECESSARY TO AVOID SHORT.
12▷ BRIDGE WELD.

~~BOND A .25 MIN WIDE PERIMETER OF THE TOP AND BOTTOM INSULATOR TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~

~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEAT-SINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03± .03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ± .03 OF EXTERNAL EDGE

CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.

EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND1002279, USING 1010992 PRIMER AND 1008809-4 PAINT. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE OF PAINT.

REV D REPLACES REV C

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF	✕	1010024	SCHEMATIC
66	AR	MIL-I-631	INSULATION SLEEVING #22
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010273-9	CAPACITOR
62	1	1010264-12	CAPACITOR
61	1	1010264-6▷	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	20	1006775	INSULATOR
52	20	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	2	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5▷ 41	AR	1006757-8	WIRE, ELECTRICAL
5▷ 40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5▷ 39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-9	REACTOR
35	1	1010277-8	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010345-1	TRANSISTOR
28	1	1010252-1	TRANSISTOR
27	1	1010830-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	6	1010392-1	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-44	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1007151	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN [illegible] DATE 3/27/63
CHECKED [illegible] 3 APR 63
APPROVAL A. KODEL / M. BLYSHAK
APPROVAL [illegible]
NASA APPROVAL [illegible] 5-22-63
MIT APPROVAL [illegible] 22 May 63

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GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO 80230
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

1007040 AB

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
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K		REVISED PER TDRR 04115			[illegible]
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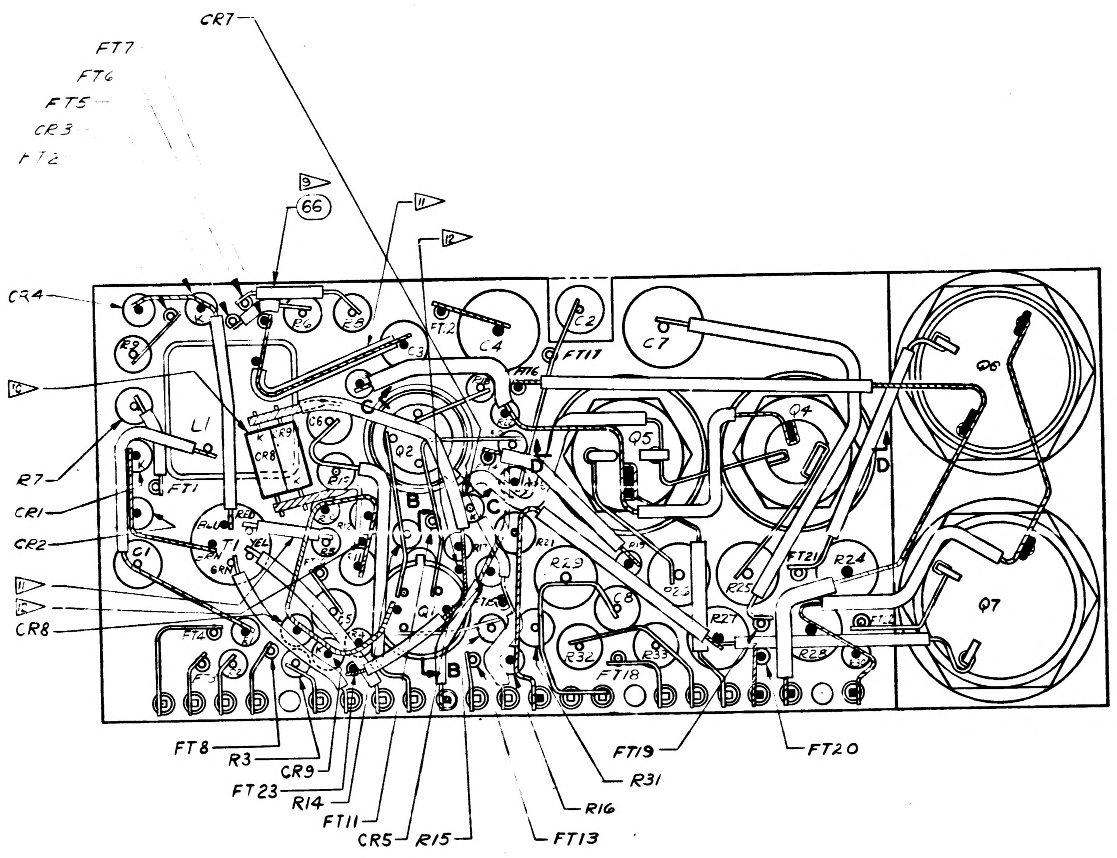
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C1
T1
FT1
Q2
Q4
Q5
Q6
Q7
C4
C7
FT17
FT16
R24
R27
B
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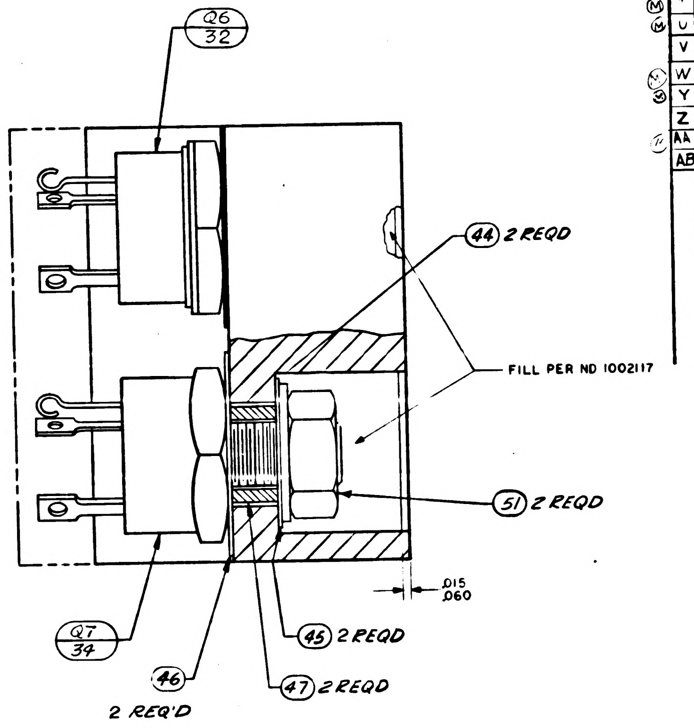
FT18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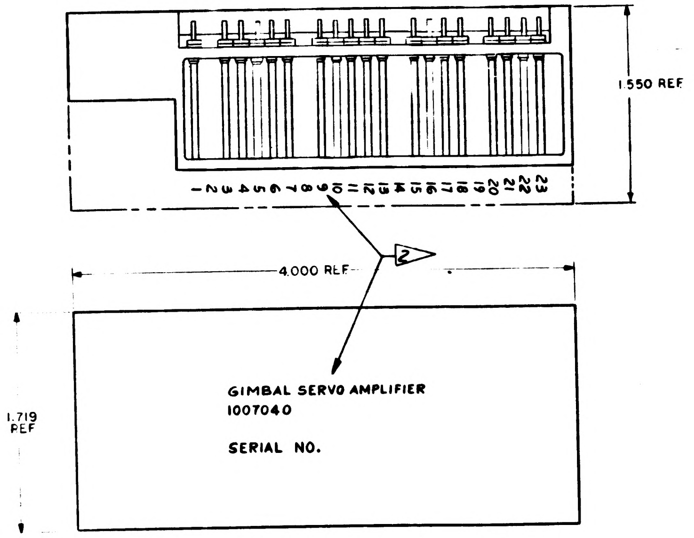
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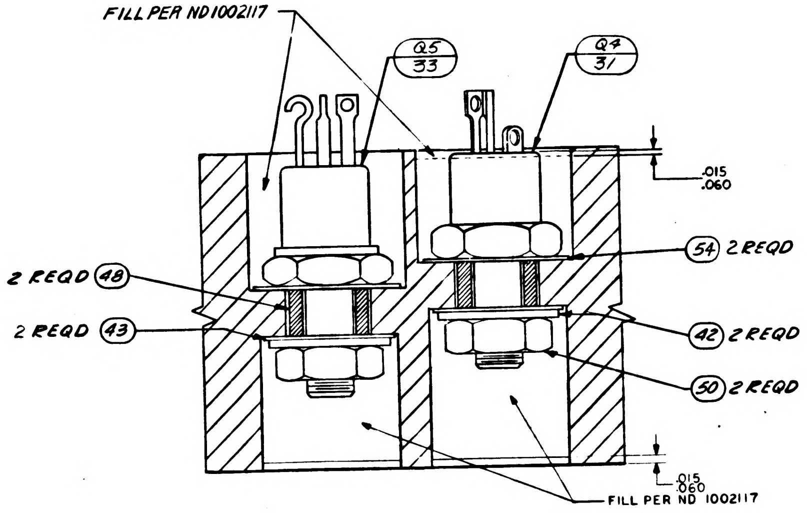
4.000 REF
1.719 REF
GIMBAL SERVO AMPLIFIER
1007040
SERIAL NO.

MARKING VIEW
SCALE - 2:1


FILL PER ND 1002117
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Q4 31
.015
.060
54 2 REQD
2 REQD 48
2 REQD 43
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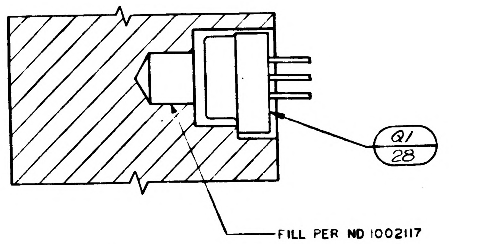
.015
.060
FILL PER ND 1002117

PARTIAL SECTION D-D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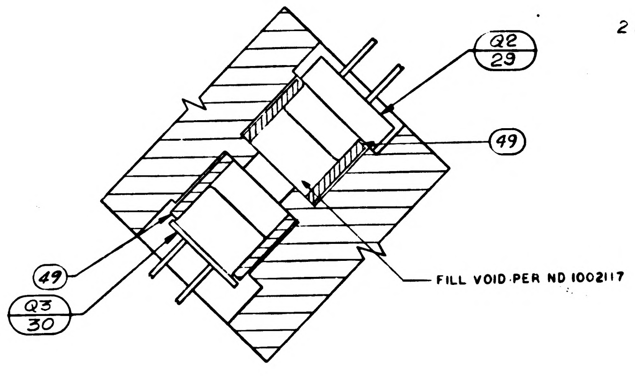
FILL PER ND 1002117

PARTIAL SECTION B-B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Q3 30
FILL VOID PER ND 1002117

PARTIAL SECTION C-C

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

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G		REVISED PER TDRR 01471		7-1-63	[illegible]
H		REVISED PER TDRR 02727		[illegible]	[illegible]
J		REVISED PER TDRR 03091		7-12-63	[illegible]
K		REVISED PER TDRR 04115		10-24-63	[illegible]
L		REVISED PER TDRR 05327		12-9-63	[illegible]
M		REVISED PER TDRR 05408		[illegible]	[illegible]
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P		REVISED PER TDRR 06893			[illegible]
R		REVISED PER TDRR 07277		8 APR 64	J.E.G.
S		REVISED PER TDRR 07285		13 APR 64	JWP
T		REVISED PER TDRR 07304		16 APR 64	JWP PBR
U		REVISED PER TDRR 09650		11 JUN 64	JWP
V		REVISED PER TDRR 11638		28 AUG 64	A.N.
W		REVISED PER TDRR 11632		15 SEP 64	JWP CP
Y		REVISED PER TDRR 17306		[illegible] MAR 65	JHG
Z		REVISED PER TDRR 19462		1 JUN 65	RS
AA		REVISED PER TDRR 19478		3 JUN 65	[illegible]
AB		REVISED PER TDRR 22977		11-OCT-65	[illegible] MEM
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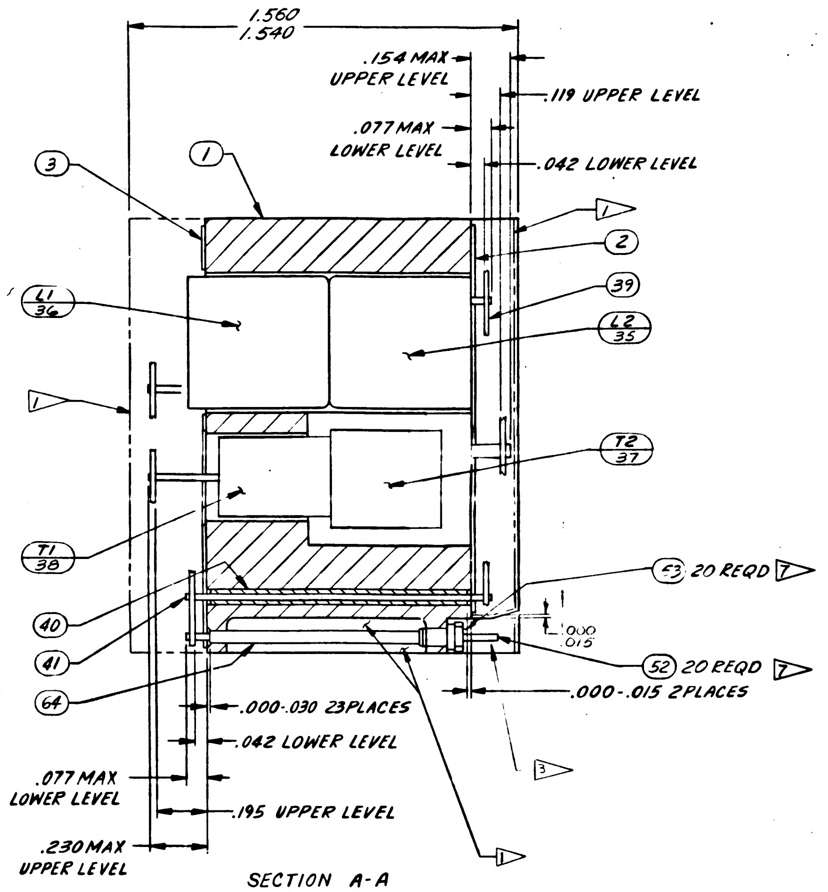
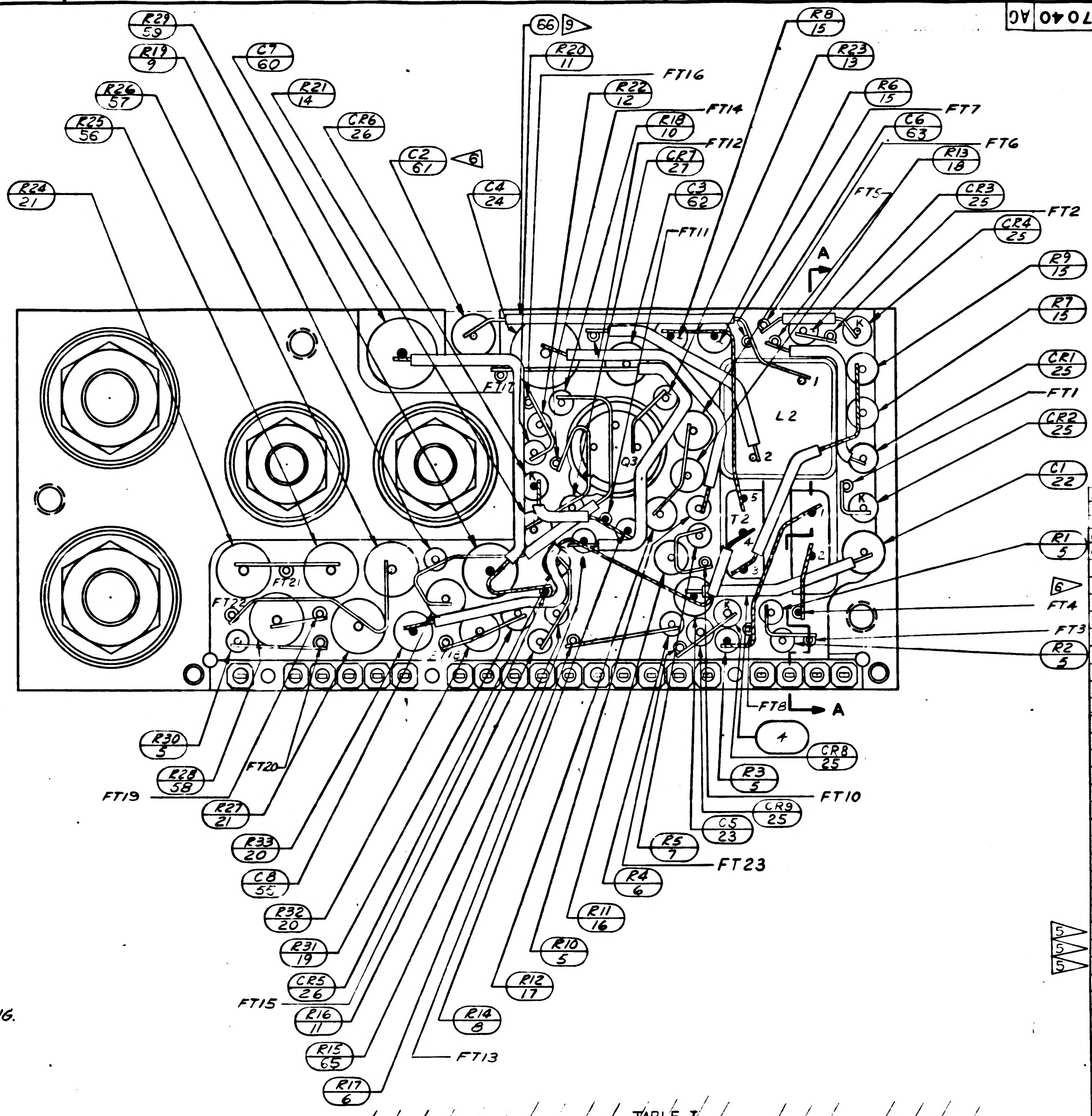


SECTION A-A



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▷7 ASSEMBLE PER ND1002136 ~~SOLDER PER ND1002~~

▷3 AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER ND1002009 METHOD J.

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

~~UNLESS OTHERWISE SPECIFIED:~~
~~▷1 ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.~~

ON ITEMS ② & ③
FT( ) INDICATES FEED THRU.
K INDICATES CATHODE SIDE OF DIODE.
C INDICATES COLLECTOR LEAD OF TRANSISTOR
B " BASE " " "
E " EMITTER " " "
C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR
B_2 " BASE " " " " "
E_2 " EMITTER " " " " "

▷6 AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-
PROCURE PER PS 1007040

▷6

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

TABLE I

CONFIGURATION	BOND BETWEEN WAFER AND HEATSINK	TOP OF WAFER	HEATSINK-FOAM CONTACT SURFACE ADJACENT TO HEATSINK EXTERNAL SURFACE
WAFER AND FLAT HEATSINK	100% OF AREA .12 FROM EXTERNAL HEATSINK SURFACE. 80% OF AREA .25 FROM EXTERNAL HEATSINK SURFACE.	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
WAFER AND ADJACENT VERTICAL HEAT-SINK SURFACE	CORNER FILLET AND VERTICAL SURFACE TO WITHIN .03 ± .03 OF EXTERNAL SURFACE	100% OF AREA .25 FROM EXTERNAL MODULE SURFACE	N/A
HEATSINK FOAM CONTACT SURFACE PERIMETER	N/A	N/A	.25 MIN WIDTH OR TOTAL AVAILABLE ON 90% OF PERIMETER TO WITHIN .03 ± .03 OF EXTERNAL EDGE

CLEAN MODULE WHERE POSSIBLE BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL PRIOR TO ENCAPSULATION.

EXCEPT FOR THE HELICOIL MOUNTING SURFACE, PAINT ALL SURFACES PER ND1002279, USING 1010992 PRIMER AND 1008809-4 PAINT. CONNECTOR PIN BLADES AND INSULATORS TO BE FREE OF PAINT.

▷10 BOND CR8 AND CR9 TO L1 PER ND1002004 TYPE I.

▷11 SLEEVE IF NECESSARY TO AVOID SHORT.

▷12 BRIDGE WELD.

~~BOND A .25 MIN WIDE PERIMETER OF THE TOP AND BOTTOM INSULATOR TO THE HEATSINK AND COAT A .25 MIN WIDE PERIMETER ON THE OUTSIDE SURFACE OF THE INSULATORS PER ND1002187 TYPE I.~~

~~CLEAN MODULE WHERE POSSIBLE PRIOR TO BONDING OF WAFER BOARDS AND APPLICATION OF COATING MATERIAL BY DEGREASING WITH FREON AND ISO-PROPYL ALCOHOL. ADHESIVE AND COATING MATERIAL PER ND1002187 TYPE II. APPLY MATERIAL AND COATING AS INDICATED IN TABLE I.~~

REV D REPLACES REV C

ITEM NO	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF	⨯	1010024	SCHEMATIC
66	AR	MIL-I-631	INSULATION SLEEVING #22
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-9	CAPACITOR
62	1	1010264-12	CAPACITOR
61	1	1010264-▷6	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	20	1006775	INSULATOR
52	20	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	2	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
41	AR	1006757-8	WIRE, ELECTRICAL
40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-9	REACTOR
35	1	1010277-8	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1008813-1	TRANSISTOR
28	1	1010252-1	TRANSISTOR
27	1	1010830-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	6	1010392-1	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-44	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1007151	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ XXX ± .005 +
− XX ± .02 −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

MIT
INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN [illegible] DATE 3/27/63
CHECKED [illegible] 3 APR 63
APPROVAL A KODEL / M BLYSHAK
APPROVAL
5-22-63
NASA APPROVAL [illegible]
MIT APPROVAL [illegible] 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

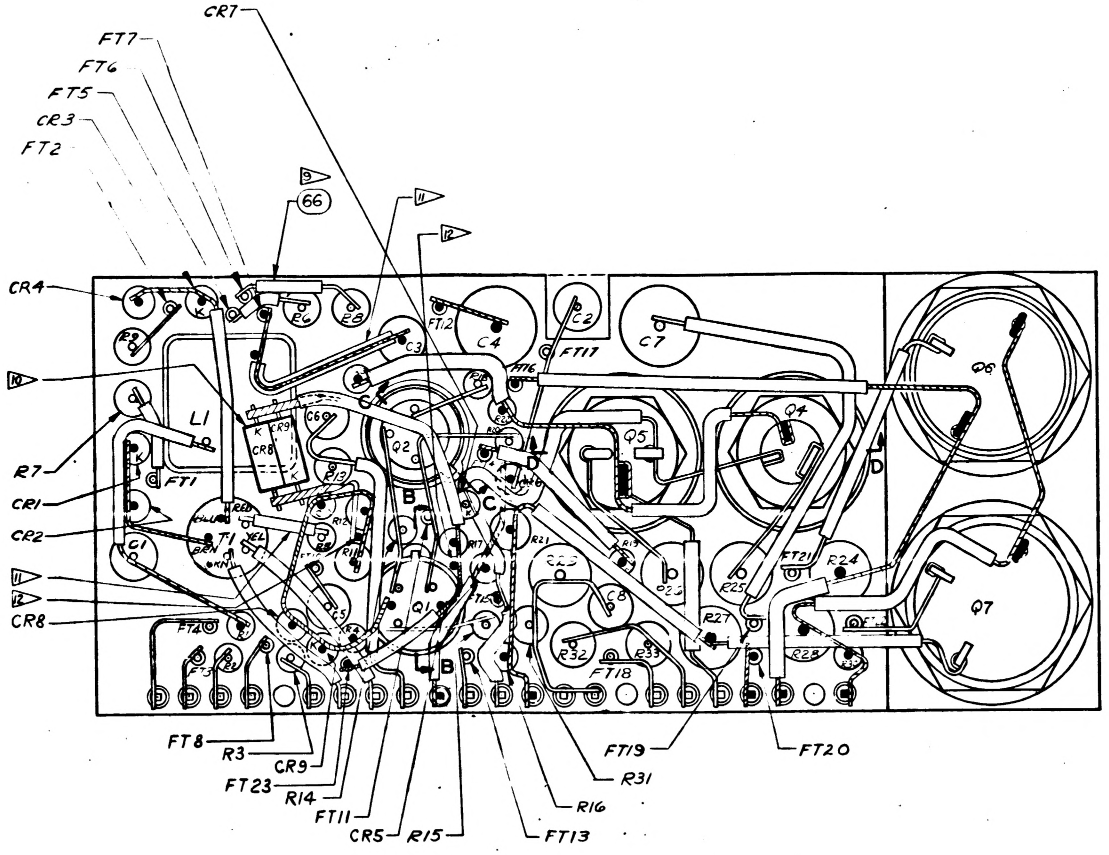
GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO 80230
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

1007040 AC

1007040 AC

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD.
D		REVISED PER TDRR 01310		2-21-63	O.T.
F		REVISED PER TDRR 01714		6-25-63	EPL WK
G		REVISED PER TDRR 01871		7-1-63	J.J.M. WK
H		REVISED PER TDPR 02727		8-21-63	JJM JW
J		REVISED PER TDRR 03091		9-12-63	EPL WK
K		REVISED PER TDRR 04115		10-24-63	EPL WK
L		REVISED PER TDRR 05327		12-9-63	WK
M		REVISED PER TDRR 05408		[illegible]	WK
N		REVISED PER TDRR 06271		64	EPL WK
P		REVISED PER TDRR 06893			EPL WK
R		REVISED PER TDRR 07277		8 APR 64	JJJ J.E.G.
T		REVISED PER TDRR 07304		APR 64	JWP
U		REVISED PER TDRR 09650		11 JUN 64	JWB
V		REVISED PER TDRR 11638		28 AUG 64	A.N.
W		REVISED PER TDRR 11632		15 SEP 64	JWP
Y		REVISED PER TDRR 17306		12 MAR 65	JTH EF
Z		REVISED PER TDRR 19462		1 JUN 65	RS
AA		REVISED PER TDRR 19478		3 JUN 65	
AB		REVISED PER TDRR 22977		11-OCT-65	
AC		REVISION STATUS CHANGED		28-JUN 66	RWH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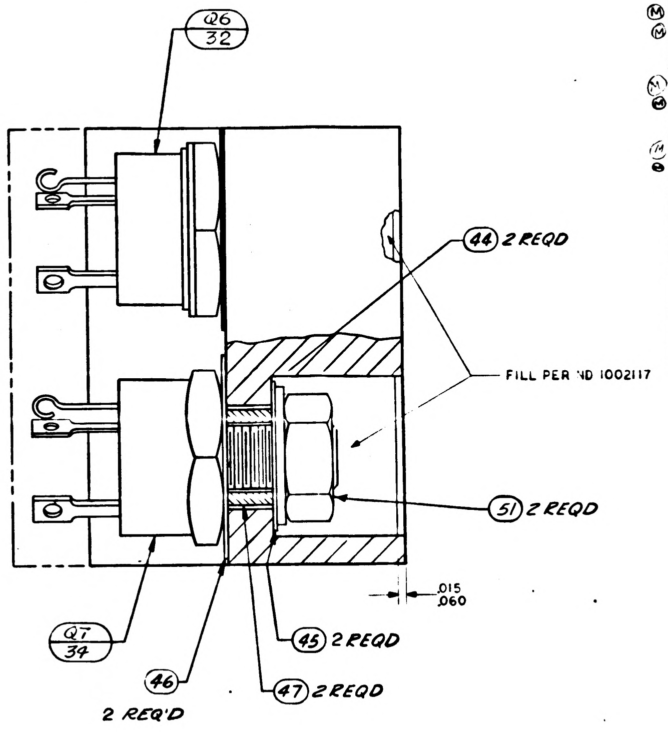
FT7
FT6
FT5
CR3
FT2
9
66
11
12
CR4
10
R7
CR1
CR2
11
12
CR8
L1
FT1
T1
C1
C2
C3
C4
C6
C7
C8
Q1
Q2
Q4
Q5
Q6
Q7
FT12
FT17
FT21
R24
R27
R28
R32
R33
FT18
B
C
D
FT8
R3
CR9
FT23
R14
FT11
CR5
R15
FT13
R16
R31
FT19
FT20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32
44 2 REQD
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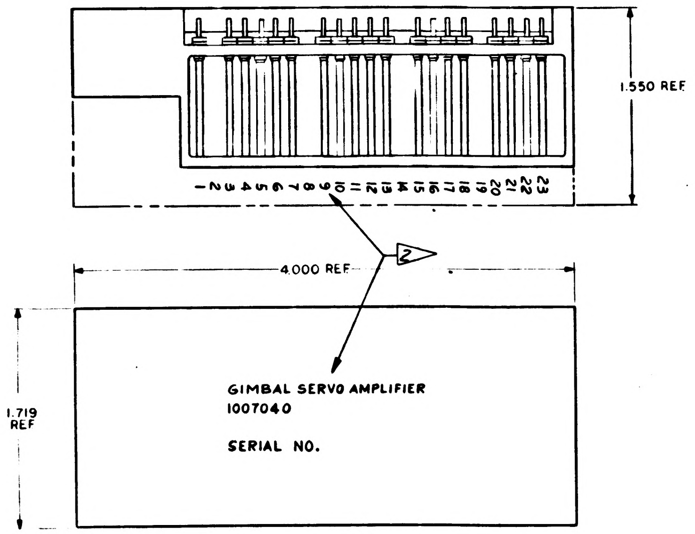
.015
.060
Q7
34
45 2 REQD
46
2 REQ'D
47 2 REQD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4.000 REF
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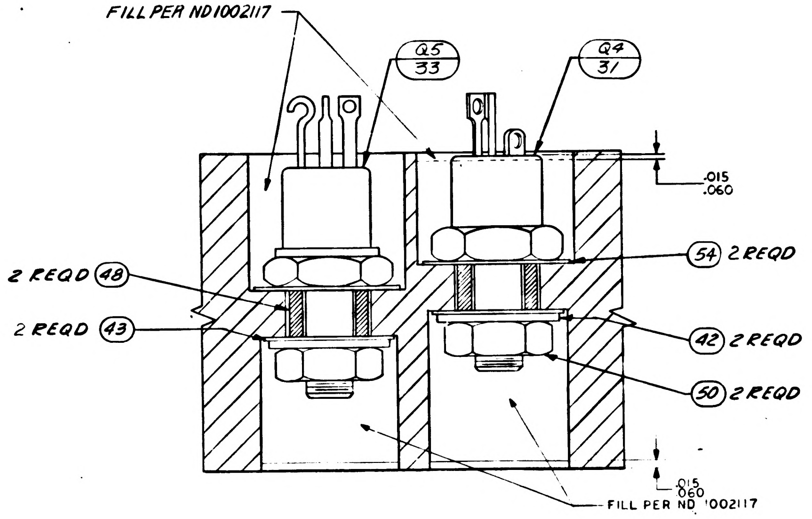
GIMBAL SERVO AMPLIFIER
1007040
SERIAL NO.
1.719 REF

MARKING VIEW
SCALE - 2:1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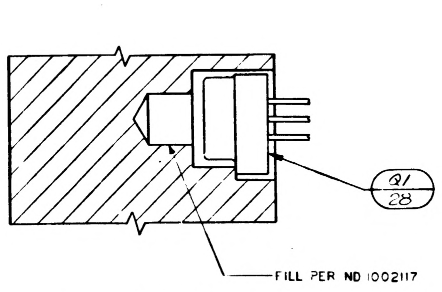
33
Q4
31
.015
.060
54 2 REQD
2 REQD 48
2 REQD 43
42 2 REQD
50 2 REQD
.015
.060
FILL PER ND 1002117

PARTIAL SECTION D-D


Q1
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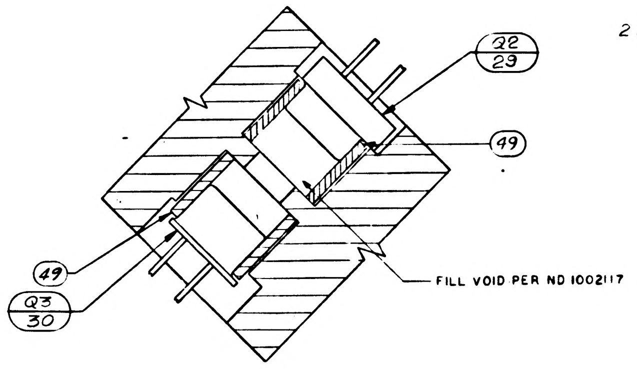
FILL PER ND 1002117

PARTIAL SECTION B-B


Q2
29
49
49
Q3
30
FILL VOID PER ND 1002117

PARTIAL SECTION C-C

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

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DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS + − ANGLES ±
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INSTRUMENTATION LAB
CAMBRIDGE MASS
DRAWN Gracchke DATE 3/27/63
CHECKED 3 APR 63
APPROVAL A. KODEL
APPROVAL J. M. ELYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

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HOUSTON TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO 80230
SIZE E
1007040
SCALE 4:1
SHEET 2 OF 2

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A 1007040

REVISIONS CLASS B TDRR 00416			
SYM	DESCRIPTION	DATE	APPROVAL
A	UPGRADED FOR CLASS A RELEASE PER TDRR 00490	3-1-63	D.R.T.

PART NO.	DESCRIPTION	NO. REQ'D
1006782-5	CONTACT	23
1006775	INSULATOR	23
NAS1222-06E	HELI-COIL INSERT	3
NAS1022-C4	NUT	2
NAS1022-C3	NUT	2
1008024-2	WASHER-MICA	8
1008024-3	WASHER-MICA	4
1008024-4	WASHER-MICA	4
1008020-1	WASHER-PLAIN	2
1008020-2	WASHER-PLAIN	2
1008021-1	SPACER	2
1008021-2	SPACER	2

REF DES	PART NO.	DESCRIPTION	VALUE	TOL	RATING
R1	1006750-73	RESISTOR	51K	5%	1/4W
R2	-73		51K		
R3	-73		51K		
R4	-80		100K		
R5	-48		4700		
R6	1010364-443		10K	1%	1/8W
R7	-		10K	1%	1/8W
R8	-		10K	1%	1/8W
R9	-		10K	1%	1/8W
R10	1006750-73		51K	5%	1/4W
R11	1010364-635		100K	1%	1/8W
R12	-465		13K		
R13	-719		274K		
R14	1006750-60		15K	5%	1/4W
R15	-76		68K		
R16	-51		6200		
R17	-80		100K		
R18	-70		39K		
R19	-76		68K		
R20	-51		6200		
R21	1006760-36		1500		1/2W
R22	1006750-53		7500		1/4W
R23	1006750-40		2200		1/4W
R24	1010278-		100		1W
R25	1010389-		500	1%	3W
R26	1010389-		430	1%	3W
R27	1010278-		100	5%	1W
R28	1010389-		50	1%	3W
R29	1010389-		1	1%	3W
R30	1006750-73		51K	5%	1/4W
R31	1010364-43		82.5	1%	1/8W
R32	1010377-66		10	.5%	1/10W
R33	1010377-66		10	.5%	1/10W
C1		CAPACITOR	0.0047	10%	200VDC
C2			SEE NOTE 4—		
C3			.0082	10%	
C4			35		35VDC
C5			.11		50VDC
C6			0.5		6VDC
C7			10		50VDC
C8			0.5		50VDC

REF DES	PART NO.	DESCRIPTION	VALUE TOL	RATING
L1		REACTOR	25H	
L2		REACTOR	10H	
CR1		DIODE	IN486-B	
CR2				
CR3				
CR4				
CR5	1010372-15		HZ8544	
CR6	1010372-15		HZ8544	
CR7				
Q1		TRANSISTOR	2N2642	
Q2			2N1259	
Q3			2N1613	
Q4			2N2151	
Q5			TP4511	
Q6			5506	
Q7			2N1724	
T1		TRANSFORMER	DO-T23	
T2		TRANSFORMER	TZ-13	

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
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FINAL FINISH

MIT
INSTRUMENTATION LAB
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DWG. NO. CONTRACT
DRAWN ______ DATE ______
CHECKED D. R. Test 2-18-63
APPROVAL D. R. Test 2-18-63
APPROVAL ______
NASA APPROVAL [illegible] 2/18/63
MIT APPROVAL G J Nilson 2-18-63

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HOUSTON, TEXAS

GIMBAL SERVO AMPL.
MODULE ASSY

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007040
SCALE
WT
SHEET 1 OF 1

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A	1007040

REVISIONS CLASS B TDRR 00416			
SYM	DESCRIPTION	DATE	APPROVAL
A	UPGRADED FOR CLASS A RELEASE PER TDRR 00490	3-1-63	D.R.T. WK
B	REVISED PER TDRR 00982	4-24-63	D.T. WK

PART NO.	DESCRIPTION	NO. REQ'D
1006782-5	CONTACT	23
1006775	INSULATOR	23
NAS1222-06E	HELI-COIL INSERT	3
NAS1022-C4	NUT	2
NAS1022-C3	NUT	2
1008024-2	WASHER-MICA	8
1008024-3	WASHER-MICA	4
1008024-4	WASHER-MICA	4
1008020-1	WASHER-PLAIN	2
1008020-2	WASHER-PLAIN	2
1008021-1	SPACER	2
1008021-2	SPACER	2

REF DES	PART NO.	DESCRIPTION	VALUE	TOL	RATING
R1	1006750-73	RESISTOR	51K	±2%	1/4W
R2	-73		51K		
R3	-73		51K		
R4	-80		100K		
R5	↓ -48		4700	↓	↓
R6	1010364-443		10K	±1%	1/8W
R7	-		10K	±1%	1/8W
R8	-		10K	±1%	1/8W
R9	↓ - ↓		10K	±1%	1/8W
R10	1006750-73		51K	±2%	1/4W
R11	1010364-635		100K	±1%	1/8W
R12	-465		13K		
R13	↓ -719		274K	↓	↓
R14	1006750-60		15K	±2%	1/4W
R15	-75		62K		
R16	-51		6200		
R17	-80		100K		
R18	-70		39K		
R19	-76		68K		
R20	↓ -51		6200		↓
R21	1006760-35		1300		1/2W
R22	1006750-53		7500		1/4W
R23	1006750-40		2200		1/4W
R24	1010278-39		100	±5%	1/2W
R25	1010399-31		500	±5%	5W
R26	1010389-47		430	±1%	3W
R27	1010278-39		100	±5%	1/2W
R28	1010399-16		50	±5%	5W
R29	1010389-		1	±1%	3W
R30	1006750-73		51K	±2%	1/4W
R31	1010364-43		82.5	±1%	1/8W
R32	1010377-66		10	±0.5%	1/10W
R33	1010377-66	↓	10	±0.5%	1/10W
C1	1010264-9	CAPACITOR	0.0047	±5%	200VDC
C2	1010264		SEE NOTE		200VDC
C3	1010264-12		.0082	±5%	200VDC
C4	1010320-		35	+75,-15%	35VDC
C5	1010279-220		.11	±10%	35VDC
C6	1010279-009		0.5	±10%	VDC
C7	1010320-		10	+75,-15%	50VDC
C8	1010279-228	↓	0.5	±10%	35VDC

REF DES	PART NO.	DESCRIPTION	VALUE TOL	RATING
L1	1010277-009	REACTOR	25H	
L2	1010277-008	REACTOR	10H	
CR1	1010392	DIODE	IN486B	250MW
CR2	1010392			
CR3	1010392			
CR4	1010392			
CR5	1010372-15		HZ8544	200MW
CR6	1010372-15		HZ8544	200MW
CR7	1010286-9	↓	IN965B	400MW
Q1	1010252-001	TRANSISTOR	2N2642	
Q2	1010396-001		2N1259	
Q3	1010270		2N1613	
Q4	1010269-1		2N2151	
Q5	1010437		STC5900	
Q6	1010271		STC5506	
Q7	1010273	↓	2N1724	
T1	1010328	TRANSFORMER	DO-T23	
T2	1010327	TRANSFORMER	TZ-13	

NOTE

VALUE TO BE DETERMINED BY ELECTRICAL TEST.
COMPONENT TO BE SUPPLIED FROM TABLE BELOW.

C2	
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
-6	.0027

1007040

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ± DO NOT SCALE THIS DRAWING
		MATERIAL
		HEAT TREATMENT
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

DRAWN ________ DATE ______
CHECKED D. R. Test 2-18-63
APPROVAL D. R. Test 2-18-63
APPROVAL ________
NASA APPROVAL 4/18/63
MIT APPROVAL G J Wilson 2-18-63

GIMBAL SERVO AMPL.
MODULE ASSY

CODE IDENT NO.	SIZE	NASA DRAWING NO.
	C	1007040
SCALE	WT	SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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C 1007040

REVISIONS CLASS B TDRR 00416

SYM	DESCRIPTION	DATE	APPROVAL
A	UPGRADED FOR CLASS A RELEASE PER TDRR 00490	3-1-63	D.R.T. WK
B	REVISED PER TDRR 0098Z	4-24-63	D.T. WK
C	OBSOLETED PER TDRR 01310	5-22-63	D.T. WK

PART NO.	DESCRIPTION	NO. REQ'D
1006782-5	CONTACT	23
1006775	INSULATOR	23
NAS1222-06E	HELI-COIL INSERT	3
NAS1022-C4	NUT	2
NAS1022-C3	NUT	2
1008024-2	WASHER-MICA	8
1008024-3	WASHER-MICA	4
1008024-4	WASHER-MICA	4
1008020-1	WASHER-PLAIN	2
1008020-2	WASHER-PLAIN	2
1008021-1	SPACER	2
1008021-2	SPACER	2

REF DES	PART NO.	DESCRIPTION	VALUE	TOL	RATING
R1	1006750-73	RESISTOR	51K	±2%	1/4W
R2	-73		51K		
R3	-73		51K		
R4	-80		100K		
R5	↓ -48		4700	↓	↓
R6	1010364-443		10K	±1%	1/8W
R7	-		10K	±1%	1/8W
R8	-		10K	±1%	1/8W
R9	↓ - ↓		10K	±1%	1/8W
R10	1006750-73		51K	±2%	1/4W
R11	1010364-635		100K	±1%	1/8W
R12	-465		13K		
R13	↓ -719		274K	↓	↓
R14	1006750-60		15K	±2%	1/4W
R15	-75		62K		
R16	-51		6200		
R17	-80		100K		
R18	-70		39K		
R19	-76		68K		
R20	↓ -51		6200		↓
R21	1006760-35		1300		1/2W
R22	1006750-53		7500		1/4W
R23	1006750-40		2200		1/4W
R24	1010278-39		100	±5%	1/2W
R25	1010399-31		500	±5%	5W
R26	1010389-47		430	±1%	3W
R27	1010278-39		100	±5%	1/2W
R28	1010399-16		50	±5%	5W
R29	1010389-		1	±1%	3W
R30	1006750-73		51K	±2%	1/4W
R31	1010364-43		82.5	±1%	1/8W
R32	1010377-66		10	±0.5%	1/10W
R33	1010377-66	↓	10	±0.5%	1/10W
C1	1010264-9	CAPACITOR	0.0047	±5%	200VDC
C2	1010264		SEE NOTE		200VDC
C3	1010264-12		.0082	±5%	200VDC
C4	1010320-		35	+75,-15%	35VDC
C5	1010279-220		.11	±10%	35VDC
C6	1010279-009		0.5	±10%	6VDC
C7	1010320-		10	+75,-15%	50VDC
C8	1010279-228	↓	0.5	±10%	35VDC

REF DES	PART NO.	DESCRIPTION	VALUE	TOL	RATING
L1	1010277-009	REACTOR	25H		
L2	1010277-008	REACTOR	10H		
CR1	1010392	DIODE	IN486B		250MW
CR2	1010392				
CR3	1010392				
CR4	1010392				
CR5	1010372-15		HZ8544		200MW
CR6	1010372-15		HZ8544		200MW
CR7	1010286-9	↓	IN965B		400MW
Q1	1010252-001	TRANSISTOR	2N2642		
Q2	1010396-001		2N1259		
Q3	1010270		2N1613		
Q4	1010269-1		2N2151		
Q5	1010437		STC5900		
Q6	1010271		STC5506		
Q7	1010273	↓	2N1724		
T1	1010328	TRANSFORMER	DO-T23		
T2	1010327	TRANSFORMER	TZ-13		

NOTE

VALUE TO BE DETERMINED BY ELECTRICAL TEST.
COMPONENT TO BE SUPPLIED FROM TABLE BELOW.

	C2
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
-6	.0027

~~THIS DRAWING~~
~~OBSOLETE~~
~~DO NOT USE~~
SUPERSEDED BY____________

REV C REPLACED BY REV D

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

DRAWN ________ DATE ______
CHECKED D. R. Test 2-18-63
APPROVAL D. R. Test 2-18-63
APPROVAL ____________
NASA APPROVAL 1/18/63
MIT APPROVAL E J Wilson 2-18-63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

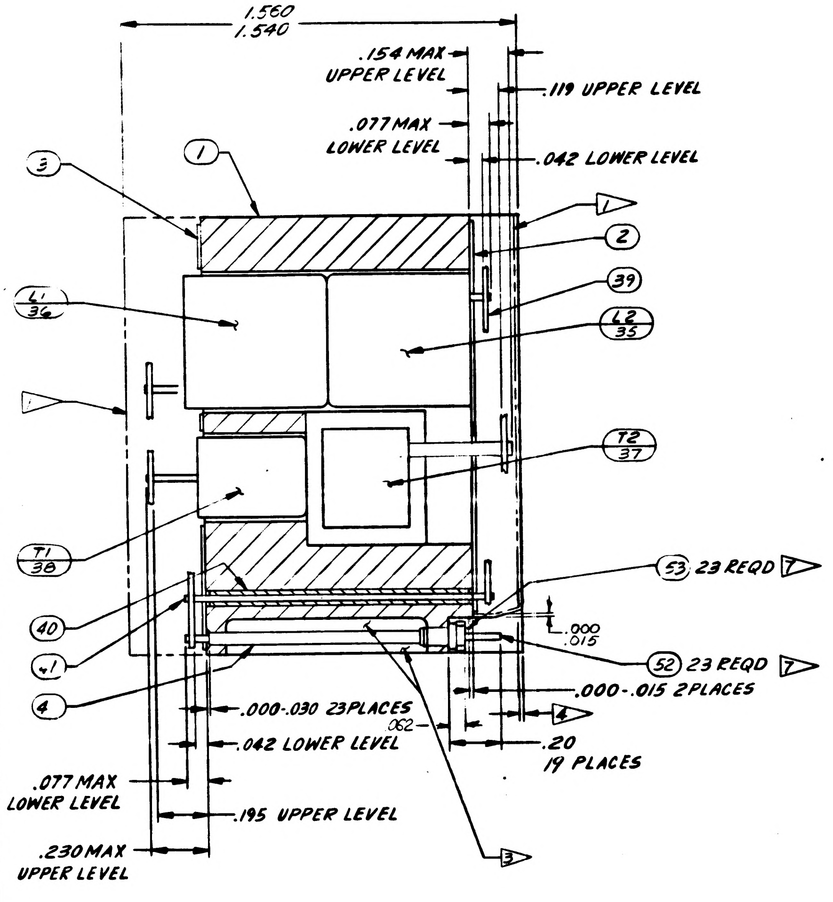
GIMBAL SERVO AMPL.
MODULE ASSY

CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007040
SCALE
WT
SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007040 D

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
D		REVISED PER TDRR [illegible]		[illegible]	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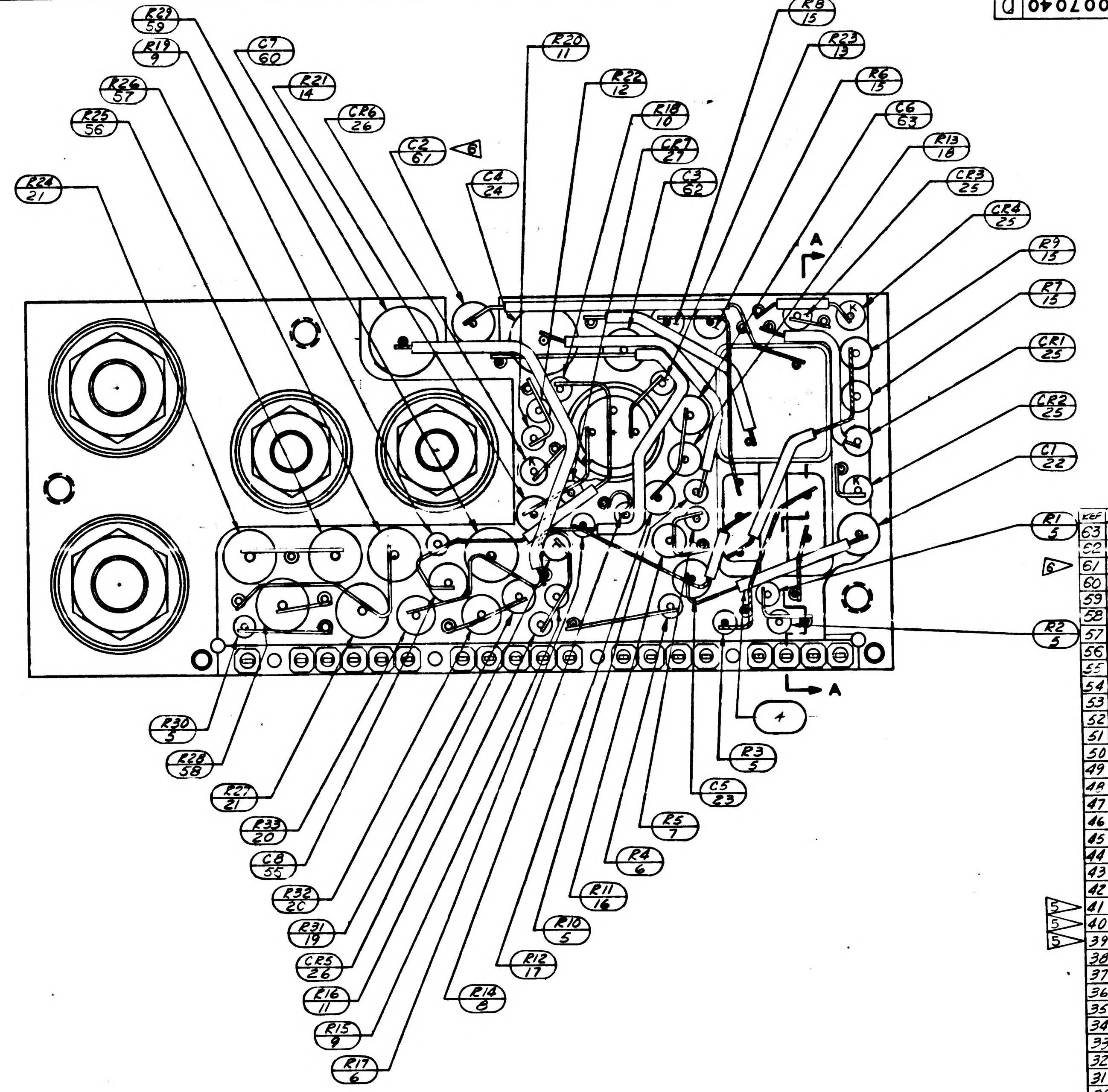
1.540
.154 MAX UPPER LEVEL
.119 UPPER LEVEL
.077 MAX LOWER LEVEL
.042 LOWER LEVEL
3
1
1
2
39
L1 36
L2 35
T2 37
T1 38
40
41
4
53 23 REQD 7
52 23 REQD 7
.000 .015
.000-.015 2PLACES
.000-.030 23PLACES
.062
4
.042 LOWER LEVEL
.20 19 PLACES
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230MAX UPPER LEVEL
3

SECTION A-A


R29 59
R19 9
C7 60
R21 14
R26 57
R25 56
CR6 26
R24 21
C2 61
6
C4 24
R20 11
R22 12
R18 10
CR7 27
C3 62
R8 15
R23 13
R6 13
C6 63
R13 18
CR3 25
CR4 25
R9 13
R7 13
CR1 25
CR2 25
C1 22
R1 5
R2 5
A
A
4
R3 5
C5 23
R5 7
R4 6
R11 16
R10 5
R12 17
R14 8
R30 5
R28 58
R27 21
R33 20
C8 55
R32 20
R31 19
CR5 26
R16 11
R15 5
R17 6

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

WIRING STDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003

1▷ ENCAPSULATE MODULE PER G&ND1002002 (BLACK POLYURETHANE FOAM).

2▷ MARK CHARACTERS .080 ± .020 HIGH, WHITE PER ND 1002019

5▷ AR DENOTES AS REQUIRED.

7▷ ASSEMBLE PER ND 1002136

SOLDER PER ND 1002071

3▷ AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER G&ND 1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

4▷ ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.

ON ITEMS ② & ③
$FT_{(\ )}$ INDICATES FEED THRU.
K INDICATES CATHODE SIDE OF DIODE.
C INDICATES COLLECTOR LEAD OF TRANSISTOR
B " BASE " " "
E " EMITTER " " "
C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR
B_2 " BASE " " " " "
E_2 " EMITTER " " " " "

6▷ AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6▷

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

REV D REPLACES REV C

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
	REF	X	1010024	SCHEMATIC
	63	1	1010279-009	CAPACITOR
	62	1	1010269-12	CAPACITOR
6▷	61	1	1010264	CAPACITOR
	60	1	1010320	CAPACITOR
	59	1	1010389	RESISTOR, FIXED
	58	1	1010399-16	RESISTOR, FIXED
	57	1	1010389-47	RESISTOR, FIXED
	56	1	1010399-31	RESISTOR, FIXED
	55	1	1010279-228	CAPACITOR
	54	2	1008024-2	WASHER, INSULATOR
	53	17	1006775	INSULATOR
	52	17	1006782-5	CONTACT
	51	2	MS20341-416B	NUT
	50	2	MS20341-10B	NUT
	49	1	1008025-2	BUSHING, INSULATOR
	48	2	1008021-1	BUSHING, INSULATOR
	47	2	1008021-2	BUSHING, INSULATOR
	46	2	1008024-3	WASHER, INSULATOR
	45	2	1008024-4	WASHER, INSULATOR
	44	2	1008071-5	WASHER, FLAT
	43	2	1008024-1	WASHER, INSULATOR
	42	2	1008071-2	WASHER, FLAT
5▷	41	AR	ND1015400	WIRE, ELECTRICAL .020 DIA
5▷	40	AR	ND1006776-22	INSULATION SLEEVING, ELECTRICAL
5▷	39	AR	ND1015400	WIRE, ELECTRICAL .010 X .020
	38	1	1010328	TRANSFORMER
	37	1	1010327	TRANSFORMER
	36	1	1010277-009	REACTOR
	35	1	1010277-008	REACTOR
	34	1	1010273	TRANSISTOR
	33	1	1010437	TRANSISTOR
	32	1	1010271	TRANSISTOR
	31	1	1010269-1	TRANSISTOR
	30	1	1010270	TRANSISTOR
	29	1	1010396-001	TRANSISTOR
	28	1	1010252-001	TRANSISTOR
	27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
	26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
	25	4	1010392-	SEMICONDUCTOR DEVICE, DIODE
	24	1	1010320	CAPACITOR, FIXED
	23	1	1010279-220	CAPACITOR, FIXED
	22	1	1010264-9	CAPACITOR, FIXED
	21	2	1010278-39	RESISTOR, FIXED
	20	2	1010377-66	RESISTOR, FIXED
	19	1	1010364-43	RESISTOR, FIXED
	18	1	1010364-719	RESISTOR, FIXED
	17	1	1010364-465	RESISTOR, FIXED
	16	1	1010364-635	RESISTOR, FIXED
	15	4	1010364-443	RESISTOR, FIXED
	14	1	1006760-35	RESISTOR, FIXED
	13	1	1006750-40	RESISTOR, FIXED
	12	1	1006750-53	RESISTOR, FIXED
	11	2	1006750-51	RESISTOR, FIXED
	10	1	1006750-70	RESISTOR, FIXED
	9	2	1006750-76	RESISTOR, FIXED
	8	1	1006750-60	RESISTOR, FIXED
	7	1	1006750-48	RESISTOR, FIXED
	6	2	1006750-80	RESISTOR, FIXED
	5	5	1006750-73	RESISTOR, FIXED
	4	AR	ND1006776-21	INSULATION SLEEVING, ELECTRICAL
	3	1	1015687	INSULATOR
	2	1	1015686	INSULATOR
	1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS ±.005 ±.02 ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN Luchke DATE 3/27/63
CHECKED E.L. Hurst 3 APR 63
APPROVAL A. KODEL / V. BLYSHAK
APPROVAL
NASA APPROVAL W.J. Kline 5-22-63
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

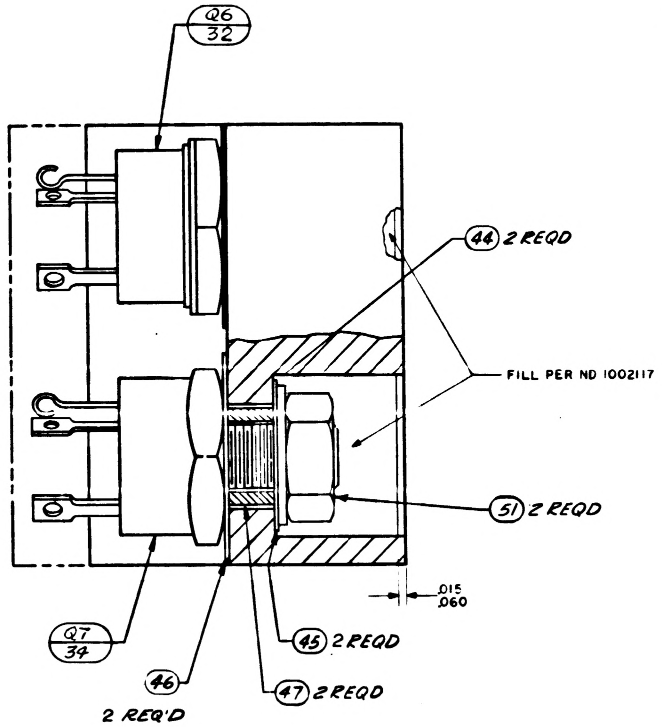
CODE IDENT NO
SIZE E
1007040
SCALE 4:1
SHEET 1 OF [illegible]

1007040 D

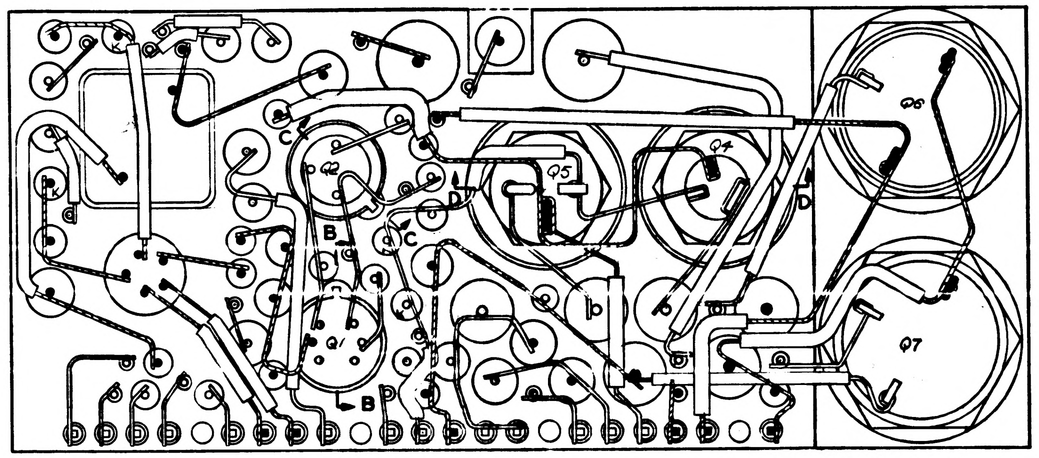
INCHES
PHOTOGRAPHIC SCALE ONLY

1007040 D

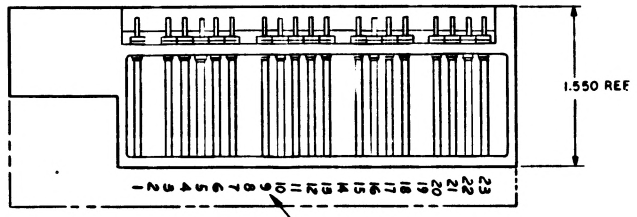
REVISIONS					
SYM	ZONE	DESCRIPTION		DATE	APPD
D		REVISED PER TDRR	CHG NO		



Q6
32
44 2 REQD
FILL PER ND 1002117
51 2 REQD
.015
.060
Q7
34
45 2 REQD
46
2 REQ'D
47 2 REQD



Q6
Q4
Q5
Q2
Q1
Q7
B
C
D



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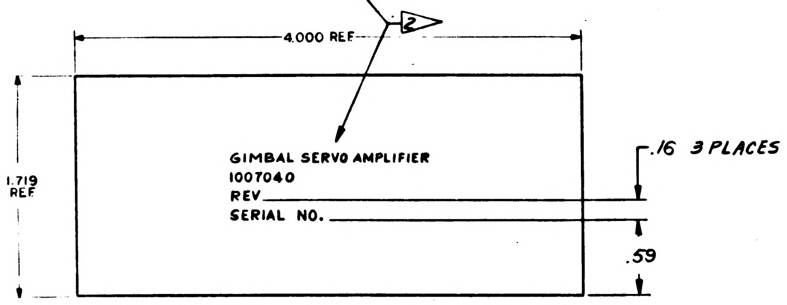
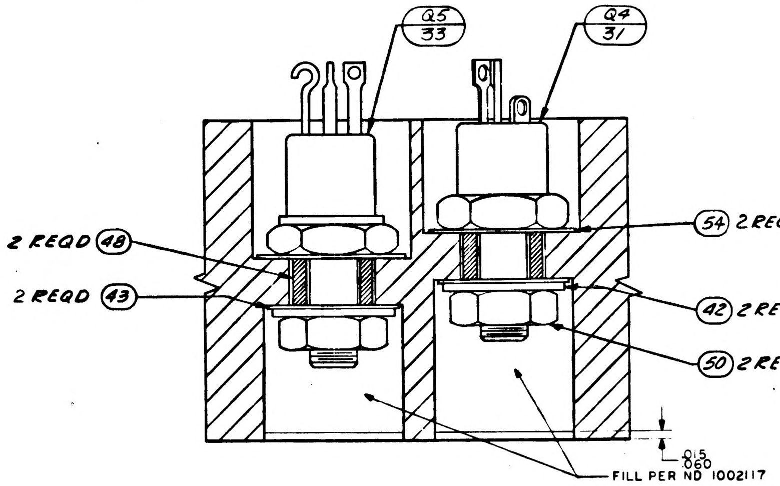


4.000 REF
2
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.
1.719 REF
.16 3 PLACES
.59

MARKING VIEW
SCALE - 2:1



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Q4
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2 REQD 43
54 2 REQD
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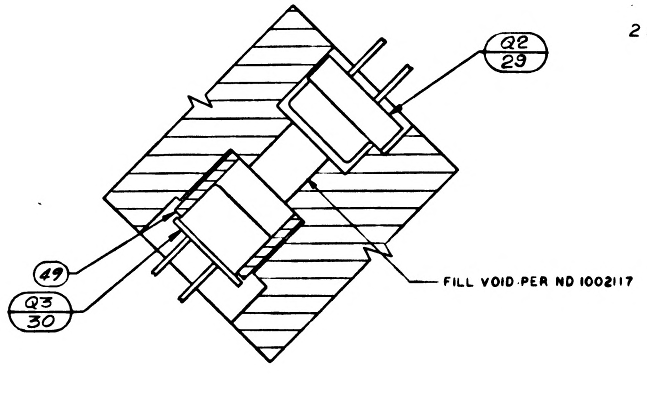
.015
.060
FILL PER ND 1002117

PARTIAL SECTION D-D



Q2
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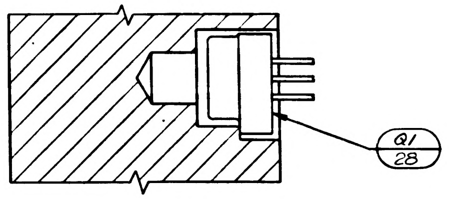
49
Q3
30
FILL VOID PER ND 1002117



PARTIAL SECTION B-B

PARTIAL SECTION C-C

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ \+ \+
- \- \-
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN DATE 3/27/63
CHECKED 3 APR 63
APPROVAL A. KODEL
APPROVAL M. BLYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO. SIZE E 1007040
SCALE 4:1 SHEET 2 OF 2

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007040 D

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
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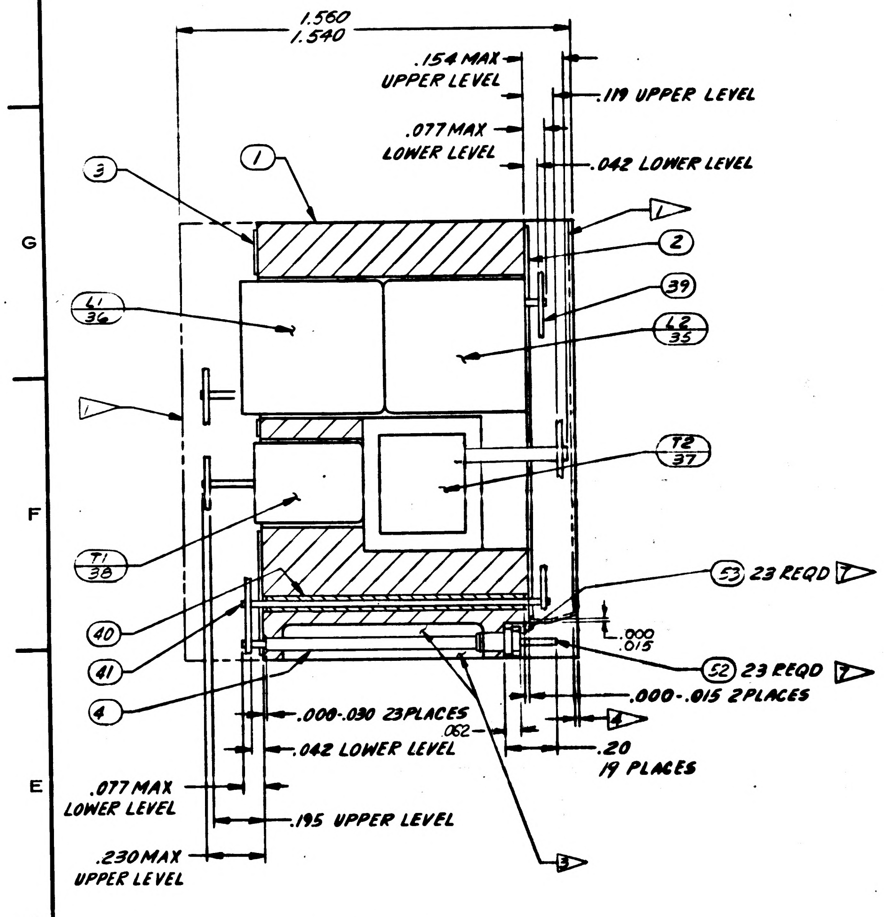
E		REVISED PER TDRR [illegible] 1448		[illegible]	[illegible]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1.540
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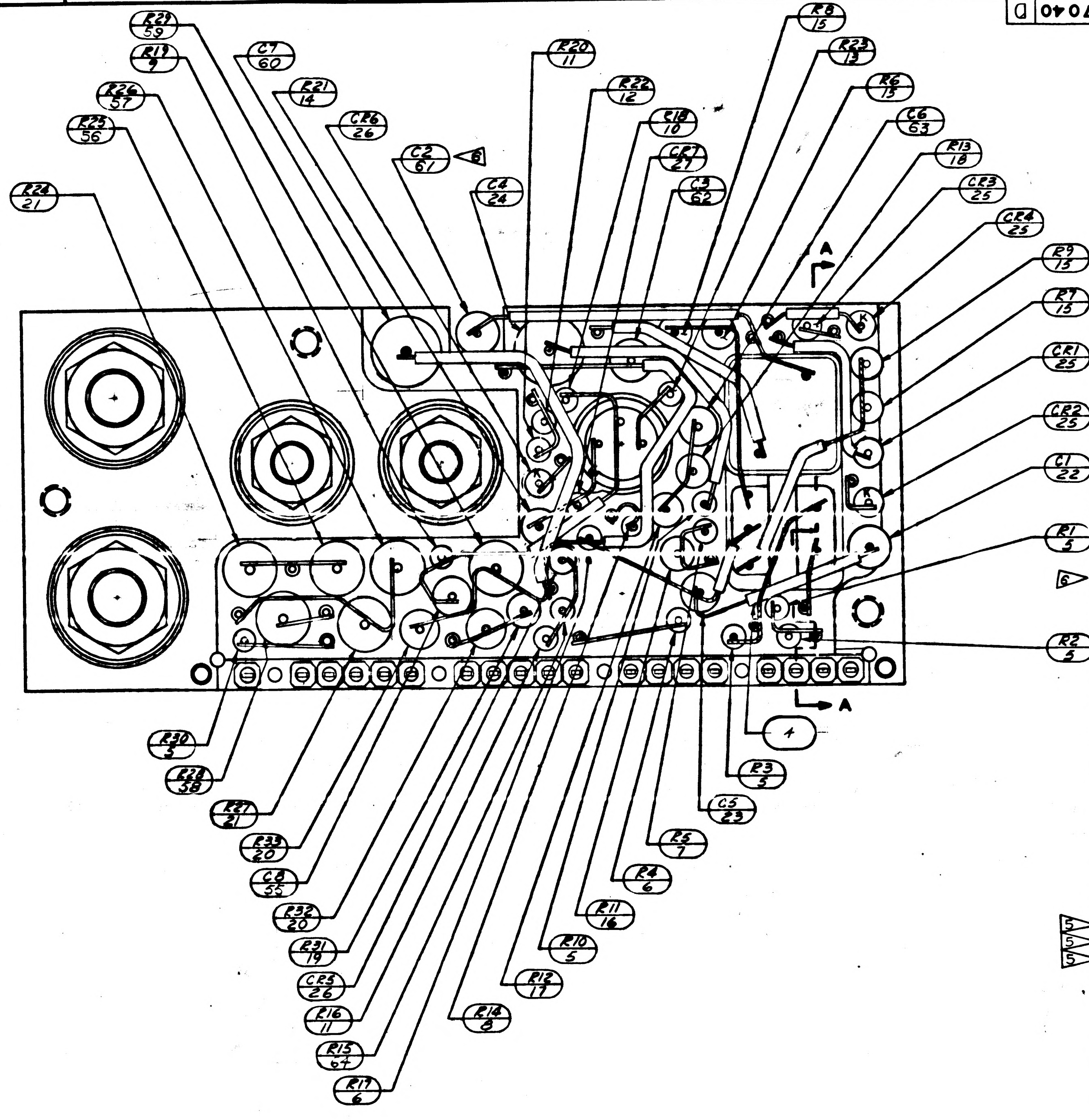
.119 UPPER LEVEL
.077 MAX LOWER LEVEL
.042 LOWER LEVEL
3
1
1
2
39
L1 36
L2 35
T2 37
T1 38
40
41
4
52 23 REQD 7
52 23 REQD 7
.000 .015
.000-.030 23 PLACES
.062
.000-.015 2 PLACES
4
.042 LOWER LEVEL
.20 19 PLACES
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL
3

SECTION A-A


R29 59
R19 9
C7 60
R21 14
R26 57
R25 56
CR6 26
C2 61
6
R20 11
R22 12
C18 10
CR7 27
C3 62
C4 24
R24 21
R8 15
R23 13
R6 13
C6 63
R13 18
CR3 25
CR4 25
A
R9 15
R7 15
CR1 25
CR2 25
C1 22
R1 5
R2 5
A
4
R3 5
C5 23
R5 7
R4 6
R11 16
R10 5
R12 17
R14 8
R30 5
R28 58
R27 21
R33 20
C8 55
R32 20
R31 19
CR5 26
R16 11
R15 64
R17 6

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

WIRING STDS FOR WELDED UNITS IN ACCORDANCE WITH ND 1002003

1 ▷ ENCAPSULATE MODULE PER G&ND1002002 (BLACK POLYURETHANE FOAM).

2 ▷ MARK CHARACTERS .080 ± .020 HIGH, WHITE PER ND 1002019

5 ▷ AR DENOTES AS REQUIRED.

7 ▷ ASSEMBLE PER ND 1002136

SOLDER PER ND 1002071

3 ▷ AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER G&ND 1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

4 ▷ ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.

ON ITEMS ② & ③

$FT_{(\ )}$ INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR

B " BASE " " "

E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR

B_2 " BASE " " " " "

E_2 " EMITTER " " " " "

6 ▷ AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6 ▷

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

REV D REPLACES REV C

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF	✕	1010024	SCHEMATIC
64	1	1006750-75	RESISTOR
63	1	1010279-009	CAPACITOR
62	1	1010264-12	CAPACITOR
6 ▷ 61	1	1010264	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	19	1006775	INSULATOR
52	19	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	1	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5 ▷ 41	AR	ND1015400	WIRE, ELECTRICAL .020 DIA
5 ▷ 40	AR	ND1006776-22	INSULATION SLEEVING, ELECTRICAL
5 ▷ 39	AR	ND1015400	WIRE, ELECTRICAL .010 X .020
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010396-001	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-76	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS ±.005 ±.02 ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN DATE 3/27/63
CHECKED 3 APR 63
APPROVAL A. KODEL J. M. BLYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

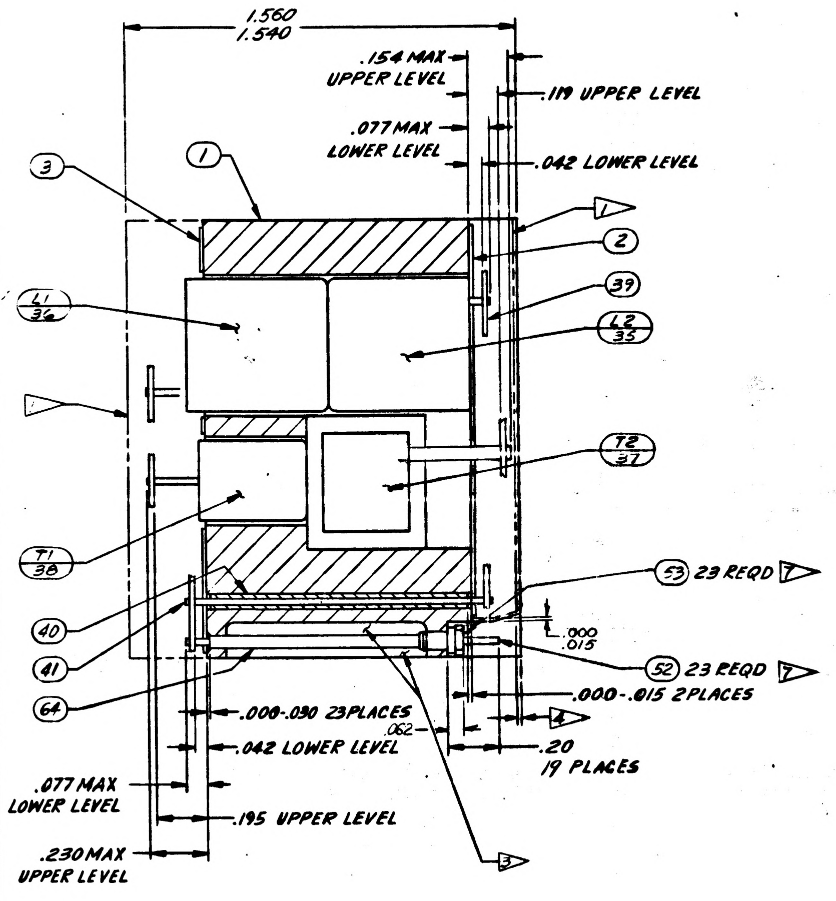
CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

1007040 E

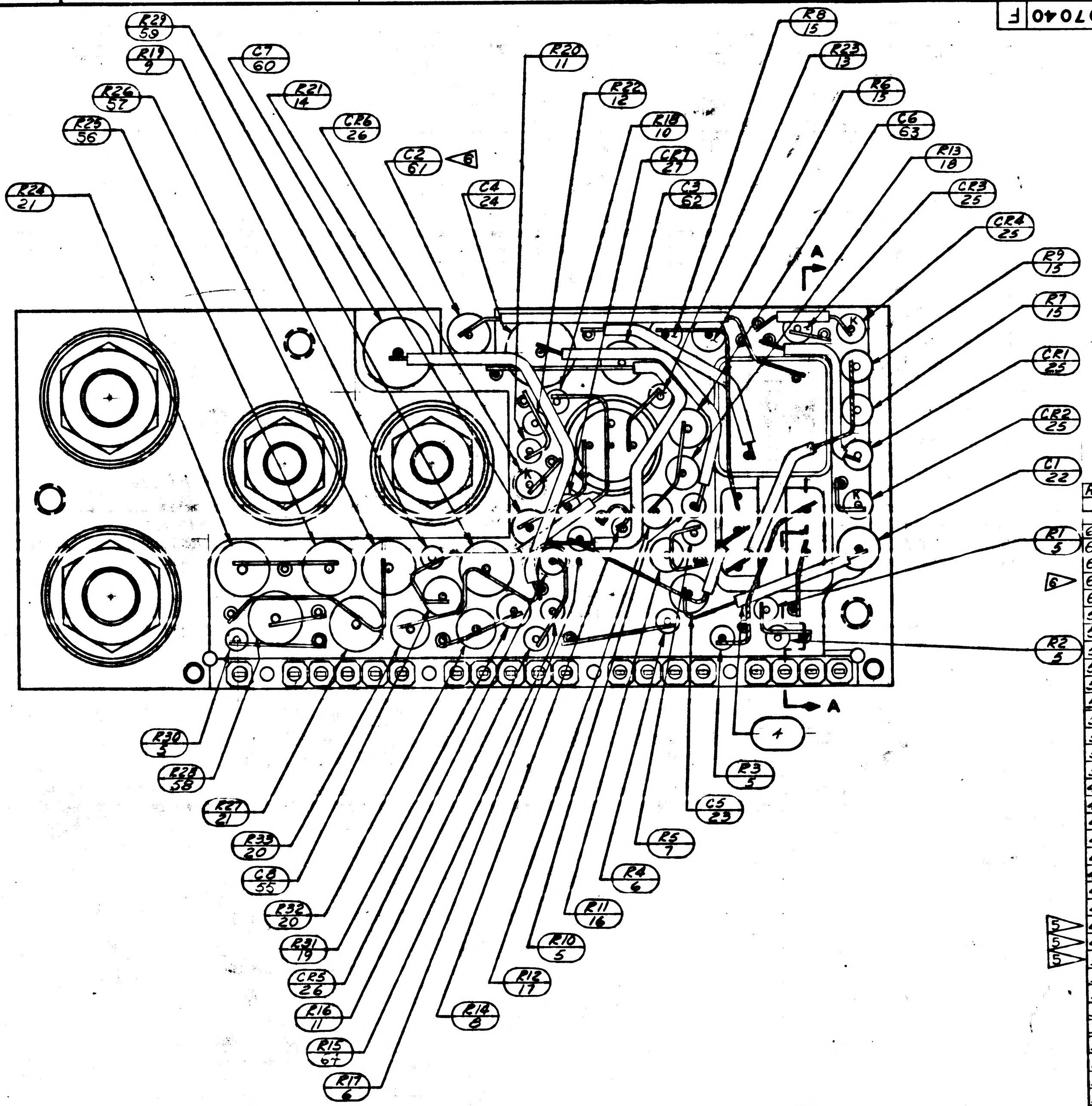
INCHES
PHOTOGRAPHIC SCALE ONLY

1007040 F

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
D		REVISED PER TDRR 01310		[illegible]	[illegible]
E		REVISED PER TDRR 01448		[illegible]	[illegible]
F		REVISED PER TDRR 01714		[illegible]	[illegible]


1.560
1.540
.154 MAX
UPPER LEVEL
.119 UPPER LEVEL
.077 MAX
LOWER LEVEL
.042 LOWER LEVEL
3
1
2
39
L1 36
L2 35
T2 37
T1 38
40
41
64
53 23 REQD 7
52 23 REQD 7
.000
.015
4
.000-.090 23PLACES
.062
.000-.015 2PLACES
.042 LOWER LEVEL
.20
19 PLACES
.077 MAX
LOWER LEVEL
.195 UPPER LEVEL
.230 MAX
UPPER LEVEL
3

SECTION A-A


R29 59
R19 9
C7 60
R21 14
CR6 26
C2 61 6
C4 24
R20 11
R22 12
R18 10
CR7 27
C3 62
R8 15
R23 13
R6 13
C6 63
R13 18
CR3 25
CR4 25
R9 15
R7 15
CR1 25
CR2 25
C1 22
R1 5
R2 5
R26 57
R25 56
R24 21
A
A
4
R30 5
R28 58
R27 21
R33 20
C8 55
R32 20
R31 19
CR5 26
R16 11
R15 67
R17 6
R14 8
R12 17
R10 5
R11 16
R4 6
R5 7
C5 23
R3 5

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

1▷ ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM).
2▷ MARK CHARACTERS .080 ± .020 HIGH, WHITE PER ND1002019
5▷ AR DENOTES AS REQUIRED.
7▷ ASSEMBLE PER ND 1002136
SOLDER PER ND 1002071

3▷ AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER G&ND 1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:
4▷ ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.

ON ITEMS ② & ③
$FT_{( )}$ INDICATES FEED THRU.
K INDICATES CATHODE SIDE OF DIODE.
C INDICATES COLLECTOR LEAD OF TRANSISTOR
B " BASE " " "
E " EMITTER " " "
C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR
B_2 " BASE " " " " "
E_2 " EMITTER " " " " "

6▷ AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6▷

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

REV D REPLACES REV C

LIST OF PARTS AND MATERIALS

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
	REF	✕	1010024	SCHEMATIC
	64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
	63	1	1010279-009	CAPACITOR
	62	1	1010264-12	CAPACITOR
6▷	61	1	1010264	CAPACITOR
	60	1	1010320-6	CAPACITOR
	59	1	1010389-94	RESISTOR, FIXED
	58	1	1010399-16	RESISTOR, FIXED
	57	1	1010389-47	RESISTOR, FIXED
	56	1	1010399-31	RESISTOR, FIXED
	55	1	1010279-228	CAPACITOR
	54	2	1008024-2	WASHER, INSULATOR
	53	19	1006775	INSULATOR
	52	19	1006782-5	CONTACT
	51	2	MS20341-416B	NUT
	50	2	MS20341-10B	NUT
	49	1	1008025-2	BUSHING, INSULATOR
	48	2	1008021-1	BUSHING, INSULATOR
	47	2	1008021-2	BUSHING, INSULATOR
	46	2	1008024-3	WASHER, INSULATOR
	45	2	1008024-4	WASHER, INSULATOR
	44	2	1008071-5	WASHER, FLAT
	43	2	1008024-1	WASHER, INSULATOR
	42	2	1008071-2	WASHER, FLAT
5▷	41	AR	1006757-8	WIRE, ELECTRICAL
5▷	40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5▷	39	AR	1006757-1	WIRE, ELECTRICAL
	38	1	1010328	TRANSFORMER
	37	1	1010327	TRANSFORMER
	36	1	1010277-009	REACTOR
	35	1	1010277-008	REACTOR
	34	1	1010273-1	TRANSISTOR
	33	1	1010437	TRANSISTOR
	32	1	1010271	TRANSISTOR
	31	1	1010269-1	TRANSISTOR
	30	1	1010270	TRANSISTOR
	29	1	1010396-001	TRANSISTOR
	28	1	1010252-001	TRANSISTOR
	27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
	26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
	25	4	1010392-	SEMICONDUCTOR DEVICE, DIODE
	24	1	1010320-11	CAPACITOR, FIXED
	23	1	1010279-220	CAPACITOR, FIXED
	22	1	1010264-9	CAPACITOR, FIXED
	21	2	1010278-39	RESISTOR, FIXED
	20	2	1010377-66	RESISTOR, FIXED
	19	1	1010364-43	RESISTOR, FIXED
	18	1	1010364-719	RESISTOR, FIXED
	17	1	1010364-465	RESISTOR, FIXED
	16	1	1010364-635	RESISTOR, FIXED
	15	4	1010364-443	RESISTOR, FIXED
	14	1	1006760-35	RESISTOR, FIXED
	13	1	1006750-40	RESISTOR, FIXED
	12	1	1006750-53	RESISTOR, FIXED
	11	2	1006750-51	RESISTOR, FIXED
	10	1	1006750-70	RESISTOR, FIXED
	9	1	1006750-76	RESISTOR, FIXED
	8	1	1006750-60	RESISTOR, FIXED
	7	1	1006750-48	RESISTOR, FIXED
	6	2	1006750-80	RESISTOR, FIXED
	5	5	1006750-73	RESISTOR, FIXED
	4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
	3	1	1015687	INSULATOR
	2	1	1015686	INSULATOR
	1	1	1015685	HEATSINK

F 1007040

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ XXX ± .005 +
- XX ± .02 -
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN [illegible] DATE 3/27/63
CHECKED [illegible] 3 APR 63
APPROVAL A. KODEL J. M. BLYSHAK
APPROVAL [illegible]
NASA APPROVAL 5-22-63 [illegible]
MIT APPROVAL [illegible] 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO. SIZE E 1007040
SCALE 4:1 SHEET 1 OF 2

INCHES
PHOTOGRAPHIC SCALE ONLY

1007040 F

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
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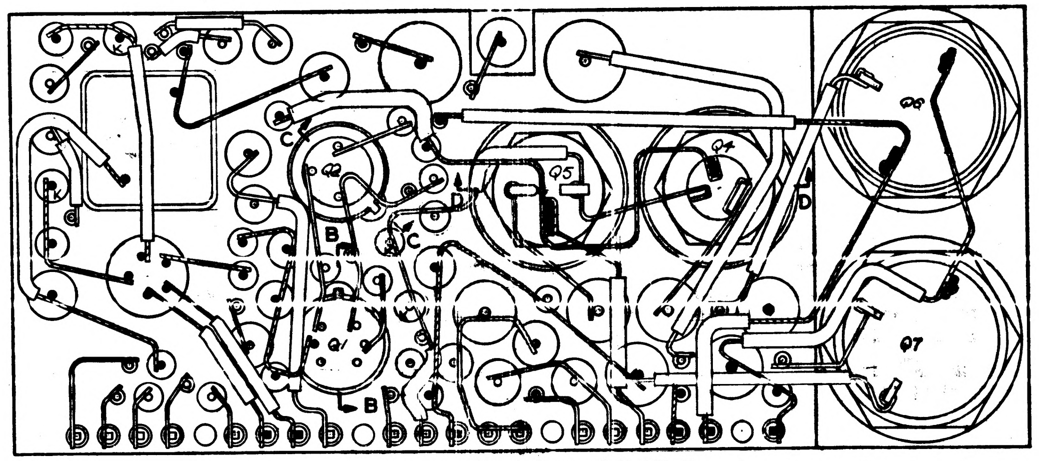
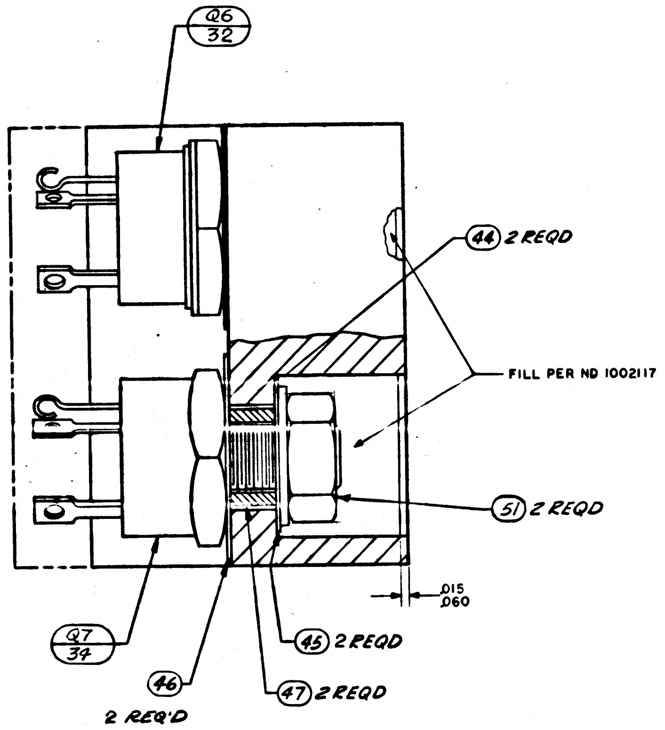
F		REVISED PER TDRR 0/7/4		[illegible]	[illegible]



Q1
Q2
Q4
Q5
Q7
Q8
B
C



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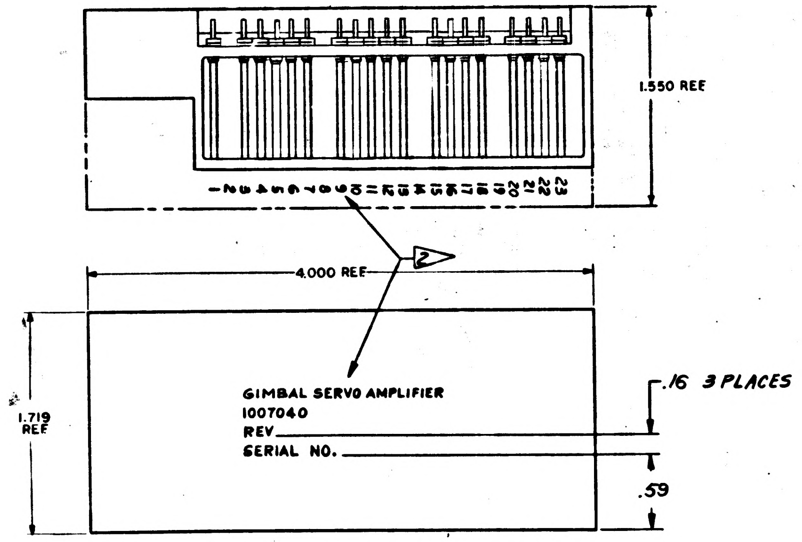
44 2 REQD
FILL PER ND 1002117
51 2 REQD
.015 .060
Q7 34
45 2 REQD
46 2 REQ'D
47 2 REQD



1.550 REF
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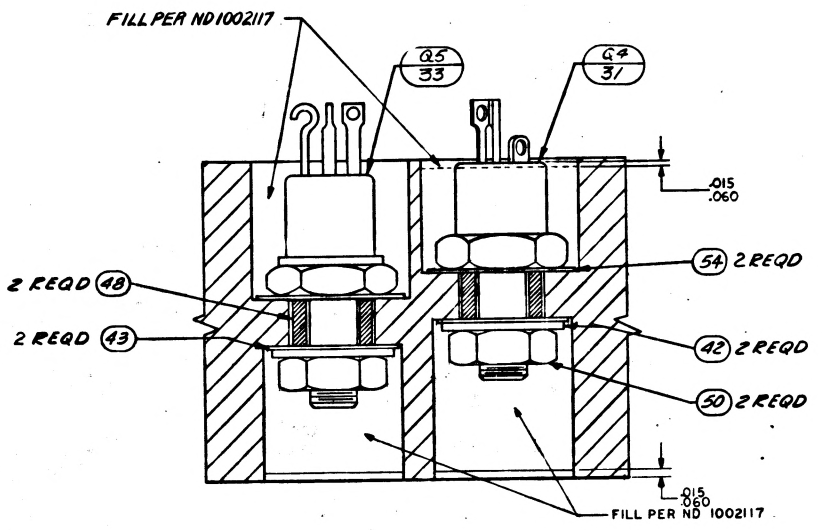
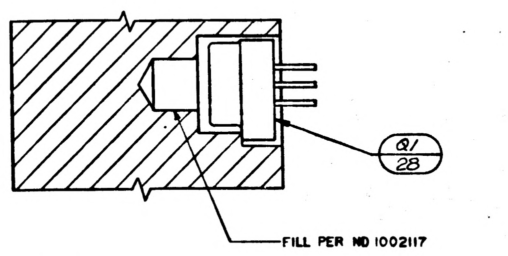
4.000 REF
2
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.
.16 3 PLACES
1.719 REF
.59

MARKING VIEW
SCALE - 2:1



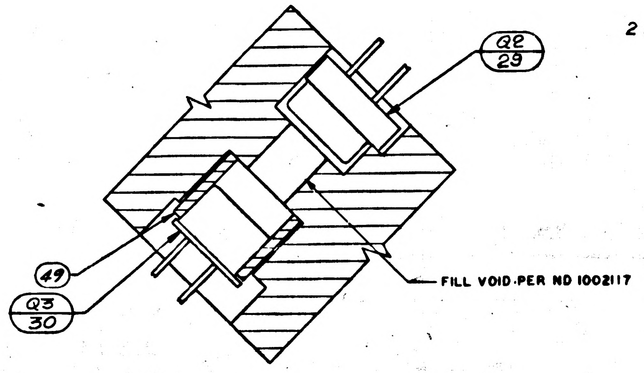
FILL PER ND 1002117
Q5 33
Q4 31
.015 .060
54 2 REQD
2 REQD 48
2 REQD 43
42 2 REQD
50 2 REQD
FILL PER ND 1002117

PARTIAL SECTION D-D



Q1 28
FILL PER ND 1002117

PARTIAL SECTION B-B



Q2 29
49
Q3 30
FILL VOID PER ND 1002117

PARTIAL SECTION C-C

REV D REPLACES REV C

NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN Bucklha DATE 3/27/63
CHECKED 3 APR 63
A. KODEL
APPROVAL J. M. BLYSHAK
APPROVAL
NASA APPROVAL W J Rhine 5-22-63
MIT APPROVAL 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 2 OF 2

1007040 F

INCHES
PHOTOGRAPHIC SCALE ONLY

1007040	F

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
D		REVISED PER TDRR 01310		[illegible]	[illegible]
E		REVISED PER TDRR 01448		[illegible]	[illegible]
F		REVISED PER TDRR 01714		[illegible]	[illegible]
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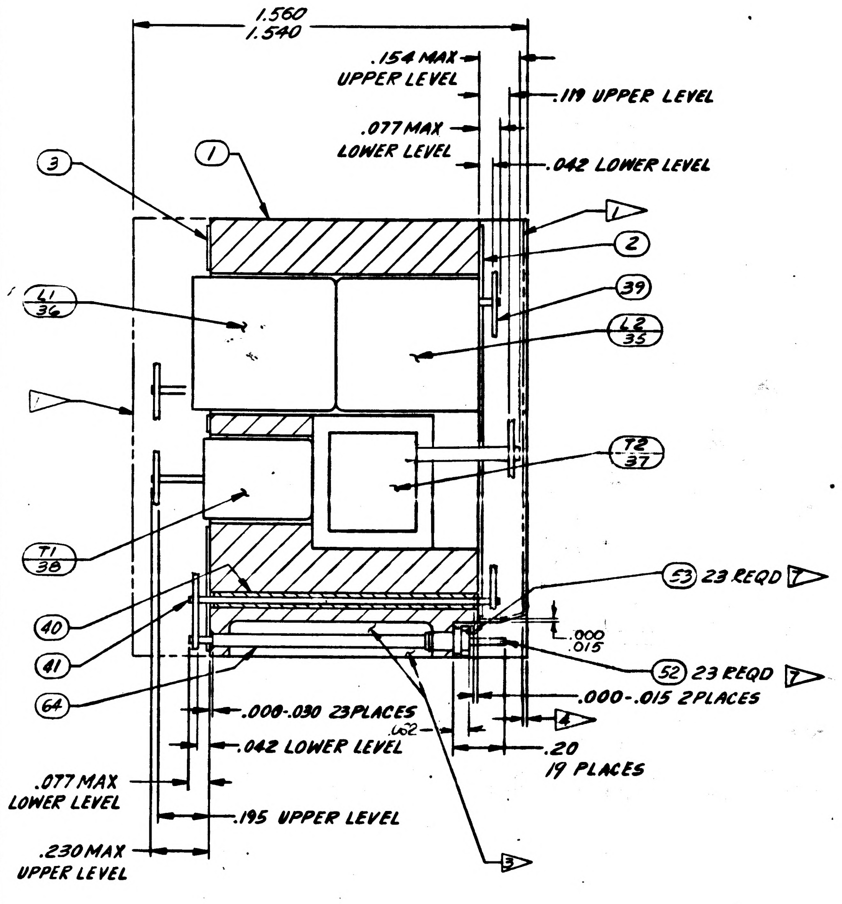
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1.540
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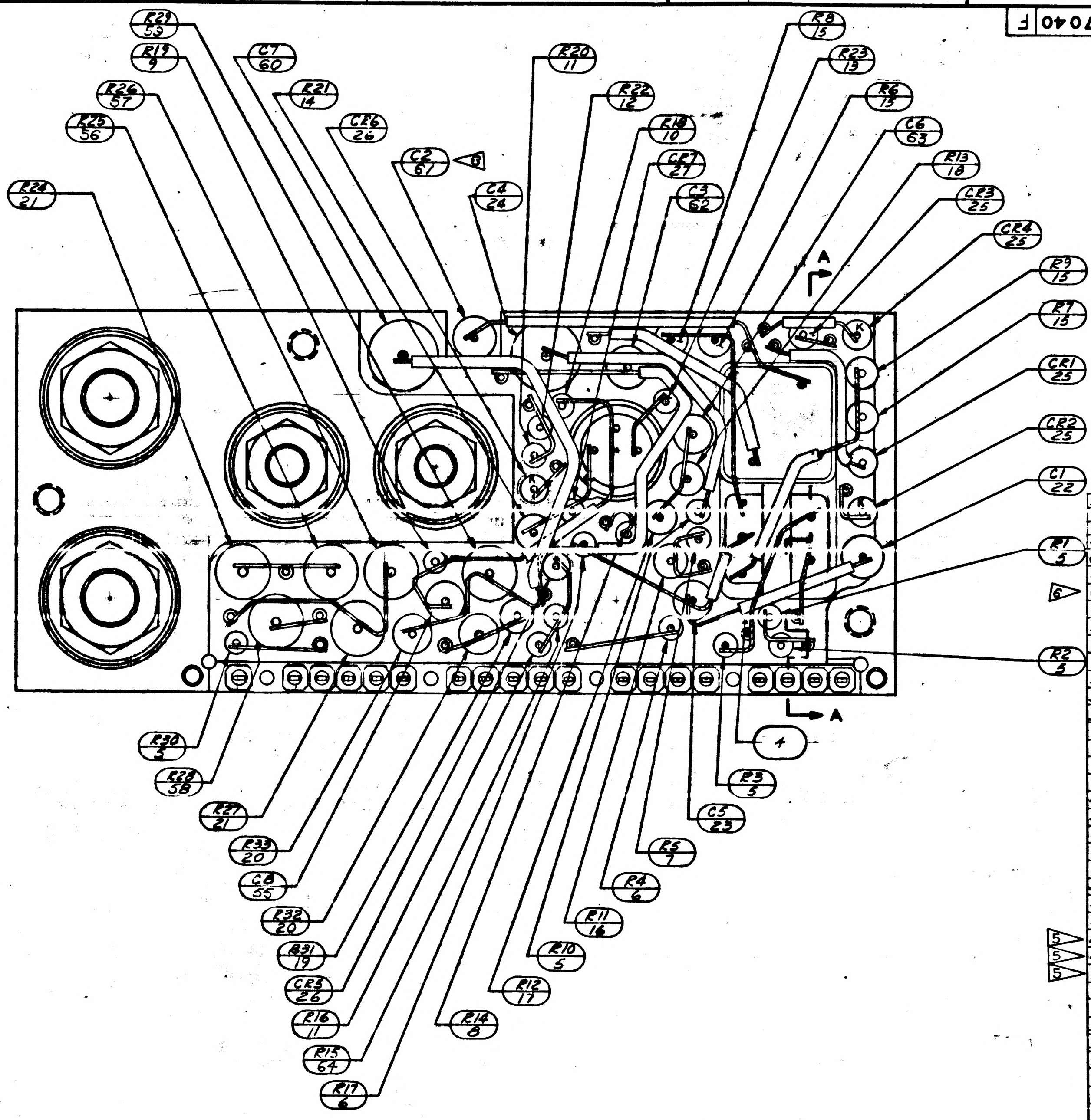
.119 UPPER LEVEL
.077 MAX LOWER LEVEL
.042 LOWER LEVEL
3
1
1
2
39
L1 36
L2 35
T2 37
T1 38
40
41
64
53 23 REQD 7
52 23 REQD 7
.000 .015
.000-.015 2 PLACES
4
.000-.030 23 PLACES
.042 LOWER LEVEL
.20 19 PLACES
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL
3

SECTION A-A


R29 53
R19 9
C7 60
R21 14
R26 57
R25 56
CR6 26
C2 61 6
C4 24
R24 21
R20 11
R22 12
R18 10
CR7 27
C3 62
R8 15
R23 13
R6 13
C6 63
R13 18
CR3 25
CR4 25
A
R9 13
R7 13
CR1 25
CR2 25
C1 22
R1 5
K
R2 5
A
4
R30 5
R28 58
R27 21
R33 20
C8 55
R32 20
R31 19
CR5 26
R16 11
R15 64
R17 6
R14 8
R12 17
R10 5
R11 16
R4 6
R5 7
C5 23
R3 5

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING.

1▷ ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM).

2▷ MARK CHARACTERS .080 ± .020 HIGH, WHITE PER ND 1002019

5▷ AR DENOTES AS REQUIRED.

7▷ ASSEMBLE PER ND 1002136

SOLDER PER ND 1002071

3▷ AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER G&ND 1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

4▷ ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.

ON ITEMS ② & ③

$FT_{( )}$ INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR

B " BASE " " "

E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR

B_2 " BASE " " " " "

E_2 " EMITTER " " " " "

6▷ AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6▷

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF	X	1010024	SCHEMATIC
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-009	CAPACITOR
62	1	1010264-12	CAPACITOR
6▷ 61	1	1010264	CAPACIT[illegible]
60	1	1010320-6	CAPACIT[illegible]
59	1	1010389-94	RESISTOR, [illegible]
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	19	1006775	INSULATOR
52	19	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	1	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5▷ 41	AR	1006757-8	WIRE, ELECTRICAL
5▷ 40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5▷ 39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010396-001	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-76	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ XXX ± .005 +
- XX ± .02 -
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN DATE
CHECKED 3 APR 63
APPROVAL A. KODEL J. M. BLYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 29 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

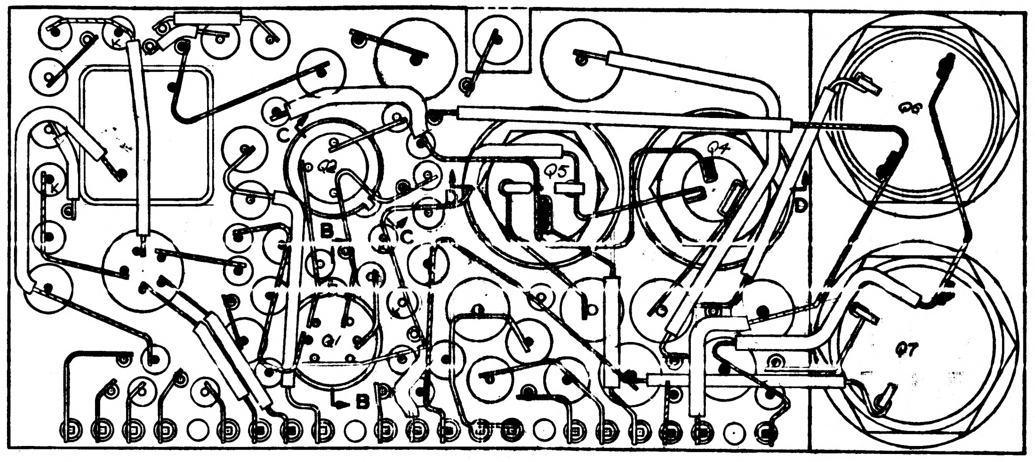
CODE IDENT NO. | SIZE E | 1007040
SCALE 4:1 | SHEET 1 OF 2

1007040 G

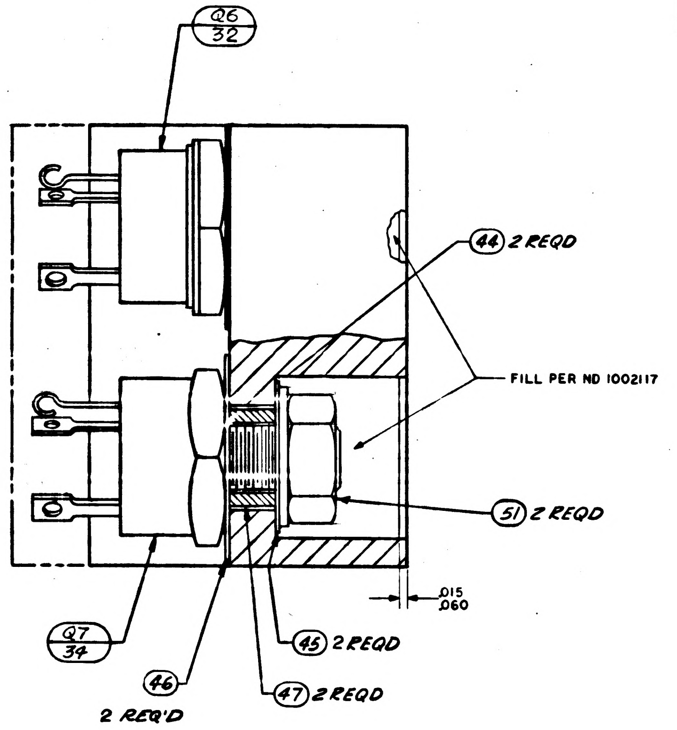
INCHES
PHOTOGRAPHIC SCALE ONLY

1007040 F

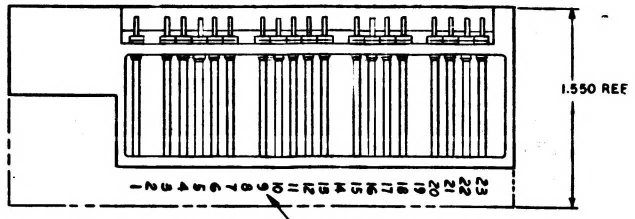
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
REVISIONS					
D		REVISED PER TDRR 01310		[illegible]	[illegible]
F		REVISED PER TDRR 01714		[illegible] 63	[illegible]
G		REVISED PER TDRR 01871		7-1-63	[illegible]



Q8
Q4
Q5
Q2
Q1
Q7
B
C
D



Q6 / 32
44 2 REQD
FILL PER ND 1002117
51 2 REQD
.015
.060
Q7 / 34
45 2 REQD
46
2 REQ'D
47 2 REQD



1.550 REF
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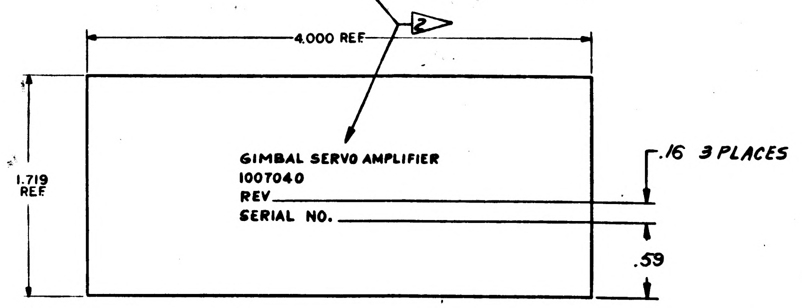
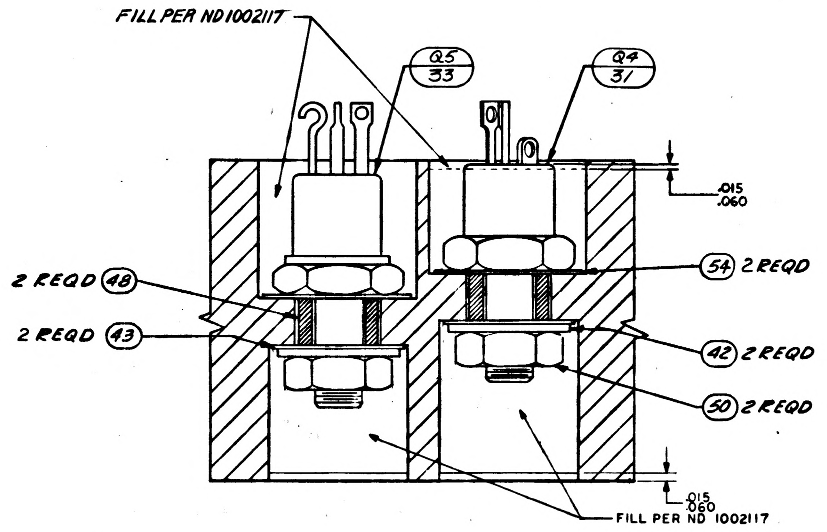


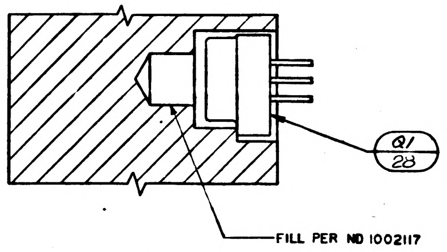
2
4.000 REF
1.719 REF
.16 3 PLACES
.59
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.

MARKING VIEW
SCALE - 2:1



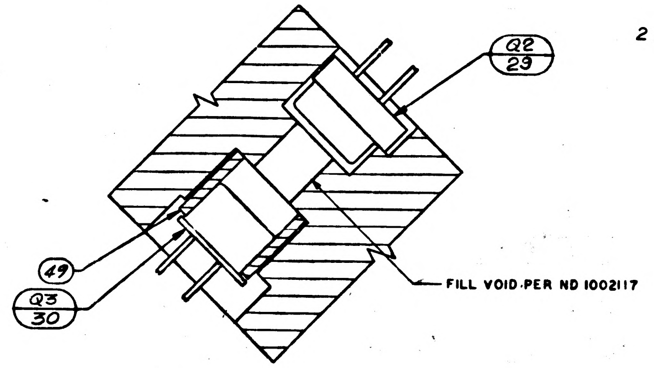
FILL PER ND1002117
Q5 / 33
Q4 / 31
.015
.060
54 2 REQD
2 REQD 48
2 REQD 43
42 2 REQD
50 2 REQD
.015
.060
FILL PER ND 1002117

PARTIAL SECTION D-D



Q1 / 28
FILL PER ND 1002117

PARTIAL SECTION B-B



Q2 / 29
49
Q3 / 30
FILL VOID PER ND 1002117

PARTIAL SECTION C-C

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN Gachke DATE 3/27/63
CHECKED [illegible] 3 APR 63
APPROVAL A. KODEL
APPROVAL J. M. BLYSHAK
APPROVAL [illegible]
NASA APPROVAL W J Rhine 5-22-63
MIT APPROVAL [illegible] 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

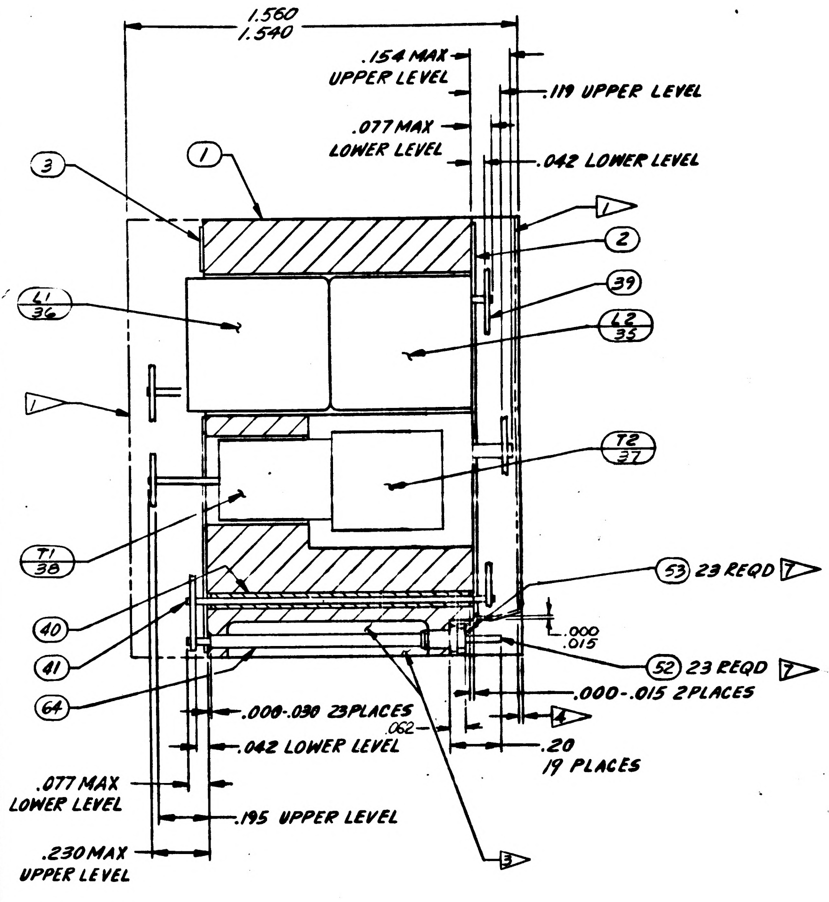
GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 2 OF 2

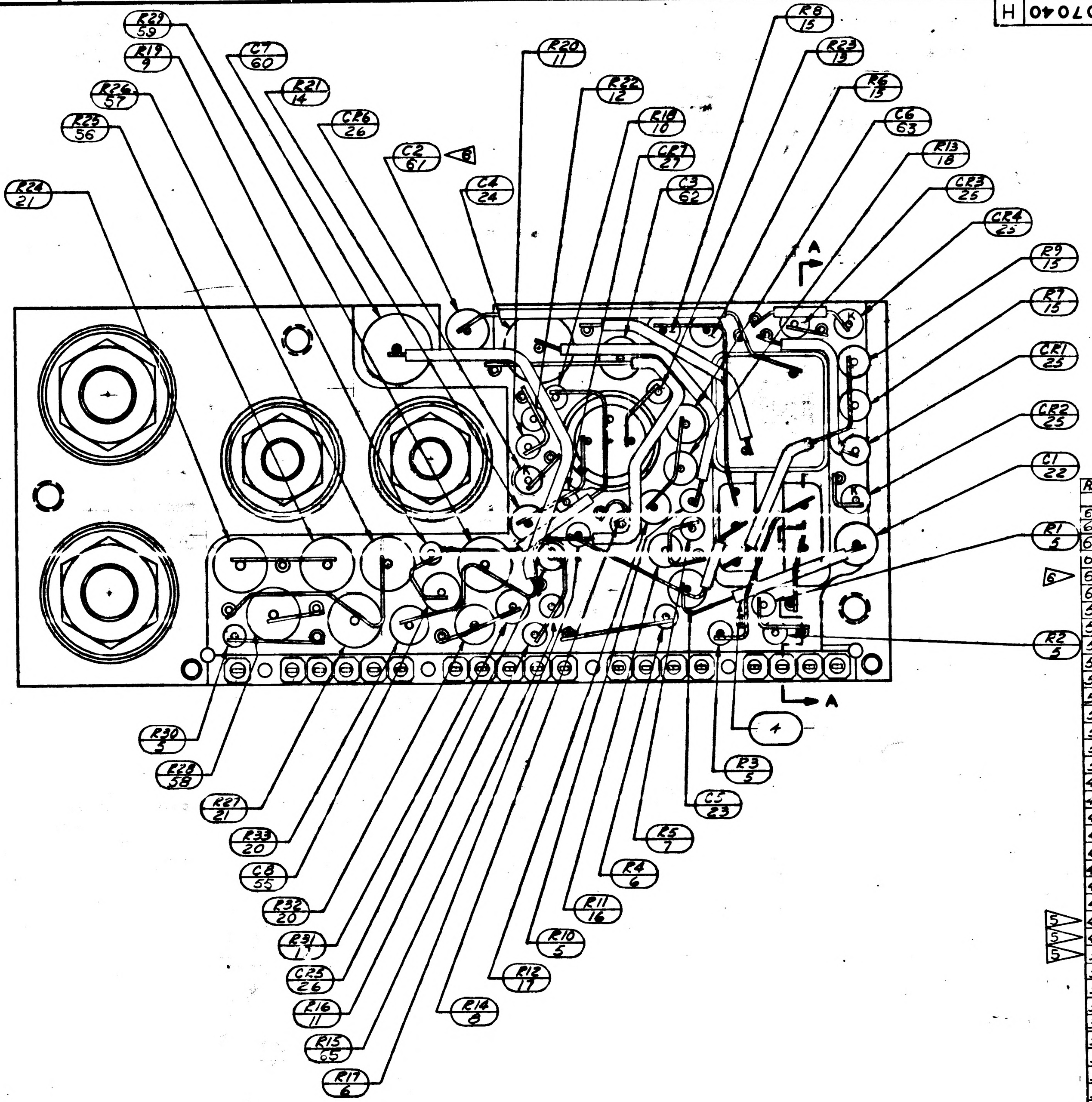
1007040 G

1007040 H

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
REVISIONS					
D		REVISED PER TDRR 01310			
E		REVISED PER TDRR 01448			
F		REVISED PER TDRR 01714			
G		REVISED PER TDRR 01671		7-1-63	
H		REVISED PER TDRR 02-27			


1.560
1.540
.154 MAX UPPER LEVEL
.119 UPPER LEVEL
.077 MAX LOWER LEVEL
.042 LOWER LEVEL
3
1
2
39
L1/36
L2/35
T2/37
T1/38
40
41
64
53 23 REQD 7
52 23 REQD 7
.000 .015
.000-.015 2 PLACES
.000-.030 23 PLACES
.062
.042 LOWER LEVEL
.20 19 PLACES
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL
4
3

SECTION A-A


R29/59
R19/9
C7/60
R21/14
R20/11
R32/12
CR6/26
R18/10
C2/61
6
CR7/27
C4/24
C3/62
R8/15
R23/13
R6/13
C6/63
R13/18
CR3/25
CR4/25
R9/15
R7/15
CR1/25
CR2/25
C1/22
R1/5
R2/5
R26/57
R25/56
R24/21
A
A
4
R30/5
R28/58
R27/21
R33/20
C8/55
R22/20
R31/1
C25/26
R16/11
R15/65
R17/6
R14/8
R12/17
R10/5
R11/16
R4/6
R5/7
C5/23
R3/5

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

1 ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM).

2 MARK CHARACTERS .080 ± .020 HIGH, WHITE PER ND 1002019

5 AR DENOTES AS REQUIRED.

7 ASSEMBLE PER ND 1002136

SOLDER PER ND 1002071

3 AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER G&ND 1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

4 ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.

ON ITEMS ② & ③

$FT_{( )}$ INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR

B " BASE " " "

E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR

B_2 " BASE " " " " "

E_2 " EMITTER " " " " "

6 AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF	✕	1010024	SCHEMATIC
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-009	CAPACITOR
62	1	1010264-12	CAPACITOR
6 61	1	1010264	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	19	1006775	INSULATOR
52	19	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	1	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5 41	AR	1006757-8	WIRE, ELECTRICAL
5 40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5 39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010396-001	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-76	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ XXX ± .005 +
- XX ± .02 -
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN DATE
CHECKED 3 APR 63
APPROVAL A. KODEL J. M. BLYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

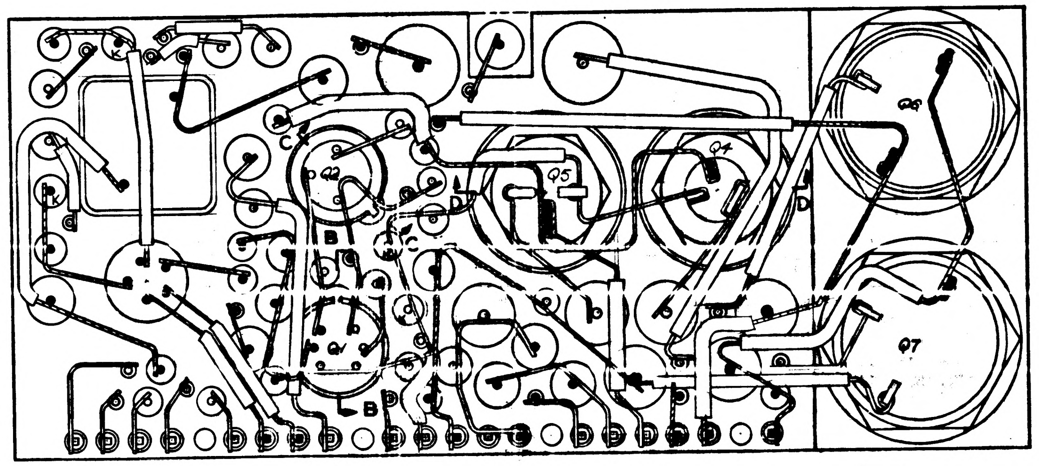
GIMBAL SERVO AMPLIFIER
MODULE ASSY

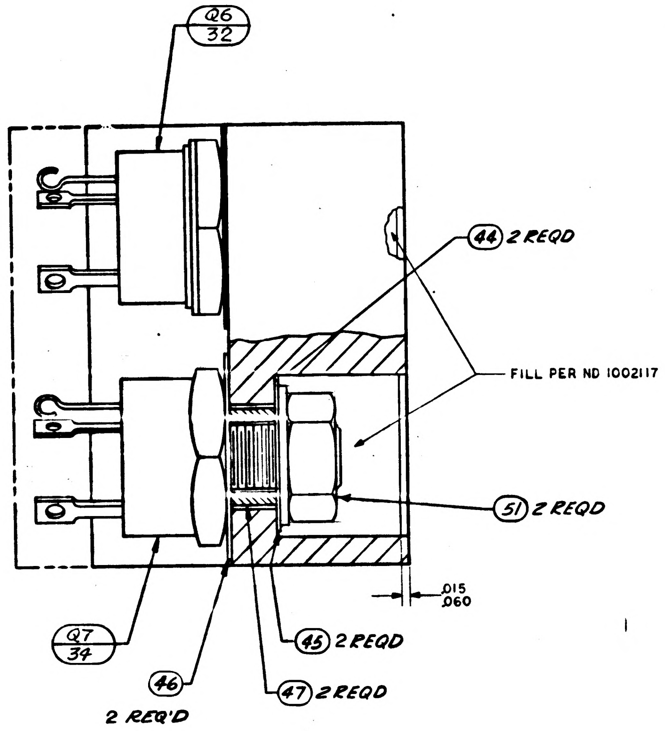
CODE IDENT NO. | SIZE E | 1007040
SCALE 4:1 | SHEET 1 OF 2

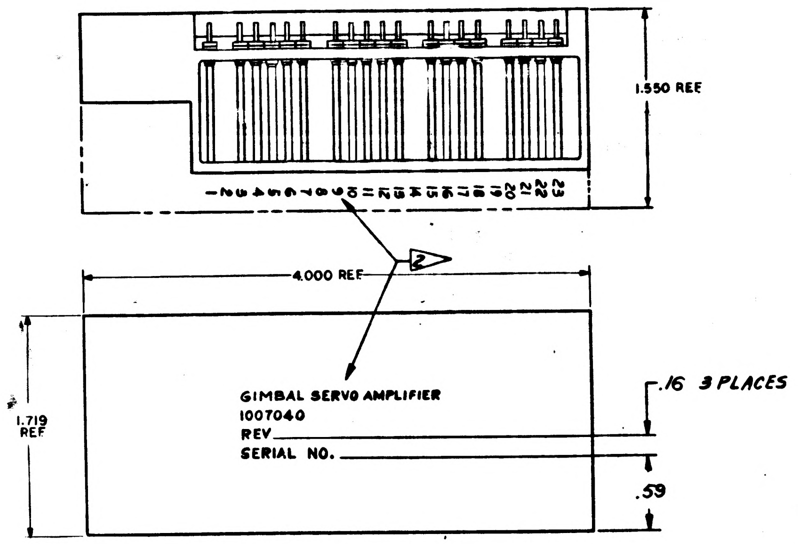
1007040 H

1007040 H

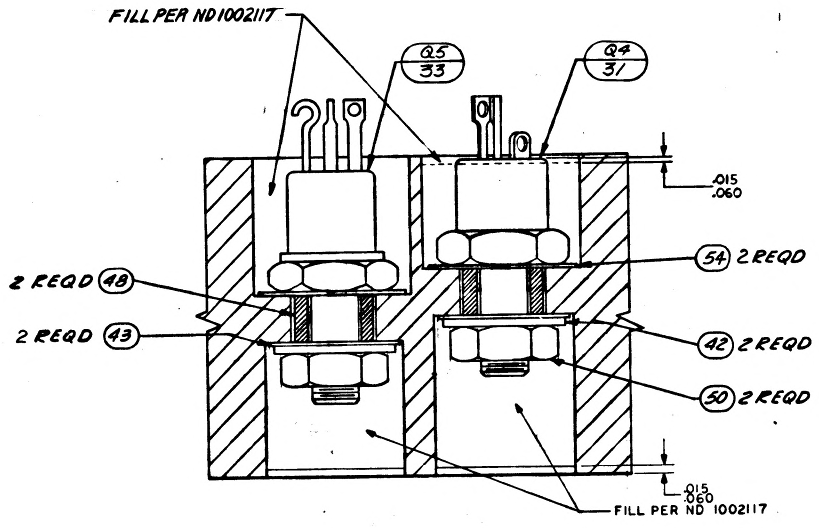
REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD.
D		REVISED PER TDRR 01310		[illegible]	[illegible]
F		REVISED PER TDRR 01714		[illegible]	[illegible]
G		REVISED PER TDRR 02871		7-1-63	[illegible]
H		REVISED PER TDRR 02-27		[illegible]	[illegible]


C
Q5
Q4
Q6
B
B
D
Q7

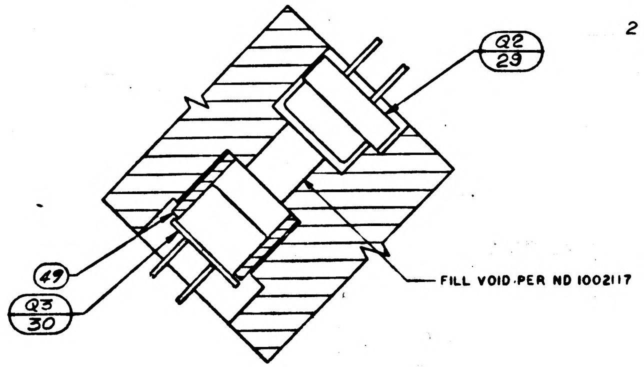

Q6 32
44 2 REQD
FILL PER ND 1002117
51 2 REQD
.015 .060
45 2 REQD
Q7 34
46 2 REQ'D
47 2 REQD


1.550 REF
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
4.000 REF
2
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.
.16 3 PLACES
1.719 REF
.59

MARKING VIEW
SCALE - 2:1


FILL PER ND1002117
Q5 33
Q4 31
.015 .060
54 2 REQD
2 REQD 48
2 REQD 43
42 2 REQD
50 2 REQD
.015 .060
FILL PER ND 1002117

PARTIAL SECTION D-D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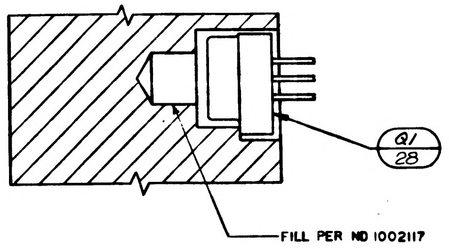
FILL VOID-PER ND 1002117
49
Q3 30


Q1 28
FILL PER ND 1002117

PARTIAL SECTION B-B

PARTIAL SECTION C-C

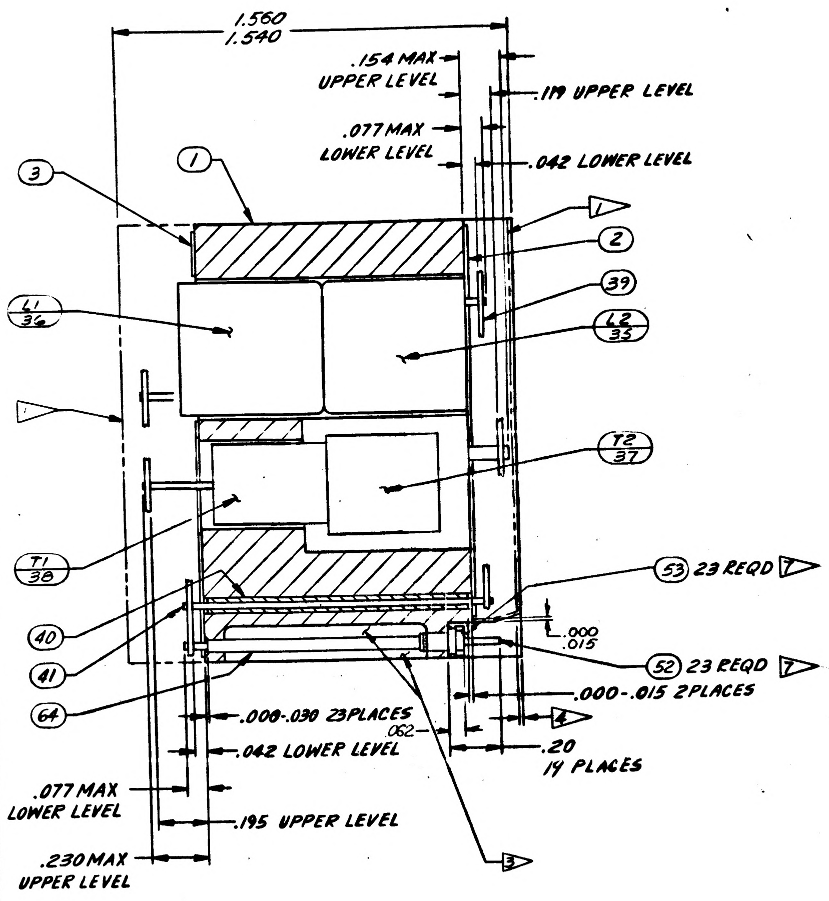
REV D REPLACES REV C

NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES + + + − − − DO NOT SCALE THIS DRAWING	AC SPARK PLUG DIVISION, GMC MILWAUKEE, WISCONSIN ACSP PN DRAWN [illegible] DATE 3/27/63 CHECKED [illegible] 3 APR 63 A. KODEL APPROVAL J. M. BLYSHAK APPROVAL [illegible]	MANNED SPACECRAFT CENTER HOUSTON, TEXAS GIMBAL SERVO AMPLIFIER MODULE ASSY
APPLICATION		MATERIAL CONTRACT	5-22-63 NASA APPROVAL W J Rhine MIT APPROVAL [illegible] 22 May 63	CODE IDENT NO. SIZE E 1007040 SCALE 4:1 SHEET 2 OF 2

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

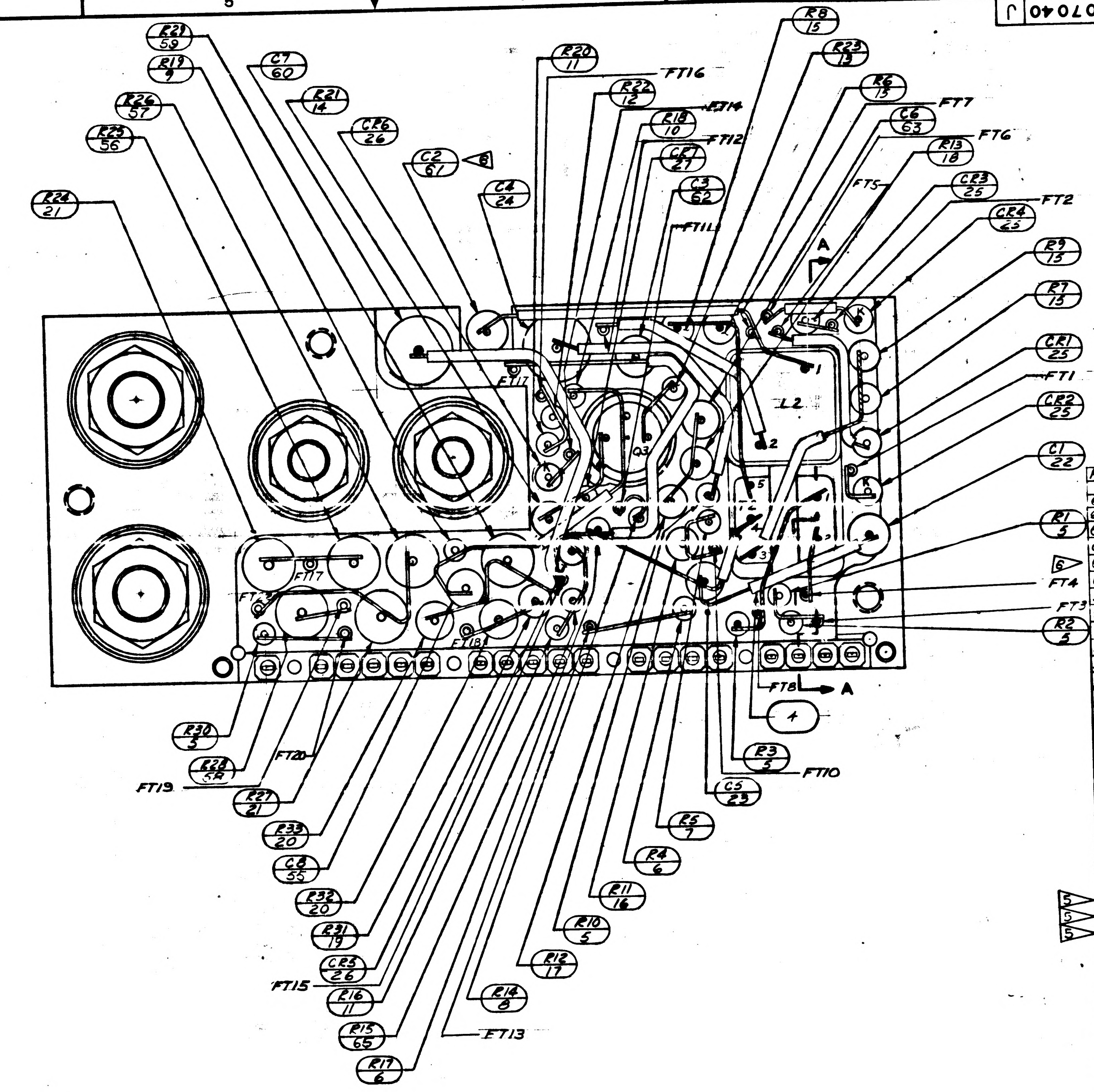
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
		REVISIONS			
D		REVISED PER TDRR 01310		5-27-63	
E		REVISED PER TDRR 01448		6-6-63	
F		REVISED PER TDRR 01714		6-25-63	
G		REVISED PER TDRR 01471		7-1-63	
H		REVISED PER TDRR 02-27			
J		REVISED PER TDRR 03091			

1007040 J



1.560
1.540
.154 MAX UPPER LEVEL
.077 MAX LOWER LEVEL
.119 UPPER LEVEL
.042 LOWER LEVEL
1
2
3
39
L1 36
L2 35
T2 37
T1 38
40
41
64
53 23 REQD 7
52 23 REQD 7
.000 .015
.008-.030 23PLACES
.062
.042 LOWER LEVEL
.000-.015 2PLACES
4
.20 19 PLACES
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL
3

SECTION A-A



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C7 60
R20 11
R8 15
R23 13
FT16
R26 57
R21 14
R22 12
FT14
R6 13
C6 63
FT7
R25 56
CR6 26
R18 10
FT12
R13 18
FT6
C2 61
6
CR7 27
C3 62
CR3 25
FT5
FT2
R24 21
C4 24
FT11
CR4 25
A
R9 13
R7 13
CR1 25
FT1
CR2 25
C1 22
L2
Q3
R1 5
FT4
FT3
R2 5
FT8 A
4
FT17
FT18
R30 5
R28 58
FT20
FT19
R27 21
R33 20
C8 55
R32 20
R31 19
CR5 26
FT15
R16 8
R15 65
R17 6
R14 8
FT13
R12 17
R10 5
R11 16
R4 6
R5 7
C5 23
R3 5
FT10

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

1 ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM).
2 MARK CHARACTERS .080±.020 HIGH, WHITE PER ND 1002019
5 AR DENOTES AS REQUIRED.
7 ASSEMBLE PER ND 1002136
SOLDER PER ND 1002071

3 AREAS TO BE FREE OF ENCAPSULATING COMPOUND
COMPONENTS TO BE CEMENTED IN PLACE PER ND 1002009
MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ±2 IN-LBS.
MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ±2 IN-LBS.
BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.
UNLESS OTHERWISE SPECIFIED:
4 ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.
ON ITEMS ② & ③
$FT_{( )}$ INDICATES FEED THRU.
K INDICATES CATHODE SIDE OF DIODE.
C INDICATES COLLECTOR LEAD OF TRANSISTOR
B " BASE " " "
E " EMITTER " " "
C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR
B_2 " BASE " " " " "
E_2 " EMITTER " " " " "
6 AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

REV D REPLACES REV C

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF		1010024	SCHEMATIC
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-009	CAPACITOR
62	1	1010264-12	CAPACITOR
61	1	1010264	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	19	1006775	INSULATOR
52	19	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	1	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5 41	AR	1006757-8	WIRE, ELECTRICAL
5 40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5 39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010396-001	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-76	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ XXX±.005 +
- XX±.02 -
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN DATE 3/27/63
CHECKED 3 APR 63
A. KODEL
APPROVAL J. M. BLYSHAK
APPROVAL
5-22-63
NASA APPROVAL
MIT APPROVAL 22 May 63

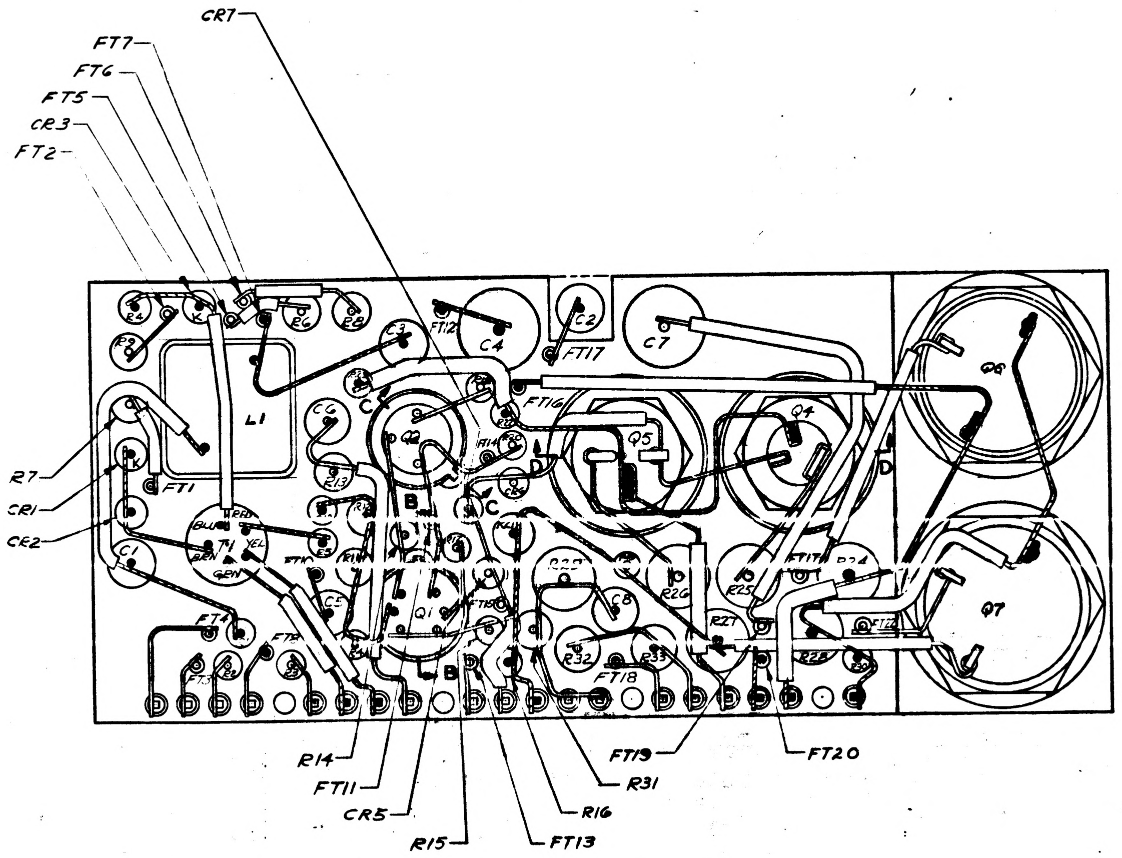
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER MODULE ASSY

CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

1007040 J

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
D		REVISED PER TDRR 01310		[illegible]	[illegible]
F		REVISED PER TDRR 01714		[illegible]	[illegible]
G		REVISED PER TDRR 01871		7-1-63	[illegible]
H		REVISED PER TDRR 02727		[illegible]	[illegible]
J		REVISED PER TDRR 03091		[illegible]	[illegible]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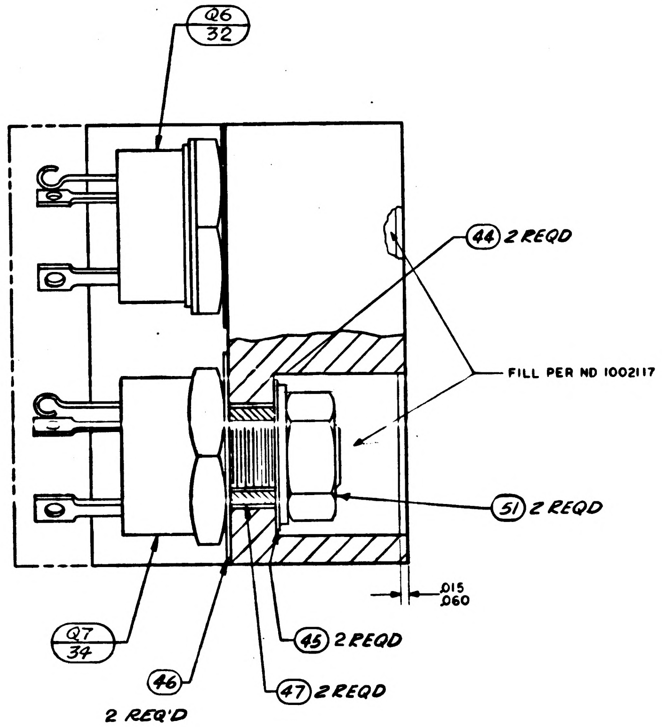
FT7
FT6
FT5
CR3
FT2
R7
CR1
CR2
L1
C1
FT1
T1
C4
C7
C8
Q1
Q2
Q4
Q5
Q6
Q7
FT12
FT16
FT17
FT18
R14
FT11
CR5
R15
FT13
R16
R31
FT19
FT20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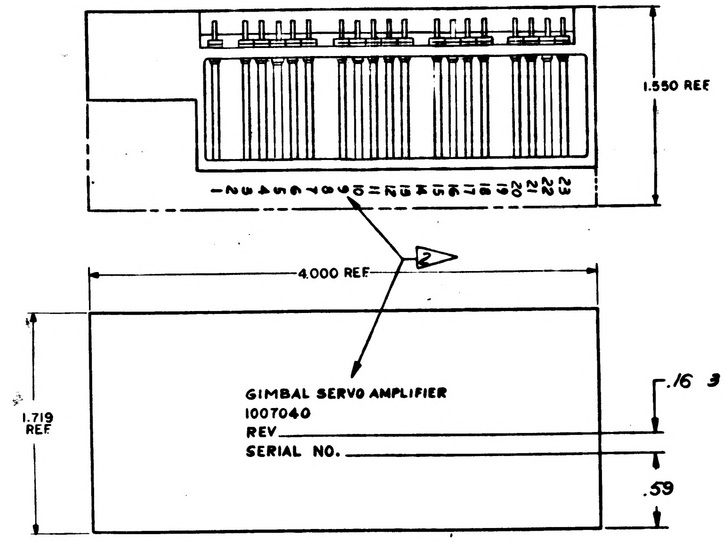
32
44 2 REQD
FILL PER ND 1002117
51 2 REQD
.015
.060
Q7
34
45 2 REQD
46
2 REQ'D
47 2 REQD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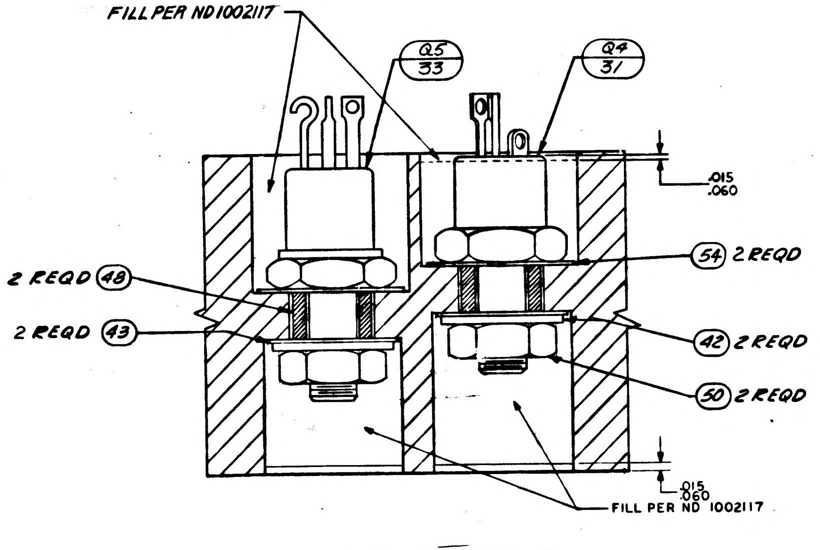
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
4.000 REF
2
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.
.16 3 PLACES
1.719 REF
.59

MARKING VIEW
SCALE - 2:1


FILL PER ND 1002117
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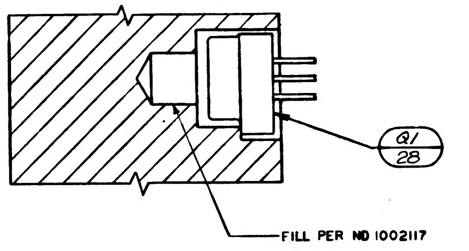
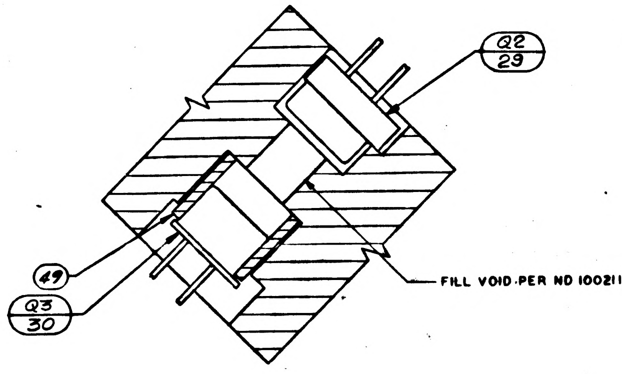
33
Q4
31
.015
.060
2 REQD 48
2 REQD 43
54 2 REQD
42 2 REQD
50 2 REQD
.015
.060
FILL PER ND 1002117

PARTIAL SECTION D-D


Q1
28
FILL PER ND 1002117

PARTIAL SECTION B-B


Q2
29
49
Q3
30
FILL VOID PER ND 1002117

PARTIAL SECTION C-C

REV D REPLACES REV C

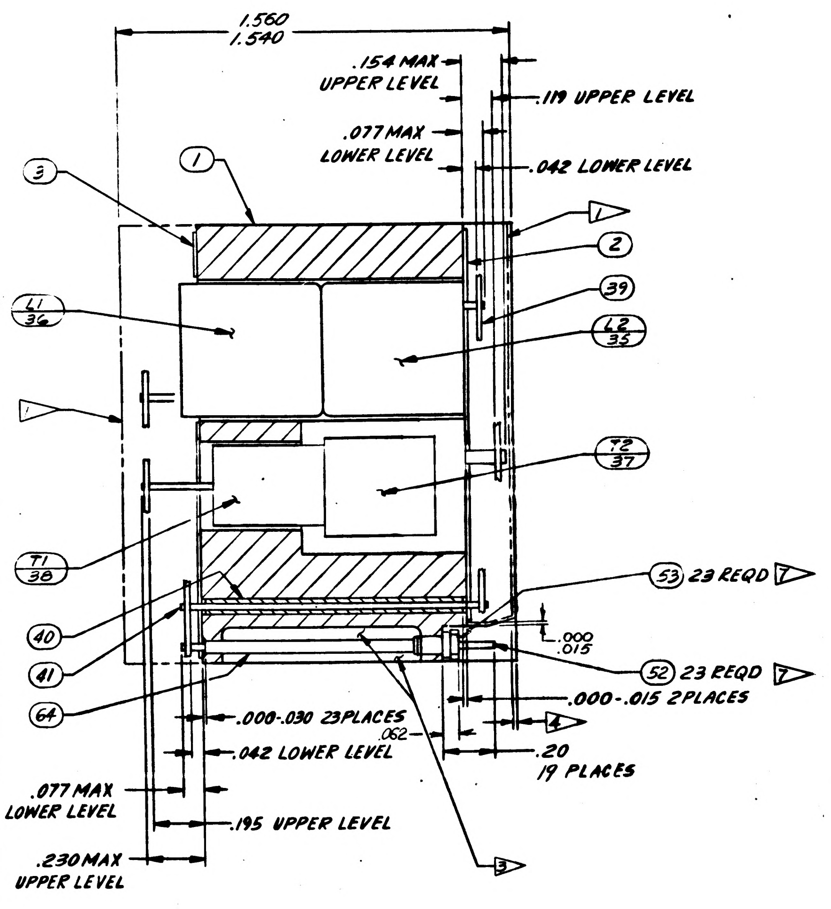
NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±	AC SPARK PLUG DIVISION, GMC MILWAUKEE, WISCONSIN ACSP PN DRAWN Buchke DATE 3/27/63 CHECKED 3 APR 63 A. KODEL APPROVAL J. M. BLYSHAK APPROVAL	MANNED SPACECRAFT CENTER HOUSTON, TEXAS GIMBAL SERVO AMPLIFIER MODULE ASSY
APPLICATION		DO NOT SCALE THIS DRAWING MATERIAL CONTRACT	NASA APPROVAL W J Rhine 5-22-63 MIT APPROVAL 22 May 63	CODE IDENT NO. SIZE E 1007040 SCALE 4:1 SHEET 2 OF 2

1007040 J

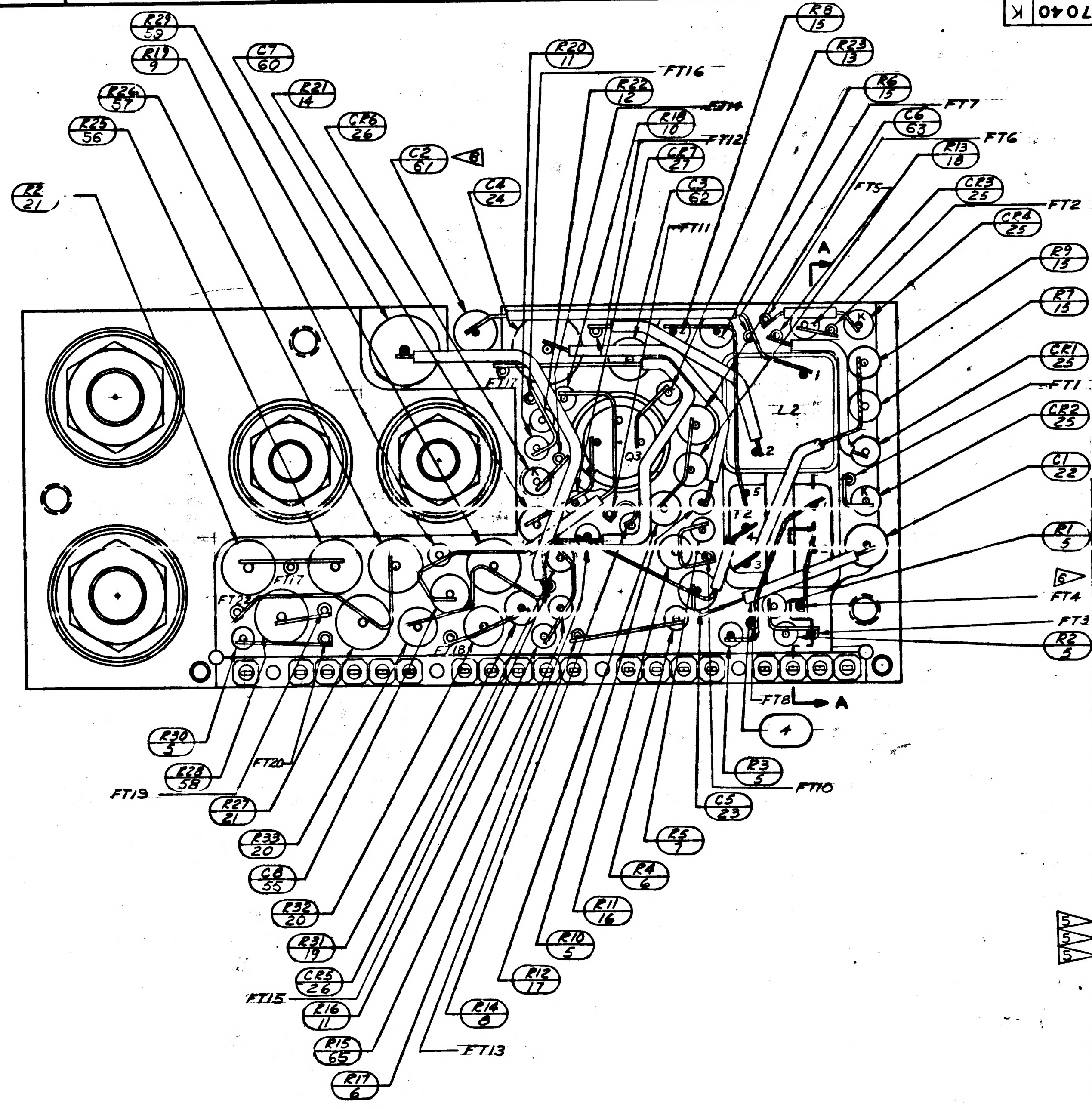
INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007040 K

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
D		REVISED PER TDRR 01310		5-27-63	DT
E		REVISED PER TDRR 01448		6-6-63	[illegible]
F		REVISED PER TDRR 01714		6-25-63	[illegible]
G		REVISED PER TDRR 01471		7-1-63	[illegible]
H		REVISED PER TDRR 02727		[illegible]	[illegible]
J		REVISED PER TDRR 03091		9-15-63	[illegible]
K		REVISED PER TDRR 04115		10-21-63	


1.560
1.540
.154 MAX UPPER LEVEL
.119 UPPER LEVEL
.077 MAX LOWER LEVEL
.042 LOWER LEVEL
1
2
3
39
L1 36
L2 35
T2 37
T1 38
40
41
64
53 23 REQD 7
52 23 REQD 7
.000 .015
.000-.030 23 PLACES
.062
.000-.015 2 PLACES
.042 LOWER LEVEL
.20 19 PLACES
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL
3

SECTION A-A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R19 9
R26 57
R25 56
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C7 60
R21 14
CR6 26
C2 61 6
C4 24
R20 11
R22 12
R18 10
CR7 27
C3 62
R8 15
R23 13
R6 15
C6 63
R13 18
CR3 25
CR4 25
R9 15
R7 15
CR1 25
CR2 25
C1 22
R1 5
R2 5
FT1
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FT7
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FT15
FT16
FT17
FT18
FT19
FT20
A
L2
4
R30 5
R28 58
R27 21
R33 20
C8 55
R32 20
R31 19
CR5 26
R16 11
R15 65
R17 6
R14 8
R12 17
R10 5
R11 16
R4 6
R5 7
C5 23
R3 5

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

1▷ ENCAPSULATE MODULE PER ND1002002(BLACK POLYURETHANE FOAM).
2▷ MARK CHARACTERS .080±.020 HIGH, WHITE PER ND 1002019
5▷ AR DENOTES AS REQUIRED.
7▷ ASSEMBLE PER ND 1002136

SOLDER PER ND 1002071

3▷ AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER ND 1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ±2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ±2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:
4▷ ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.
ON ITEMS ② & ③

$FT_{(\ )}$ INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR
B " BASE " " "
E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR
B_2 " BASE " " " " "
E_2 " EMITTER " " " " "

6▷ AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6▷

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF		1010024	SCHEMATIC
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-009	CAPACITOR
62	1	1010264-12	CAPACITOR
6▷ 61	1	1010264	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	19	1006775	INSULATOR
52	19	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	1	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5▷ 41	AR	1006757-8	WIRE, ELECTRICAL
5▷ 40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5▷ 39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010396-001	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-1	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-76	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS XXX±.005 XX±.02 ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN Gechke DATE 3/27/63
CHECKED E L Hunt 3 APR 63
APPROVAL A. KODEL J.M. BLYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

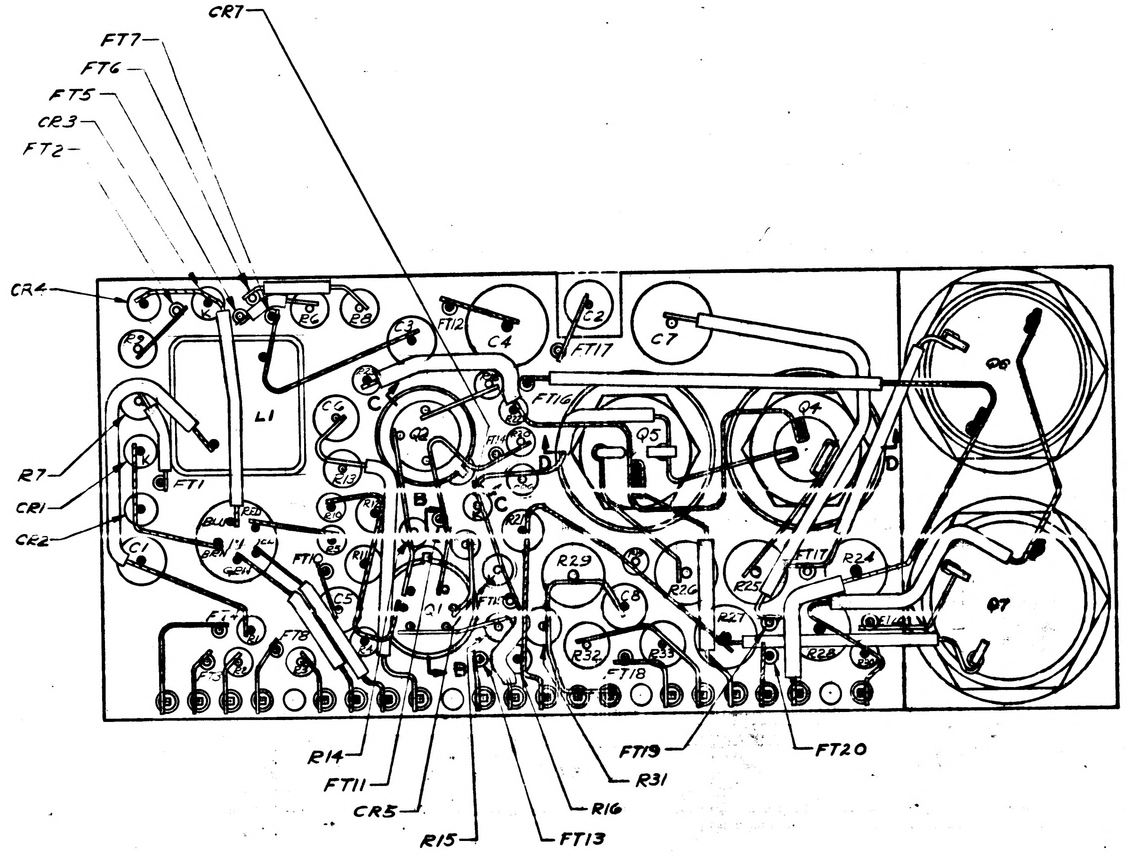
CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

K 1007040

INCHES
PHOTOGRAPHIC SCALE ONLY

1007040 K

REVISIONS					
SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
D		REVISED PER TDRR 01310		[illegible]	[illegible]
F		REVISED PER TDRR 01714		6-25-63	[illegible]
G		REVISED PER TDRR 01871		7-1-63	[illegible]
H		REVISED PER TDRR 02727		[illegible]	[illegible]
J		REVISED PER TDRR 03091		[illegible]	[illegible]
K		REVISED PER TDRR 04115		10-24-63	[illegible]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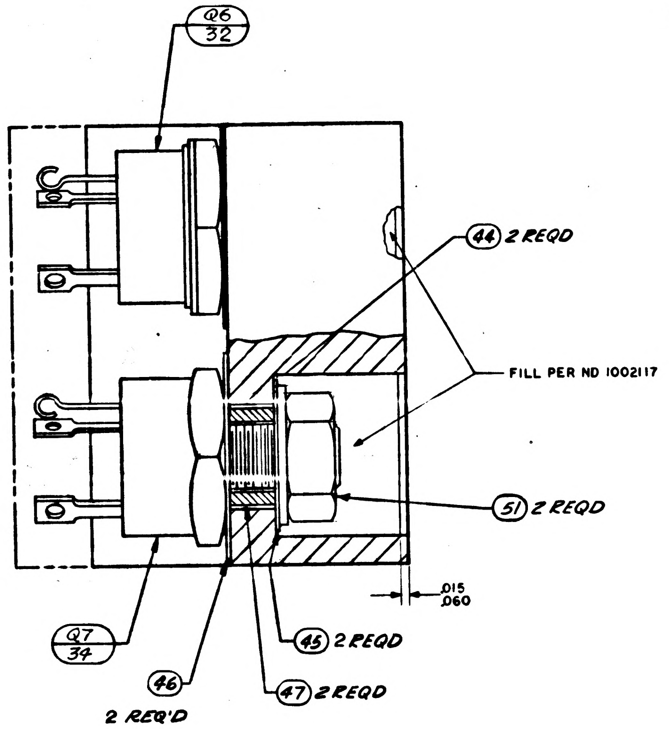
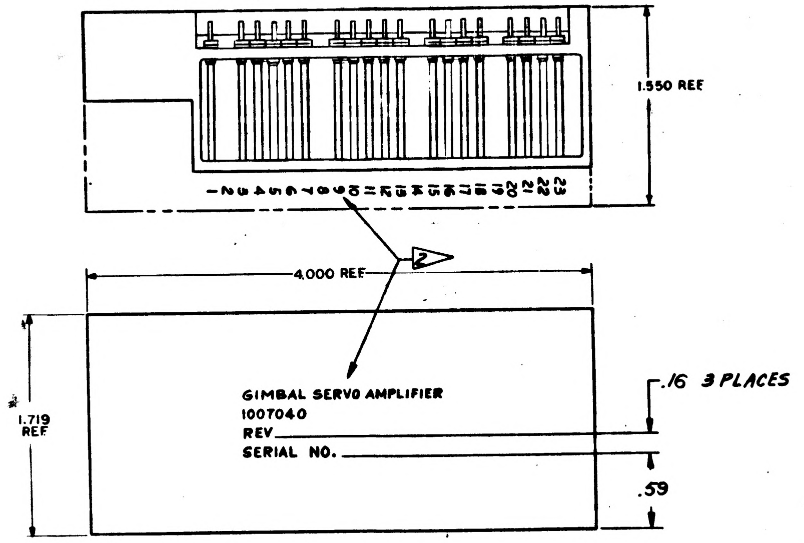
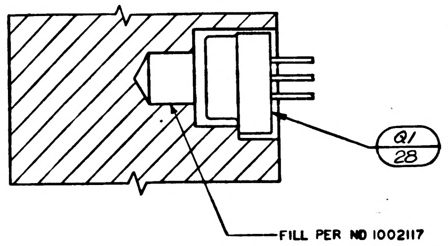
FT5
CR3
FT2
CR4
R7
CR1
CR2
L1
C1
C2
C4
C6
C7
C8
Q2
Q4
Q5
Q6
Q7
Q8
FT1
FT12
FT16
FT17
R24
R25
R26
R27
R28
R29
R32
FT18
R14
FT11
CR5
R15
FT13
R16
R31
FT19
FT20
B
C
D


Q6
32
44 2 REQD
FILL PER ND 1002117
51 2 REQD
.015
.060
Q7
34
45 2 REQD
46
2 REQ'D
47 2 REQD


1.550 REF
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
2
4.000 REF
1.719 REF
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.
.16 3 PLACES
.59

MARKING VIEW
SCALE - 2:1


Q1
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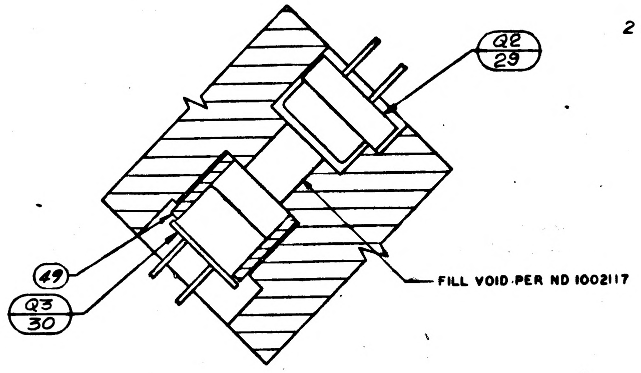
FILL PER ND 1002117

PARTIAL SECTION B-B


Q2
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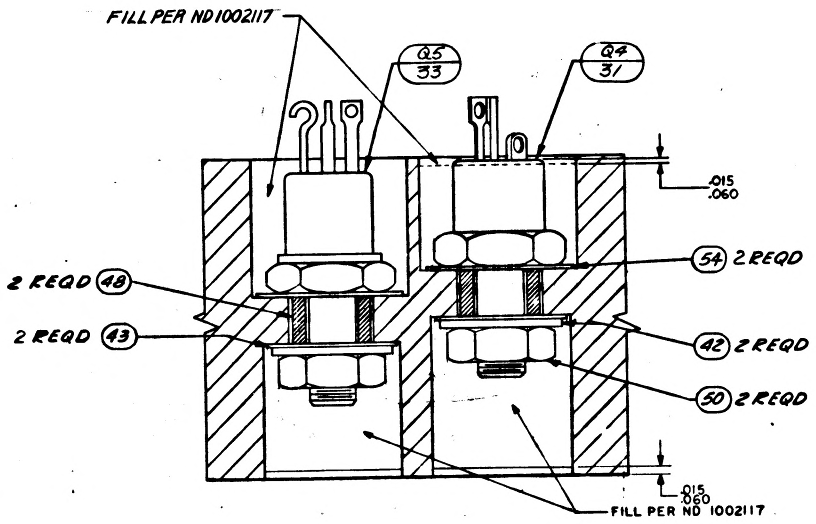
49
Q3
30
FILL VOID PER ND 1002117

PARTIAL SECTION C-C


FILL PER ND 1002117
Q5
33
Q4
31
.015
.060
54 2 REQD
2 REQD 48
2 REQD 43
42 2 REQD
50 2 REQD
.015
.060
FILL PER ND 1002117

PARTIAL SECTION D-D

REV D REPLACES REV C

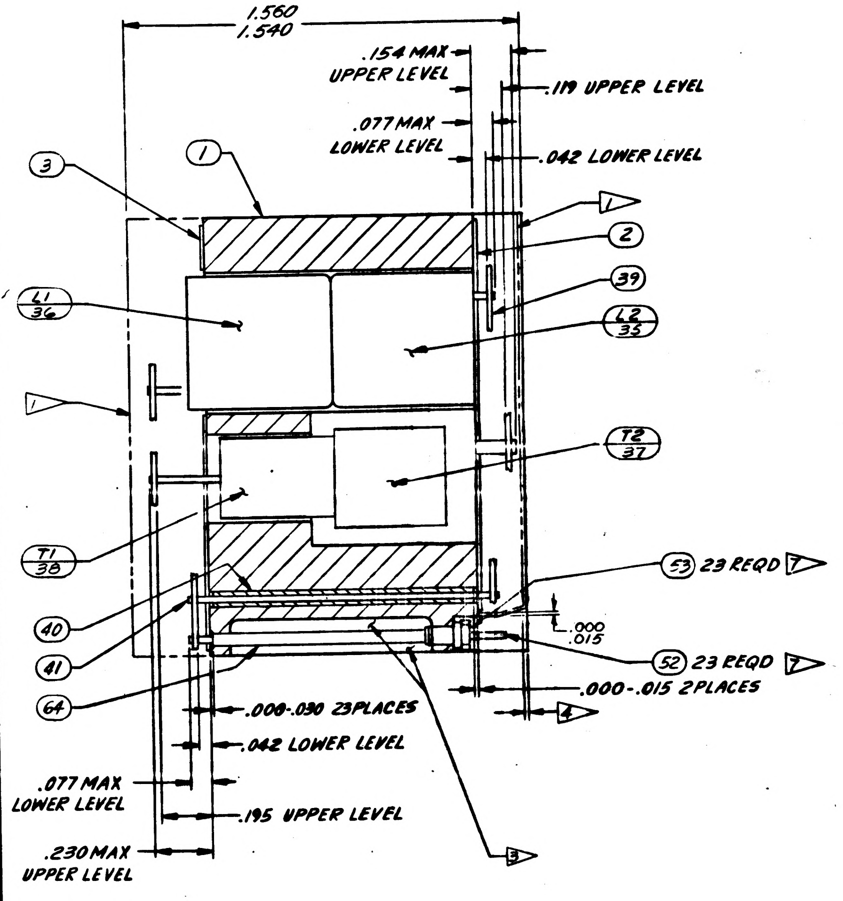
NEXT ASSY / USED ON APPLICATION	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± DECIMALS ± ANGLES ± DO NOT SCALE THIS DRAWING	AC SPARK PLUG DIVISION, GMC MILWAUKEE, WISCONSIN ACSP PN	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
	MATERIAL	DRAWN [illegible] DATE 3/27/63 CHECKED [illegible] 3 APR 63 A. KODEL APPROVAL J. M. BLYSHAK APPROVAL [illegible]	GIMBAL SERVO AMPLIFIER MODULE ASSY
	CONTRACT	NASA APPROVAL W J Rhine 5-22-63 MIT APPROVAL [illegible] 22 May 63	CODE IDENT NO. / SIZE E / 1007040 SCALE 4:1 / SHEET 2 OF 2

1007040 K

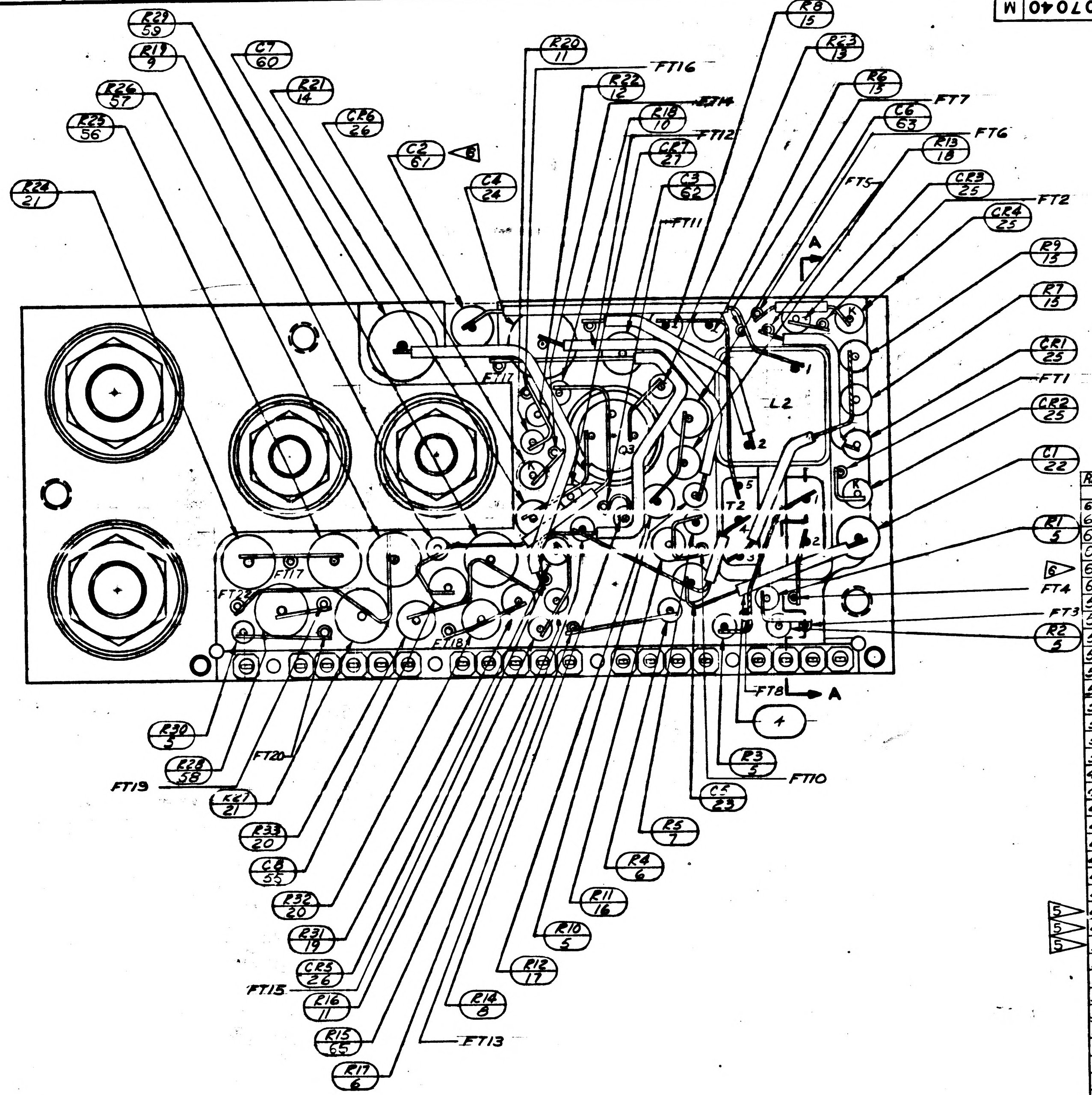
INCHES
PHOTOGRAPHIC SCALE ONLY

1007040 M

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
D		REVISED PER TDRR 01310		5 27 63	
E		REVISED PER TDRR 01448		6-6-63	
F		REVISED PER TDRR 01714		6 25 63	
G		REVISED PER TDRR 01871		7-1-63	
H		REVISED PER TDRR 02-27			
J		REVISED PER TDRR 03091		7 63	
K		REVISED PER TDRR C4115		10-24-63	
L		REVISED PER TDRR 05327		12-9-63	
M		REVISED PER TDRR 05408		DEC 63	


1.560
1.540
.154 MAX UPPER LEVEL
.119 UPPER LEVEL
.077 MAX LOWER LEVEL
.042 LOWER LEVEL
3
1
2
39
L1 36
L2 35
T2 37
T1 38
53 23 REQD 7
.000 .015
52 23 REQD 7
40
41
64
.000-.015 2 PLACES
.000-.030 23 PLACES
4
.042 LOWER LEVEL
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL
3

SECTION A-A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R19 9
C7 60
R21 14
CR6 26
R26 57
R25 56
C2 61
R24 21
C8 24
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R18 10
CR7 27
C3 62
R8 15
R23 13
R6 13
C6 63
R13 18
CR3 25
CR4 25
R9 13
R7 13
CR1 25
CR2 25
C1 22
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R2 5
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FT17
FT18
FT19
FT20
L2
T2
A
A
4
R30 5
R28 58
C5 21
R33 20
C8 55
R32 20
R31 19
CR5 26
R16 11
R15 65
R17 6
R14 8
R12 17
R10 5
R11 16
R4 6
R5 7
C5 23
R3 5

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

▷1 ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH & LENGTH DIMENSIONS BY A MAXIMUM OF .005 WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAX DIMENSION BETWEEN ANY HEATSINK SURFACE & ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015 REMOVE ALL FLASHING

▷2 MARK PIN NUMBERS .08 HIGH (WHITE) & SERIALIZE & MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023 CENTRALIZE AS SHOWN ABBREVIATIONS PERMISSIBLE

▷5 AR DENOTES AS REQUIRED

▷7 ASSEMBLE PER ND1002136 SOLDER PER ND1002

▷3 AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER ND1002009

MOUNTING TORQUE FOR ITEM ㊿ 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

▷4 ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.

ON ITEMS ② & ③

FT( ) INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR

B " BASE " " "

E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR

B_2 " BASE " " " " "

E_2 " EMITTER " " " " "

▷6 AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

▷6 C2

PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

REV D REPLACES REV C

	ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
	REF	☒	1010024	SCHEMATIC
	65	1	1006750-75	RESISTOR
	64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
	63	1	1010279-009	CAPACITOR
	62	1	1010269-12	CAPACITOR
▷6	61	1	1010264-▷6	CAPACITOR
	60	1	1010320-6	CAPACITOR
	59	1	1010389-94	RESISTOR, FIXED
	58	1	1010333-16	RESISTOR, FIXED
	57	1	1010389-47	RESISTOR, FIXED
	56	1	1010399-31	RESISTOR, FIXED
	55	1	1010279-228	CAPACITOR
	54	2	1008024-2	WASHER, INSULATOR
	53	19	1006775	INSULATOR
	52	19	1006782-5	CONTACT
	51	2	MS20341-416B	NUT
	50	2	MS20341-10B	NUT
	49	1	1008025-2	BUSHING, INSULATOR
	48	2	1008021-1	BUSHING, INSULATOR
	47	2	1008021-2	BUSHING, INSULATOR
	46	2	1008024-3	WASHER, INSULATOR
	45	2	1008024-4	WASHER, INSULATOR
	44	2	1008071-5	WASHER, FLAT
	43	2	1008024-1	WASHER, INSULATOR
	42	2	1008071-2	WASHER, FLAT
▷5	41	AR	1006757-8	WIRE, ELECTRICAL
▷5	40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
▷5	39	AR	1006757-1	WIRE, ELECTRICAL
	38	1	1010328	TRANSFORMER
	37	1	1010327	TRANSFORMER
	36	1	1010277-009	REACTOR
	35	1	1010277-008	REACTOR
	34	1	1010273-1	TRANSISTOR
	33	1	1010437	TRANSISTOR
	32	1	1010271	TRANSISTOR
	31	1	1010269-1	TRANSISTOR
	30	1	1010270	TRANSISTOR
	29	1	1010345-1	TRANSISTOR
	28	1	1010252-001	TRANSISTOR
	27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
	26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
	25	4	1010392-1	SEMICONDUCTOR DEVICE, DIODE
	24	1	1010320-11	CAPACITOR, FIXED
	23	1	1010279-220	CAPACITOR, FIXED
	22	1	1010264-9	CAPACITOR, FIXED
	21	2	1010278-39	RESISTOR, FIXED
	20	2	1010377-66	RESISTOR, FIXED
	19	1	1010364-43	RESISTOR, FIXED
	18	1	1010364-719	RESISTOR, FIXED
	17	1	1010364-465	RESISTOR, FIXED
	16	1	1010364-635	RESISTOR, FIXED
	15	4	1010364-443	RESISTOR, FIXED
	14	1	1006760-35	RESISTOR, FIXED
	13	1	1006750-40	RESISTOR, FIXED
	12	1	1006750-53	RESISTOR, FIXED
	11	2	1006750-51	RESISTOR, FIXED
	10	1	1006750-70	RESISTOR, FIXED
	9	1	1006750-76	RESISTOR, FIXED
	8	1	1006750-60	RESISTOR, FIXED
	7	1	1006750-48	RESISTOR, FIXED
	6	2	1006750-80	RESISTOR, FIXED
	5	5	1006750-73	RESISTOR, FIXED
	4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
	3	1	1015687	INSULATOR
	2	1	1015686	INSULATOR
	1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

1007040 M

NEXT ASSY	USED ON
1007151	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ± .005 XX ± .02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN DATE
CHECKED 3 MR 63
APPROVAL A. KODEL M BLYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

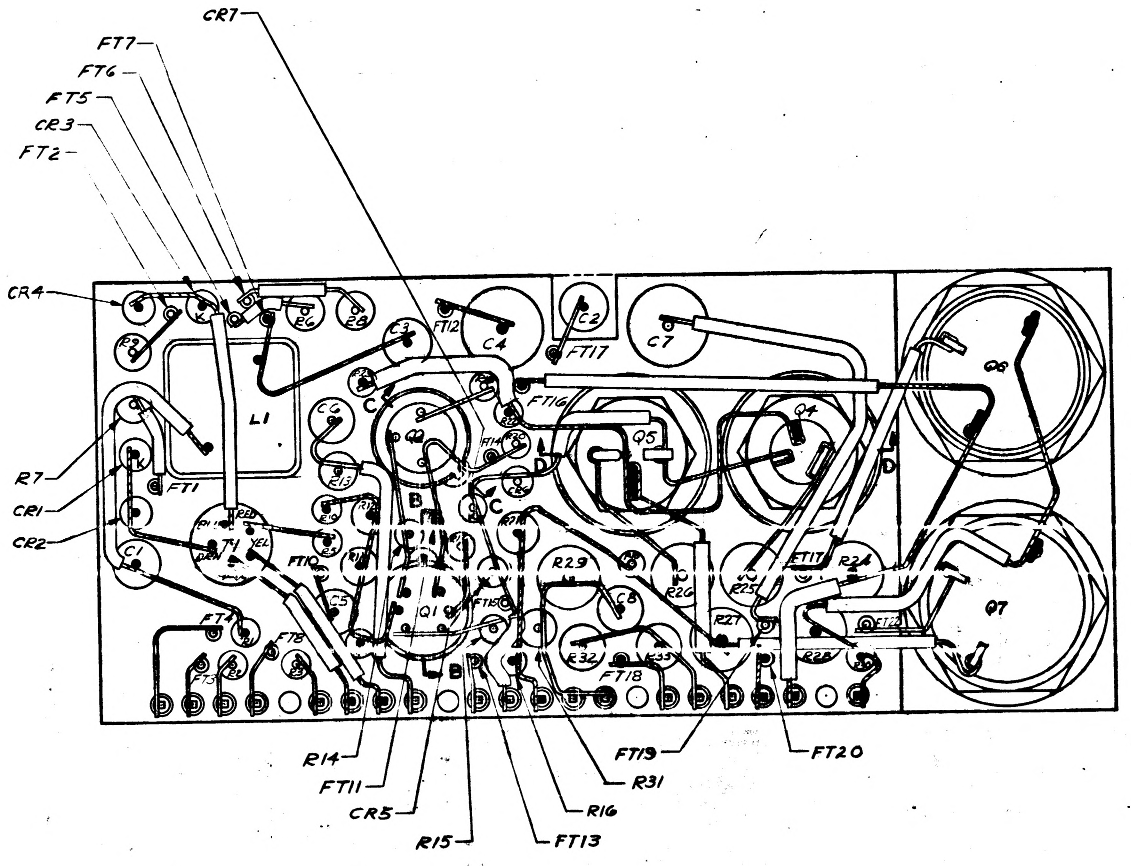
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

1007040 M

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
D		REVISED PER TDRR 01310		3-27-63	
F		REVISED PER TDRR 01714		6-25-63	EPL WK
G		REVISED PER TDRR 01871		7-1-63	WK
H		REVISED PER TDRR 02727		8-21-63	JJM
J		REVISED PER TDRR 03091		9-12-63	
K		REVISED PER TDRR 04115		10-24-63	EPL WK
L		REVISED PER TDRR 05327		12-9-63	
M		REVISED PER TDRR 05408		27 DEC 63	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FT7
FT6
FT5
CR3
FT2
CR4
R7
CR1
CR2
L1
FT1
C4
C2
C7
FT12
FT17
FT16
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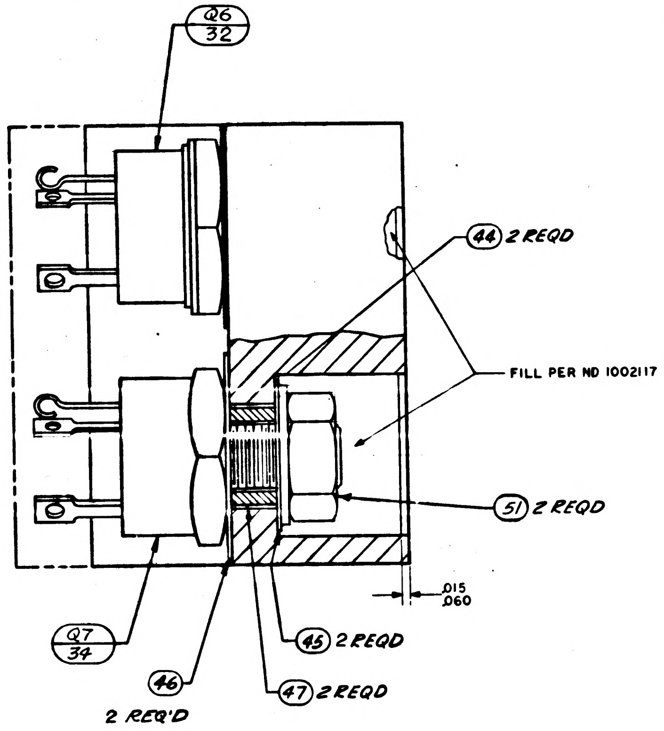
FT13
R16
R31
FT19
FT20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FILL PER ND 1002117
51 2 REQD
.015
.060
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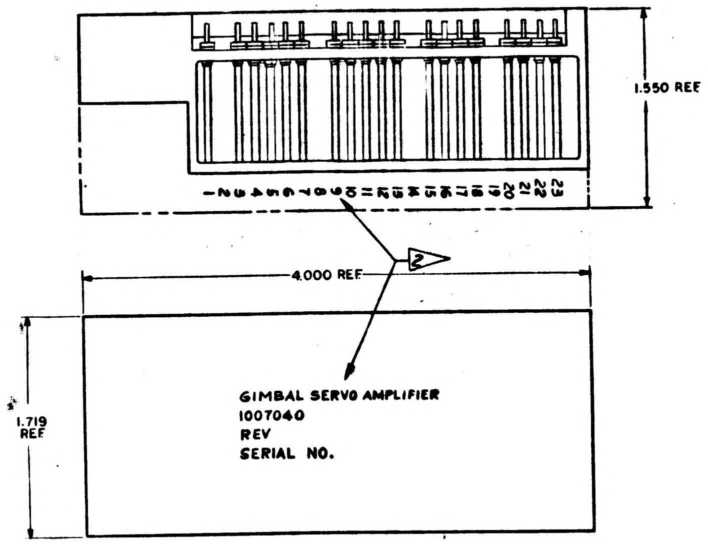
2 REQ'D
Q7
34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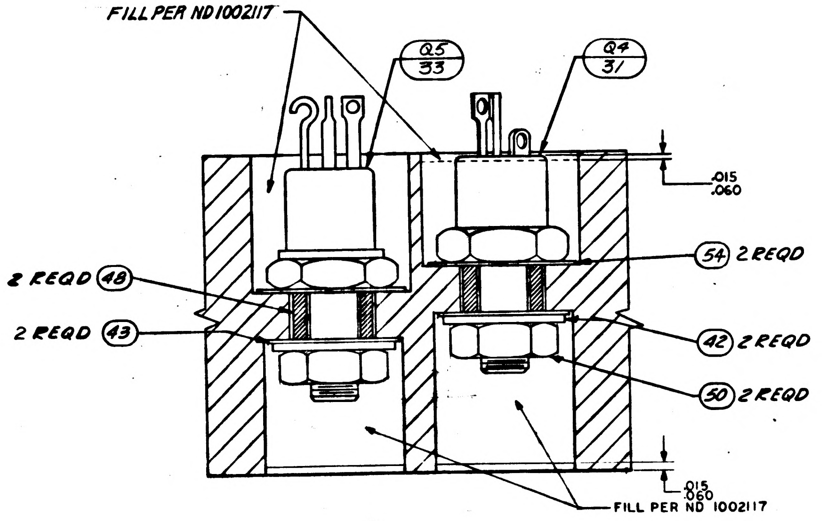
4.000 REF
1.719 REF
2
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.

MARKING VIEW
SCALE - 2:1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Q4
31
.015
.060
54 2 REQD
2 REQD 48
2 REQD 43
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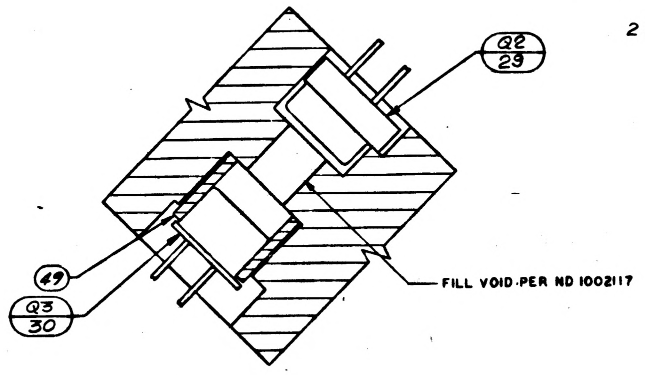
.015
.060
FILL PER ND 1002117

PARTIAL SECTION D-D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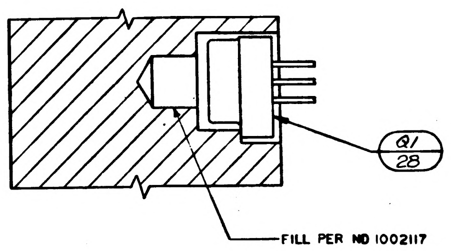
Q3
30
FILL VOID-PER ND 1002117


Q1
28
FILL PER ND 1002117

PARTIAL SECTION B-B

PARTIAL SECTION C-C

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS + − ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN Gachke DATE 3/27/63
CHECKED 3 APR 63
A. KODEL
APPROVAL J. M. BLYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

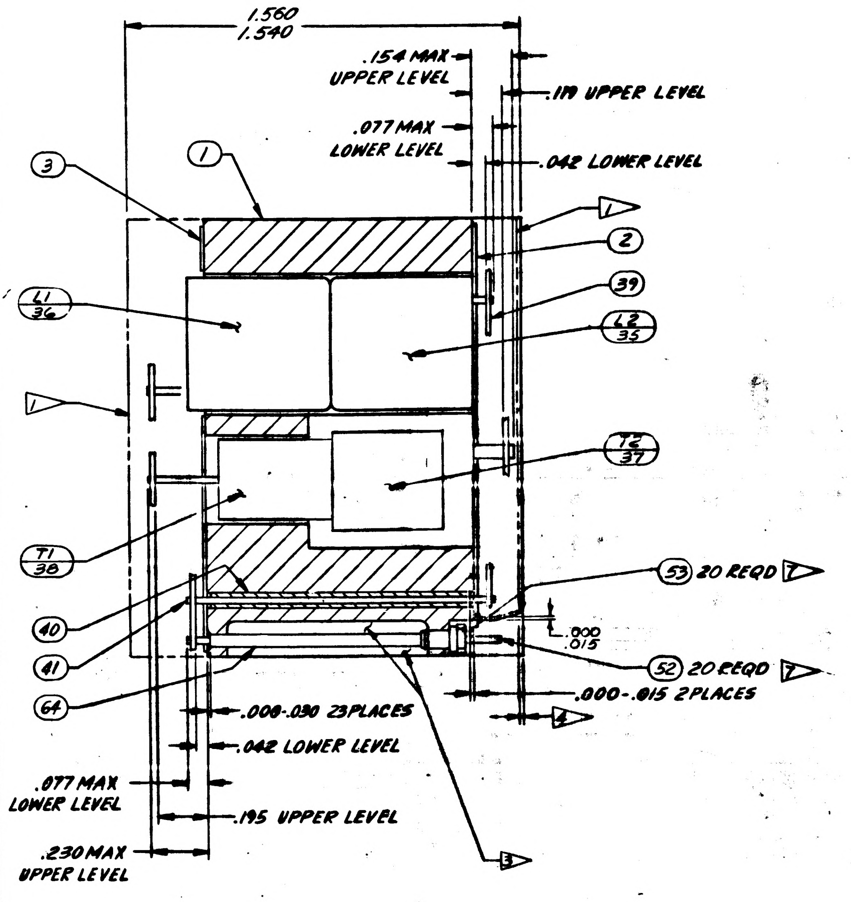
CODE IDENT NO. SIZE E 1007040
SCALE 4:1 SHEET 2 OF 2

INCHES
PHOTOGRAPHIC SCALE ONLY

N	1007040

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
D		REVISED PER TDRR 01310		5-27-63	RT
E		REVISED PER TDRR 01448		6-6-63	RB
F		REVISED PER TDRR 01714		6-25-63	RPK
G		REVISED PER TDRR 01871		7-4-63	
H		REVISED PER TDRR 02727			
J		REVISED PER TDRR 03091			RPK
K		REVISED PER TDRR 04115			
L		REVISED PER TDRR 05327		12-9-63	
M		REVISED PER TDRR 05408			
N		REVISED PER TDRR 06271		64	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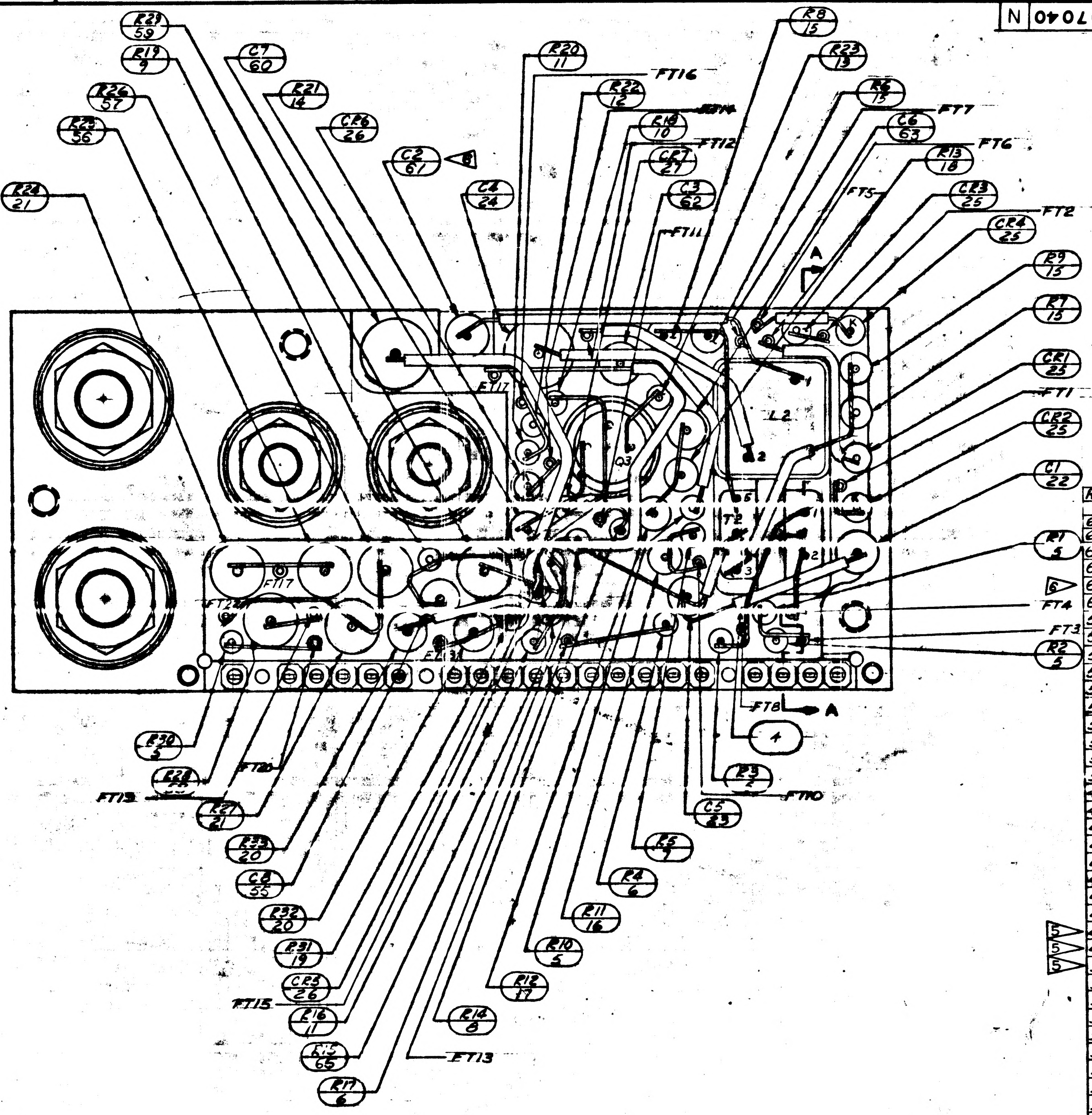
1.540
.154 MAX UPPER LEVEL
.077 MAX LOWER LEVEL
.119 UPPER LEVEL
.042 LOWER LEVEL
3
1
2
39
L1 36
L2 35
T2 37
T1 38
40
41
64
53 20 REQD
52 20 REQD
.000 .015
.008-.030 23PLACES
.000-.015 2PLACES
.042 LOWER LEVEL
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL

SECTION A-A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R19 9
R26 57
R25 56
R24 21
C7 60
R21 14
CR6 26
C2 61
C4 24
R20 11
R22 12
R18 10
CR7 27
C3 62
R8 15
R6 13
C6 63
R13 18
CR3 25
CR4 25
R7 15
CR1 25
CR2 25
C1 22
R1 5
R2 5
C8 55
R32 20
R31 19
CR5 26
R16 11
R17 6
R14 8
R12 17
R10 5
R11 16
R4 6
C5 23
L2
T2
A
FT1
FT2
FT3
FT4
FT5
FT6
FT7
FT8
FT10
FT11
FT12
FT13
FT15
FT16
FT17

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

1▷ ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH & LENGTH DIMENSIONS BY A MAXIMUM OF .005 WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAX DIMENSION BETWEEN ANY HEATSINK SURFACE & ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015 REMOVE ALL FLASHING

2▷ MARK PIN NUMBERS .08 HIGH (WHITE) & SERIALIZE & MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023 CENTRALIZE AS SHOWN ABBREVIATIONS PERMISSIBLE

5▷ AR DENOTES AS REQUIRED

7▷ ASSEMBLE PER ND1002136 SOLDER PER ND1002

3▷ AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER ND1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

4▷ ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.

ON ITEMS ② & ③

$FT_{( )}$ INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR

B " BASE " " "

E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR

B_2 " BASE " " " " "

E_2 " EMITTER " " " " "

6▷ AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6▷

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF	✕	1010024	SCHEMATIC
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVIIIG, ELECTPICAL
63	1	1010279-009	CAPACITOR
62	1	1010264-12	CAPACITOR
61	1	1010264-6▷	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-54	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	20	1006775	INSULATOR
52	20	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	1	[illegible]	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5▷ 41	AR	1006757-8	WIRE, ELECTRICAL
5▷ 40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5▷ 39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010345-1	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-1	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-76	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

REV D REPLACES REV C

NEXT ASSY	USED ON
1007151	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± XXX ±.005 ±
XX ±.02
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN
CHECKED 3 APR 63
APPROVAL A. KODEL J.M BLYSHAK
APPROVAL
NASA APPROVAL 5-23-63
MIT APPROVAL 22 May 63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER MODULE ASSY

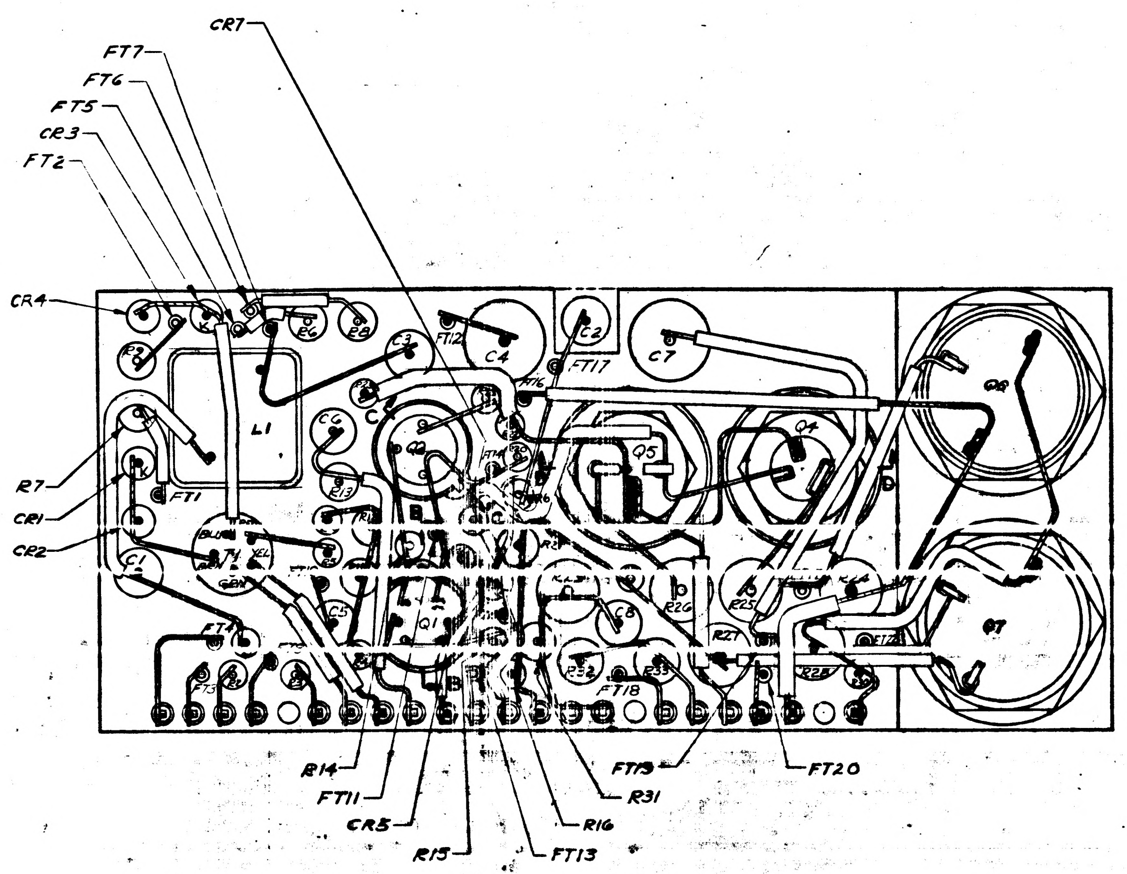
CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

1007040

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

1007040 N

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
D		REVISED PER TDRR 01310		5-27-63	O.T.
F		REVISED PER TDRR 01714		6-25-63	RAL WK
G		REVISED PER TDRR 01871		7-1-63	J.J.M. WK
H		REVISED PER TDRR 02727		8-21-63	JJM [illegible]
J		REVISED PER TDRR 03091		9-12-63	[illegible]
K		REVISED PER TDRR 04115		10-24-63	RPK WK
L		REVISED PER TDRR 05327		12-9-63	[illegible]
M		REVISED PER TDRR 05408		[illegible]	RPK [illegible]
N		REVISED PER TDRR 06271		[illegible]	[illegible]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FT2
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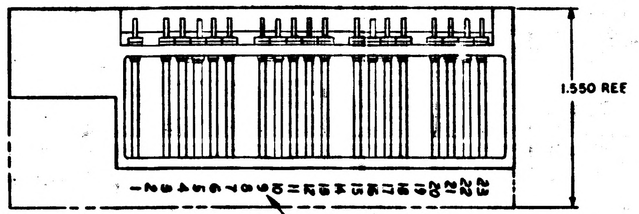
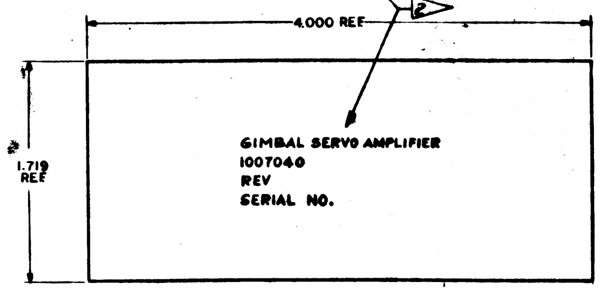
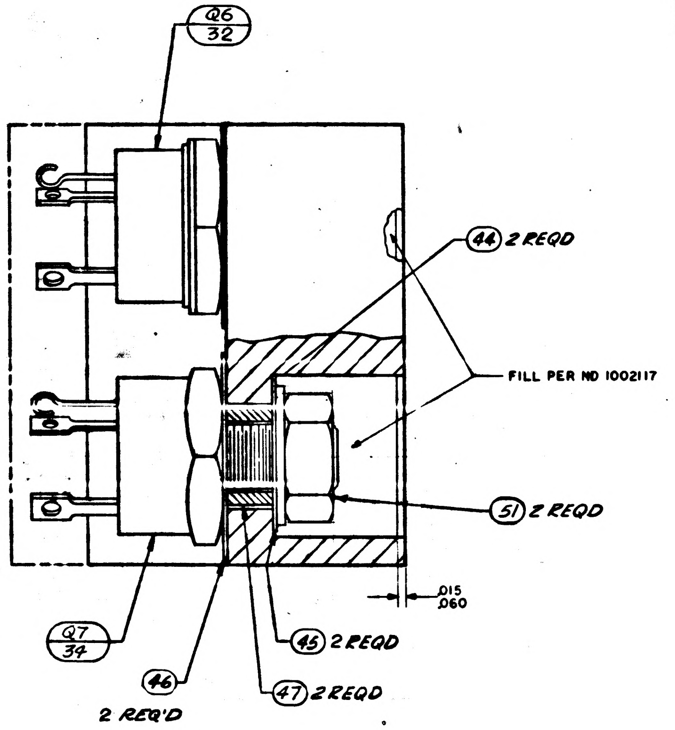



4.000 REF
2
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.
1.719 REF

MARKING VIEW
SCALE - 2:1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44 2 REQD
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51 2 REQD
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46 2 REQ'D
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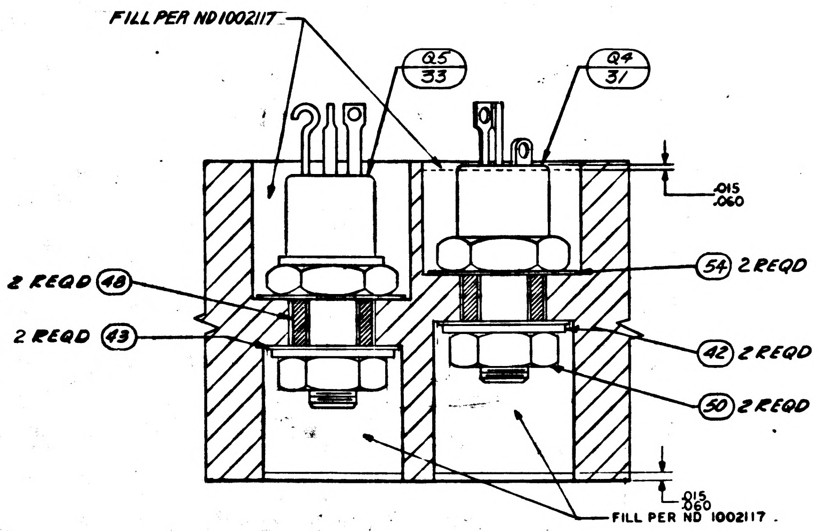
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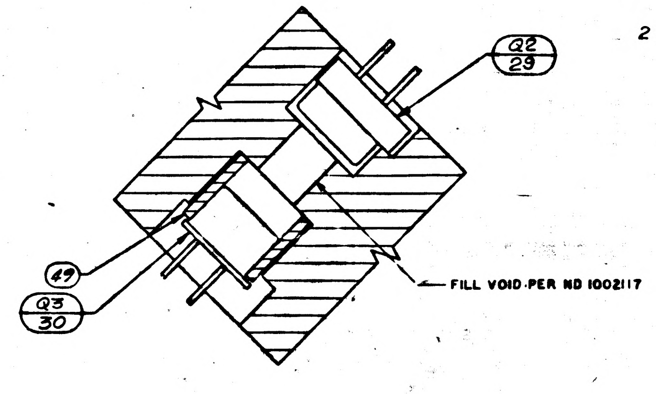
FILL PER ND 1002117

PARTIAL SECTION D-D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49
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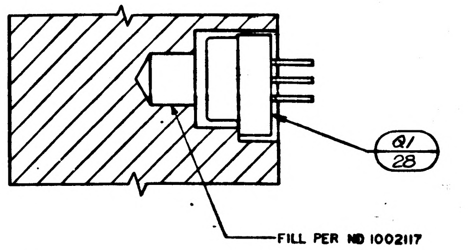
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FILL PER ND 1002117

PARTIAL SECTION B-B

PARTIAL SECTION C-C

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN [illegible] DATE [illegible]
CHECKED [illegible] 3 APR 63
A. KODEL
APPROVAL J. M. BLYSHAK
APPROVAL [illegible]
5-22-63
NASA APPROVAL W J Rhine
MIT APPROVAL [illegible] 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

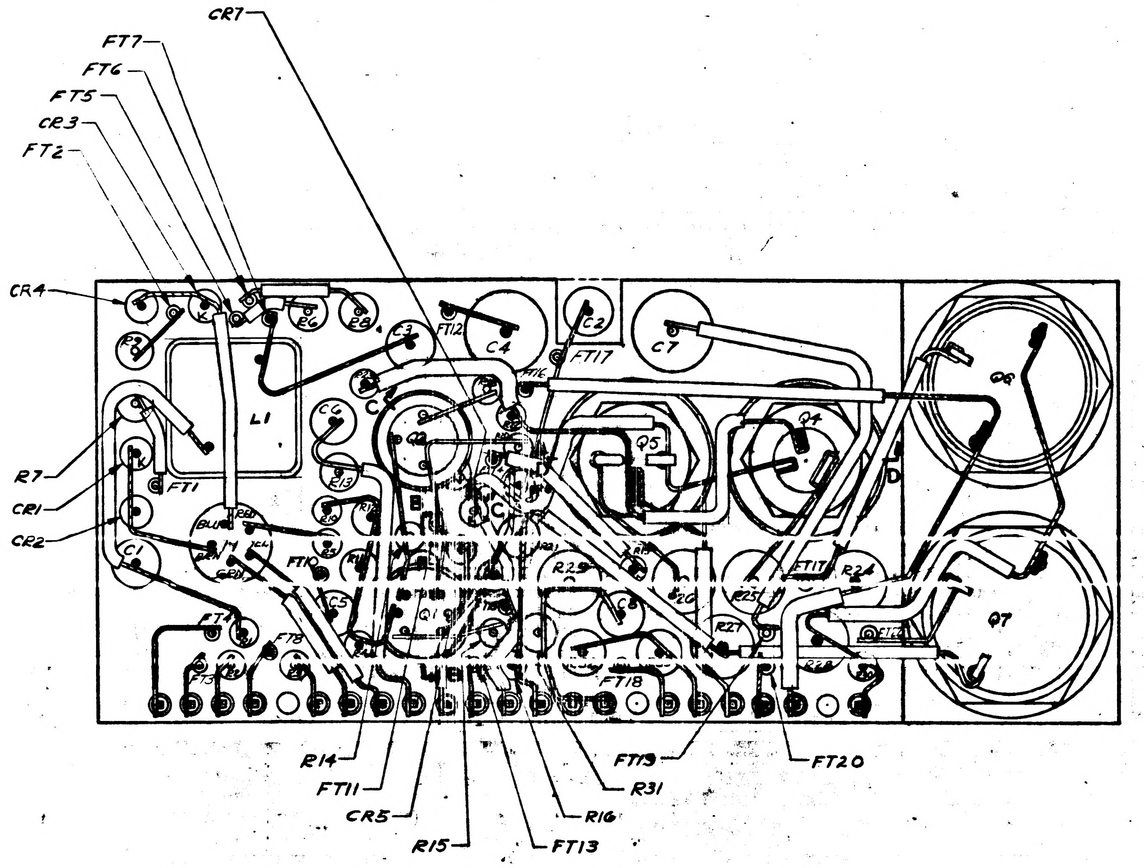
CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 2 OF 2

N 1007040 B

INCHES
PHOTOGRAPHIC SCALE ONLY

1007040 P

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
D		REVISED PER TDRR 01310		5-27-63	D.T.
F		REVISED PER TDRR 01714		6-25-63	EAL WK
G		REVISED PER TDRR 01871		7-1-63	[illegible]
H		REVISED PER TDRR 02727		8-21-63	JJM
J		REVISED PER TDRR 03091		9-9-63	[illegible]
K		REVISED PER TDRR 04115		10-24-63	RRK
L		REVISED PER TDRR 05327		12-9-63	[illegible]
M		REVISED PER TDRR 05408		[illegible]	RRK
N		REVISED PER TDRR 06271		[illegible]	[illegible]
P		REVISED PER TDRR 06893			[illegible]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C8
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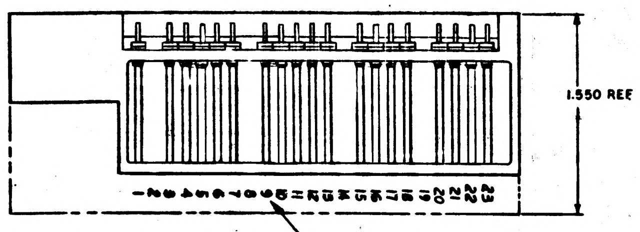
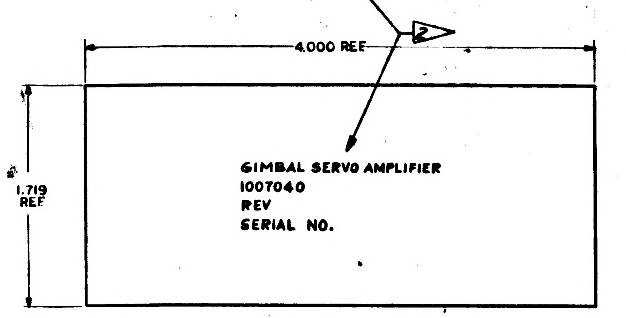
R8
R13
R22
R24
R25
R27
R28
R29
Q1
Q2
Q4
Q5
Q6
Q7
BLUE
RED
YEL
GRN
B
C
D
R14
FT11
CR5
R15
FT13
R16
R31
FT19
FT20

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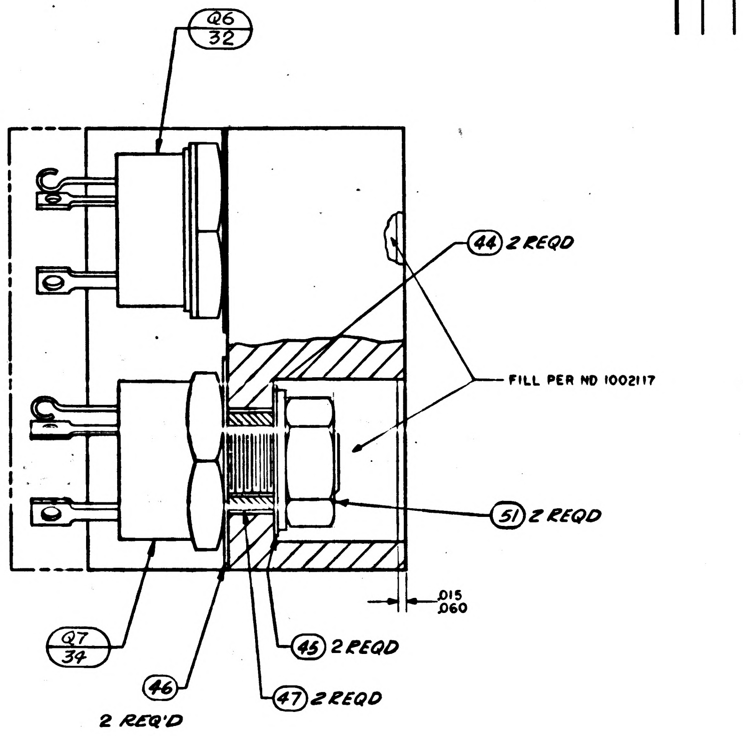
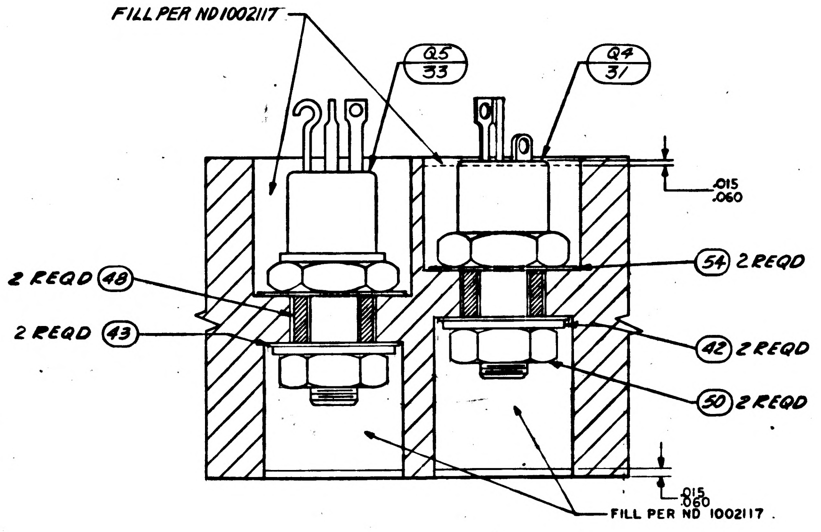
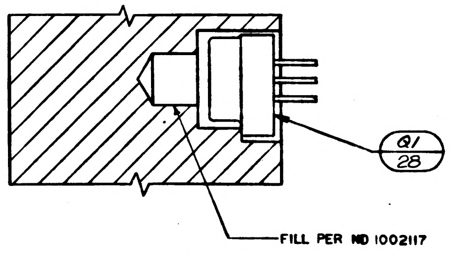
4.000 REF
1.719 REF
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.

MARKING VIEW
SCALE - 2:1


Q6
32
44 2 REQD
FILL PER ND 1002117
51 2 REQD
.015
.060
Q7
34
45 2 REQD
46
2 REQ'D
47 2 REQD


FILL PER ND1002117
Q5
33
Q4
31
.015
.060
54 2 REQD
2 REQD 48
2 REQD 43
42 2 REQD
50 2 REQD
.015
.060
FILL PER ND 1002117

PARTIAL SECTION D-D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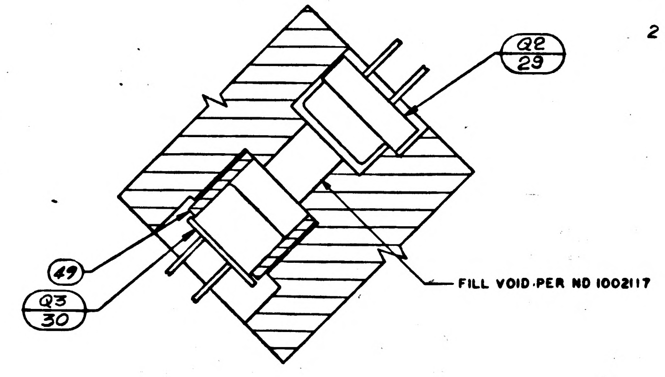
FILL PER ND 1002117

PARTIAL SECTION B-B


Q2
29
49
Q3
30
FILL VOID-PER ND 1002117

PARTIAL SECTION C-C

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN [illegible] DATE [illegible]
CHECKED [illegible] 8 APR 63
APPROVAL A. KODEL
APPROVAL J. M. BLYSHAK
APPROVAL [illegible]
NASA APPROVAL W J Rhine 5-22-63
MIT APPROVAL [illegible] 22 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

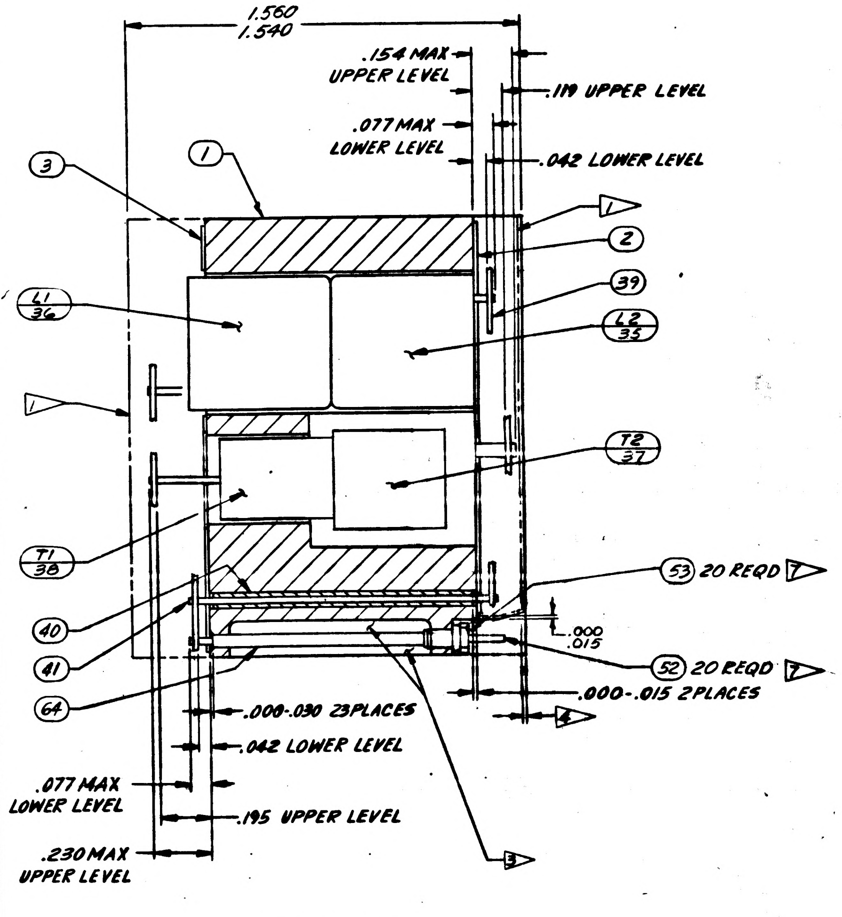
GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 2 OF 2

1007040	P	

REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD.
D		REVISED PER TDRR 01310		5-27-63	
E		REVISED PER TDRR 01448		6-6-63	
F		REVISED PER TDRR 01714		6-25-63	
G		REVISED PER TDRR 01671		7-4-63	
H		REVISED PER TDRR 02727			
J		REVISED PER TDRR 03091			
K		REVISED PER TDRR 04115			
L		REVISED PER TDRR 05327		12-9-63	
M		REVISED PER TDRR 05408			
N		REVISED PER TDRR 06271			
P		REVISED PER TDRR 06893			


1.560
1.540
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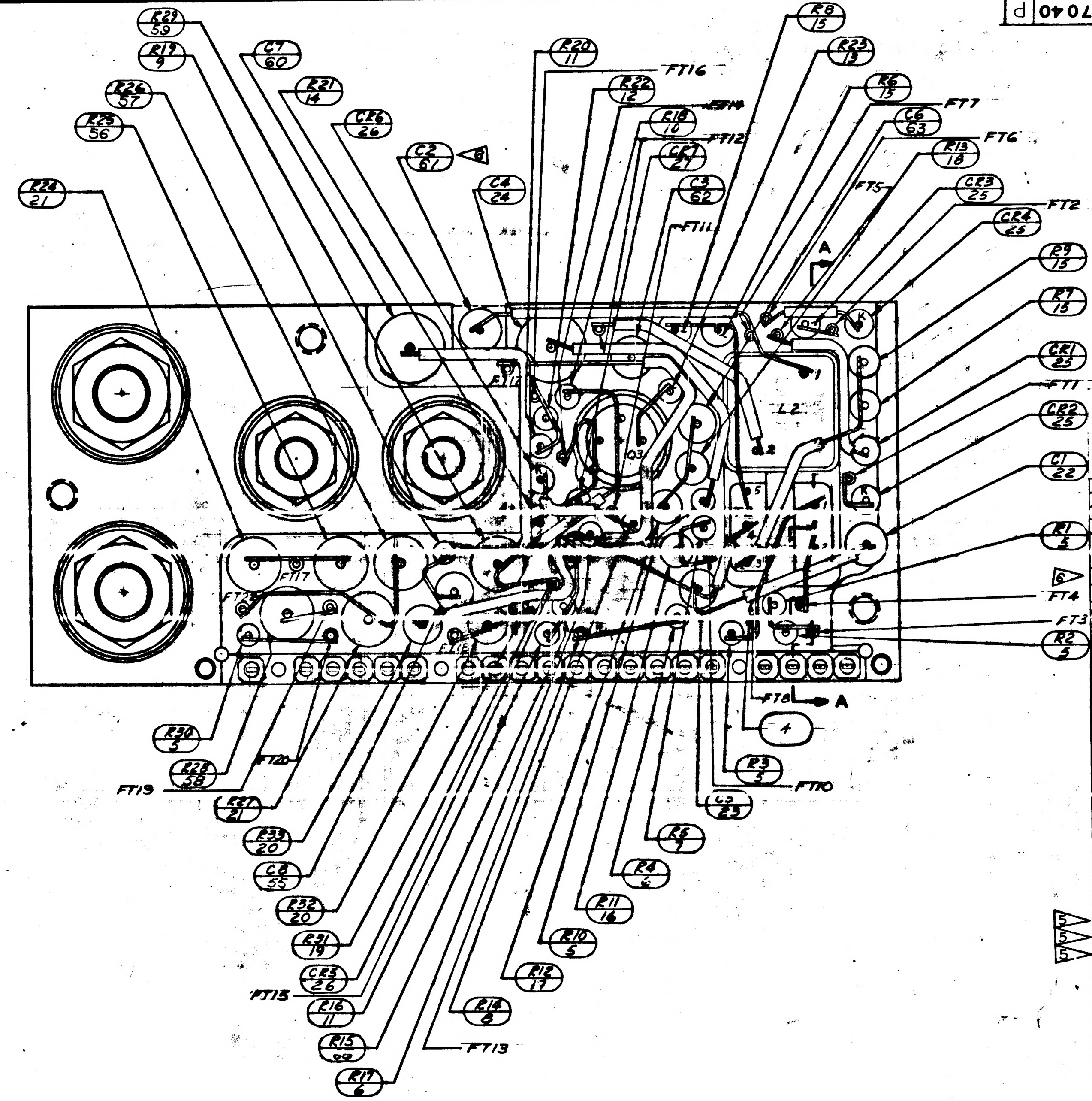
.119 UPPER LEVEL
.077 MAX LOWER LEVEL
.042 LOWER LEVEL
3
1
1
2
39
L1 36
L2 35
T2 37
T1 38
1
40
41
64
53 20 REQD 7
52 20 REQD 7
.000 .015
.000-.015 2PLACES
4
.000-.090 23PLACES
.042 LOWER LEVEL
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL
3

SECTION A-A


R29 59
R19 9
R26 57
R25 56
R24 21
C7 60
R21 14
C26 26
C2 61
6
C4 24
R20 11
FT16
R22 12
R18 10
FT14
FT12
CR7 27
C3 62
FT11
R8 15
R23 13
R6 15
FT7
C6 63
R13 18
FT6
FT5
CR3 25
CR4 25
FT2
R9 15
R7 15
A
CR1 25
FT1
CR2 25
C1 22
R1 5
FT4
FT3
R2 5
FT8
A
4
R3 7
FT10
L2
Q3
FT17
FT21
FT15
R30 5
R28 58
FT20
FT19
R27 21
C5 23
C8 55
R32 20
R31 19
CR5 26
FT13
R16 11
R15 28
R17 6
R14 8
FT13
R12 17
R10 5
R11 16
R4 6
R5 6
L1 23

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

1▷ ENCAPSULATE MODULE PER ND1002002 (BLACK POLYURETHANE FOAM) UNLESS OTHERWISE SPECIFIED PERIPHERAL ENCAPSULANT DIMENSIONS MAY EXCEED THE NOMINAL HEATSINK WIDTH & LENGTH DIMENSIONS BY A MAXIMUM OF .005 WHEN THE HEATSINK OUTLINE EXCEEDS THE ENCAPSULANT OUTLINE, THE MAX DIMENSION BETWEEN ANY HEATSINK SURFACE & ITS RESPECTIVE ENCAPSULANT SURFACE SHALL NOT EXCEED .015 REMOVE ALL FLASHING

2▷ MARK PIN NUMBERS .08 HIGH (WHITE) & SERIALIZE & MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023 CENTRALIZE AS SHOWN ABBREVIATIONS PERMISSIBLE

5▷ AR DENOTES AS REQUIRED

7▷ ASSEMBLE PER ND1002136 SOLDER PER ND1002

3▷ AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER ND 1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

4▷ ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY. ON ITEMS ② & ③

$FT_{( )}$ INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR

B " BASE " " "

E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR

B_2 " BASE " " " " "

E_2 " EMITTER " " " " "

6▷ AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6▷ C2

PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

REV D REPLACES REV C

LIST OF PARTS AND MATERIALS

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF	☒	1010024	SCHEMATIC
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-009	CAPACITOR
62	1	1010264-12	CAPACITOR
6▷ 61	1	1010264-6▷	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-15	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	20	1006775	INSULATOR
52	20	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	1	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5▷ 41	AR	1006757-8	WIRE, ELECTRICAL
5▷ 40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5▷ 39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010345-1	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-1	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-44	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

NEXT ASSY	USED ON
1007151	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS XXX ±.005 XX ±.02 ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN
CHECKED 3 1963
APPROVAL A. KODEL J. M. BLYSHAK
APPROVAL
NASA APPROVAL 5-22-63
MIT APPROVAL

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

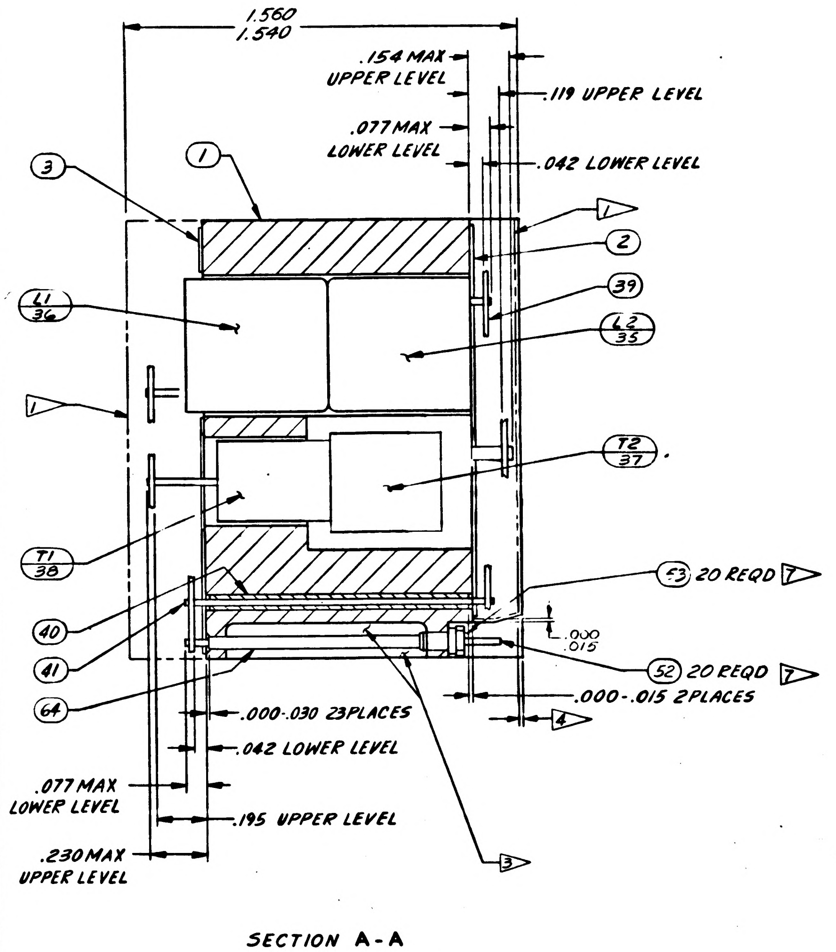
GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

1007040	P

1007040 R

SYM	ZONE	DESCRIPTION	CHG NO.	DATE	APPD
D		REVISED PER TDRR 01310		[illegible]	[illegible]
E		REVISED PER TDRR 01448		6-6-63	[illegible]
F		REVISED PER TDRR 01714		6-26-63	[illegible]
G		REVISED PER TDRR 01671		7-1-63	[illegible]
H		REVISED PER TDRR 02727		[illegible]	[illegible]
J		REVISED PER TDRR 03091		9-17-63	FPK
K		REVISED PER TDRR 04115		10-24-63	[illegible]
L		REVISED PER TDRR 05327		12-9-63	[illegible]
M		REVISED PER TDRR 05408		[illegible]	[illegible]
N		REVISED PER TDRR 06271		[illegible] 64	[illegible]
P		REVISED PER TDRR 06893			[illegible]
R		REVISED PER TDRR 07277		APR 64	J J J.E.G.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1.540
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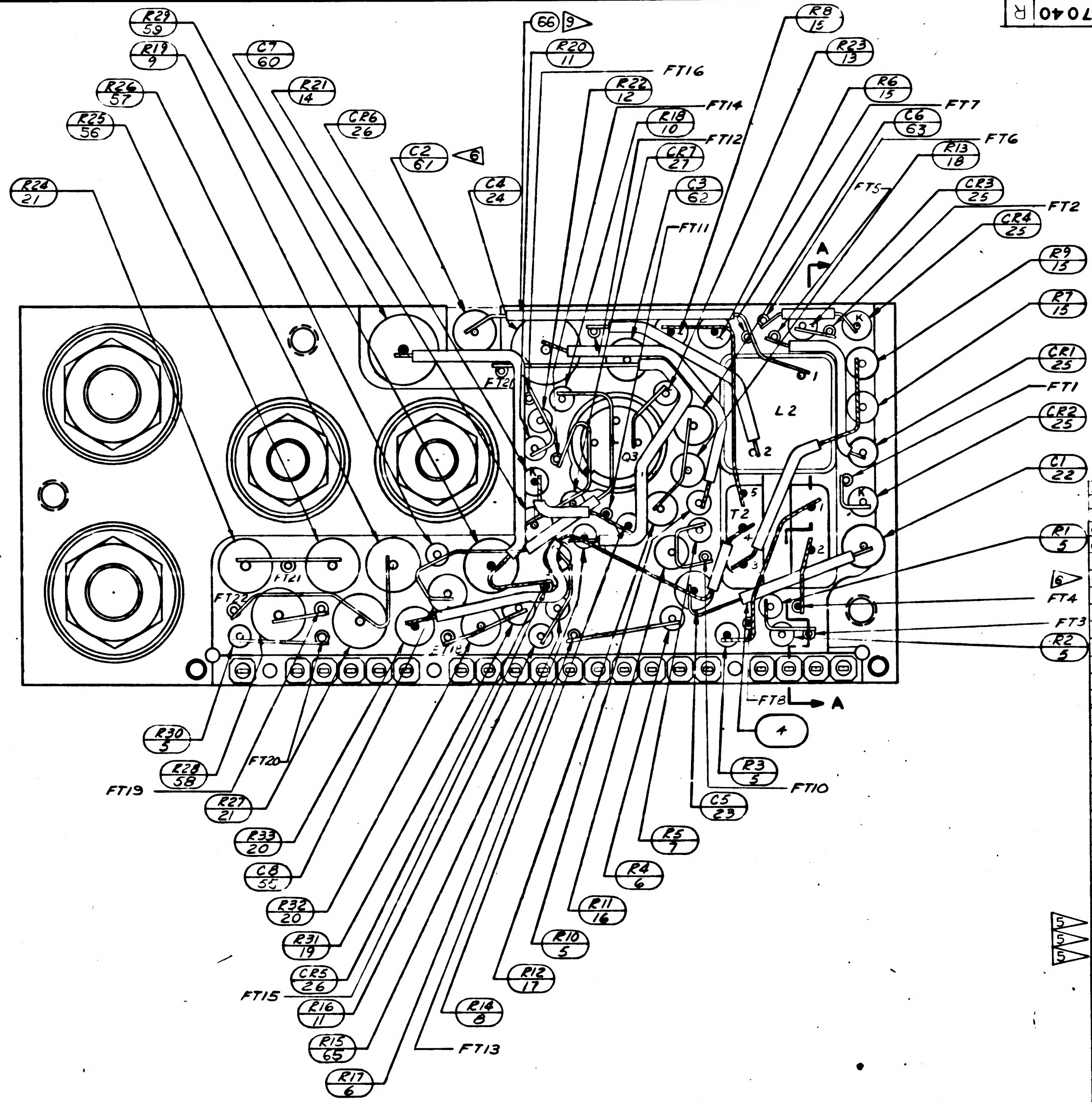
UPPER LEVEL
.119 UPPER LEVEL
.077 MAX
LOWER LEVEL
.042 LOWER LEVEL
3
1
1
2
39
L1 36
L2 35
1
T2 37
T1 38
40
41
64
53 20 REQD 7
.000
.015
52 20 REQD 7
.000-.030 23 PLACES
.000-.015 2 PLACES
4
.042 LOWER LEVEL
.077 MAX
LOWER LEVEL
.195 UPPER LEVEL
.230 MAX
UPPER LEVEL
3

SECTION A-A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R19 9
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66 9
R20 11
FT16
R8 15
R23 13
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R22 12
FT14
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CR6 26
R18 10
FT12
C6 63
FT7
C2 61 6
CR7 27
C3 62
R13 18
FT6
R24 21
C8 24
FT11
FT5
CR3 25
FT2
CR4 25
A
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R7 15
CR1 25
FT1
CR2 25
C1 22
L2
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R1 5
FT4
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R2 5
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R3 5
FT10
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R33 20
C8 55
R5 7
R4 6
R32 20
R11 16
R31 19
R10 5
CR5 26
FT15
R12 17
R16 11
R14 8
R15 65
FT13
R17 6

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

9 USE MIL-I-631, TYPE F, FORM U, GRADE C, CLASS I, CATEGORY I, IN 2 PLACES ONLY - SECURE IN PLACE PER ND 1002004.

2 MARK PIN NUMBERS .08 HIGH (WHITE) & SERIALIZE & MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023 CENTRALIZE AS SHOWN ABBREVIATIONS PERMISSIBLE

5 AR DENOTES AS REQUIRED

7 ASSEMBLE PER ND1002136 SOLDER PER ND1002

3 AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER ND 1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

1 ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.

ON ITEMS ② & ③

$FT_{( )}$ INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR

B " BASE " " "

E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR

B_2 " BASE " " " " "

E_2 " EMITTER " " " " "

6 AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-

6

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

R	R
SHEET 1	SHEET 2

REVISION STATUS OF SHEETS

REV D REPLACES REV C

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF		1010024	SCHEMATIC
66	AR	MIL-I-631	INSULATION SLEEVING #22
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-009	CAPACITOR
62	1	1010264-12	CAPACITOR
61 6	1	1010264-6	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	20	1006775	INSULATOR
52	20	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	1	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5 41	AR	1006757-8	WIRE, ELECTRICAL
5 40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5 39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010345-1	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-1	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-44	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

R 1007040

NEXT ASSY	USED ON
1007151	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ XXX ± .005 +
− XX ± .02 −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN [illegible] DATE 3/27/63
CHECKED [illegible] 3 APR 63
APPROVAL A KODEL / J M BLYSHAK
APPROVAL [illegible]
NASA APPROVAL [illegible] 5-22-63
MIT APPROVAL [illegible] 22 May 63

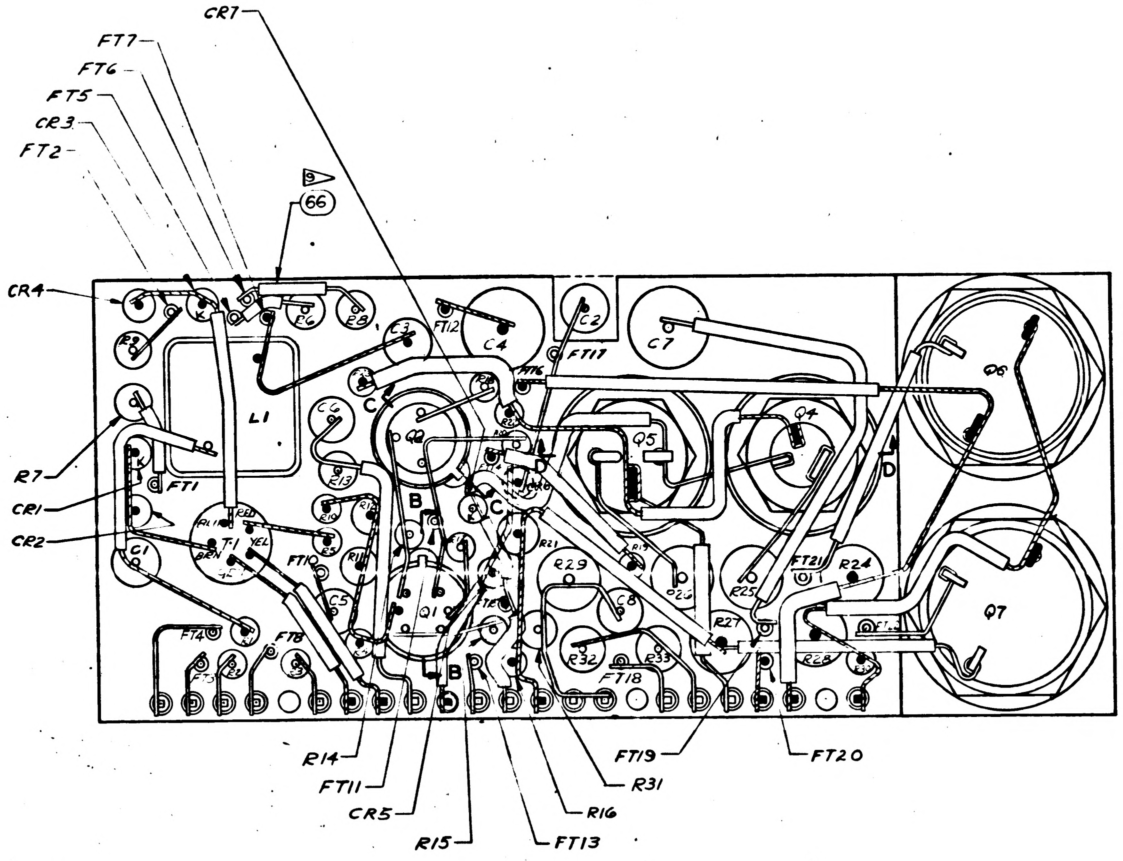
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER MODULE ASSY

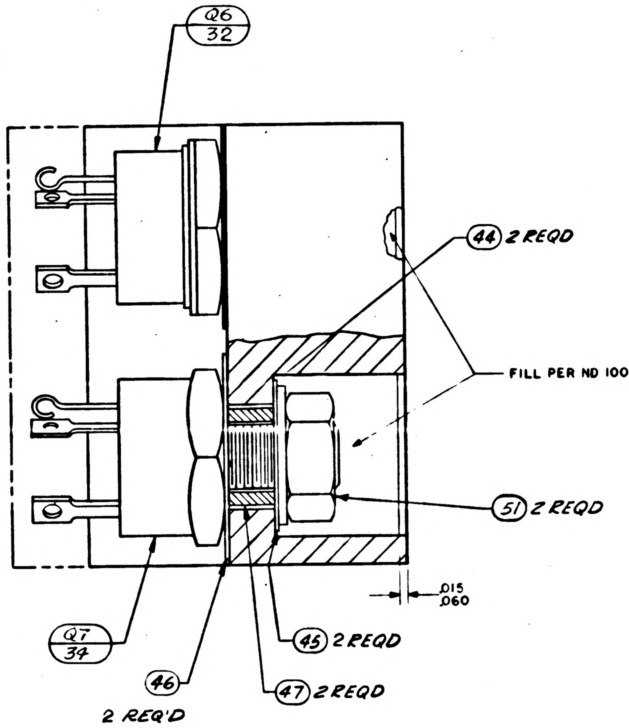
CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

1007040 R

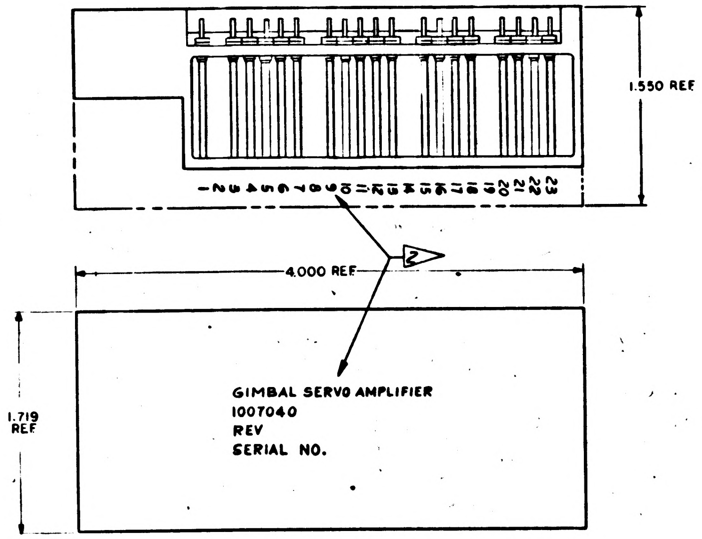
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
D		REVISED PER TDRR [illegible]		[illegible]	[illegible]
F		REVISED PER TDRR [illegible]		[illegible]	[illegible]
G		REVISED PER TDRR [illegible]		7-1-63	[illegible]
H		REVISED PER TDRR 02727		[illegible]	[illegible]
J		REVISED PER TDRR 03091		[illegible]	[illegible]
K		REVISED PER TDRR 04115		10-24-63	[illegible]
L		REVISED PER TDRR 05327		12-9-63	[illegible]
M		REVISED PER TDRR 05408		[illegible]	[illegible]
N		REVISED PER TDRR 06271		[illegible]	[illegible]
P		REVISED PER TDRR 06993			[illegible]
R		REVISED PER TDRR 07277		8 APR 64	JJJ J.E.G.



CR7
FT7
FT6
FT5
CR3
FT2
9
66
CR4
R7
CR1
CR2
L1
C4
C7
C2
C6
Q2
Q5
Q4
Q6
Q7
T-1
Q1
C5
C8
FT1
FT10
FT12
FT17
FT21
R29
R24
R27
R32
R28
B
C
D
FT18
R14
FT11
CR5
R15
FT13
R16
R31
FT19
FT20



Q6
32
44 2 REQD
FILL PER ND 1002117
51 2 REQD
.015
.060
Q7
34
45 2 REQD
46
2 REQ'D
47 2 REQD



1.550 REF
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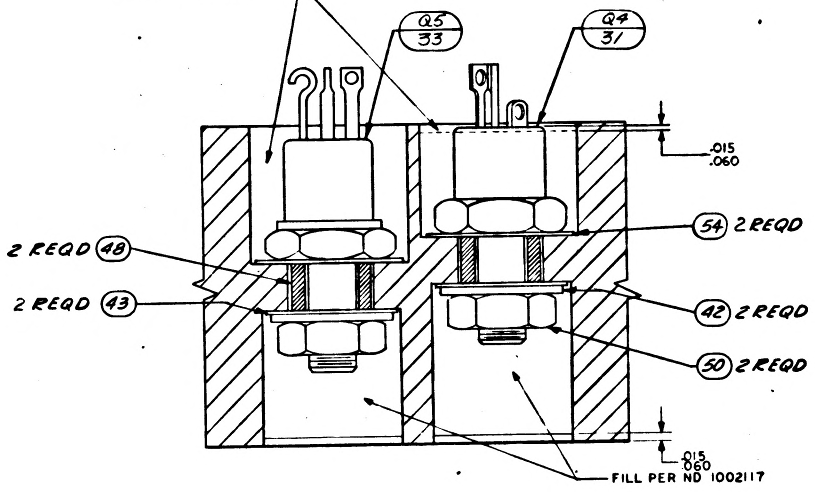
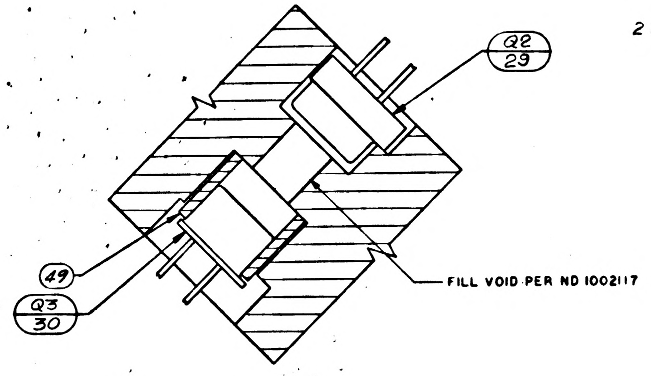
2
4.000 REF
1.719 REF
GIMBAL SERVO AMPLIFIER
1007040
REV
SERIAL NO.

MARKING VIEW
SCALE - 2:1



FILL PER ND1002117
Q5
33
Q4
31
.015
.060
54 2 REQD
2 REQD 48
2 REQD 43
42 2 REQD
50 2 REQD
.015
.060
FILL PER ND 1002117

PARTIAL SECTION D-D



Q2
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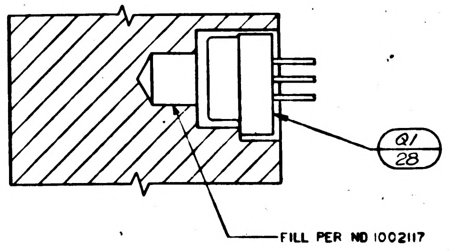
49
Q3
30
FILL VOID PER ND 1002117



Q1
28
FILL PER ND 1002117

PARTIAL SECTION B-B

PARTIAL SECTION C-C

REV D REPLACES REV C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS9-497

AC SPARK PLUG DIVISION GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN [illegible] DATE [illegible]
CHECKED [illegible]
APPROVAL [illegible]
APPROVAL [illegible]
NASA APPROVAL [illegible] 5-22-63
MIT APPROVAL [illegible]

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

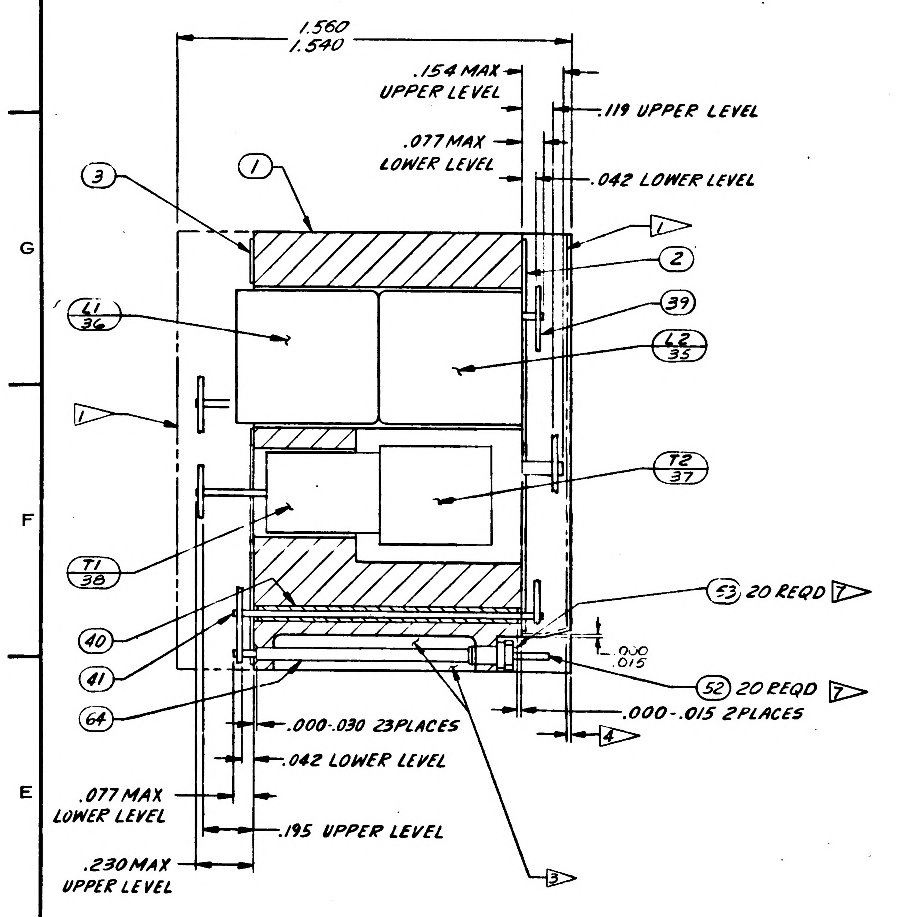
GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO
SIZE E
1007040
SCALE 4:1
SHEET 2 OF 2

1007040 S

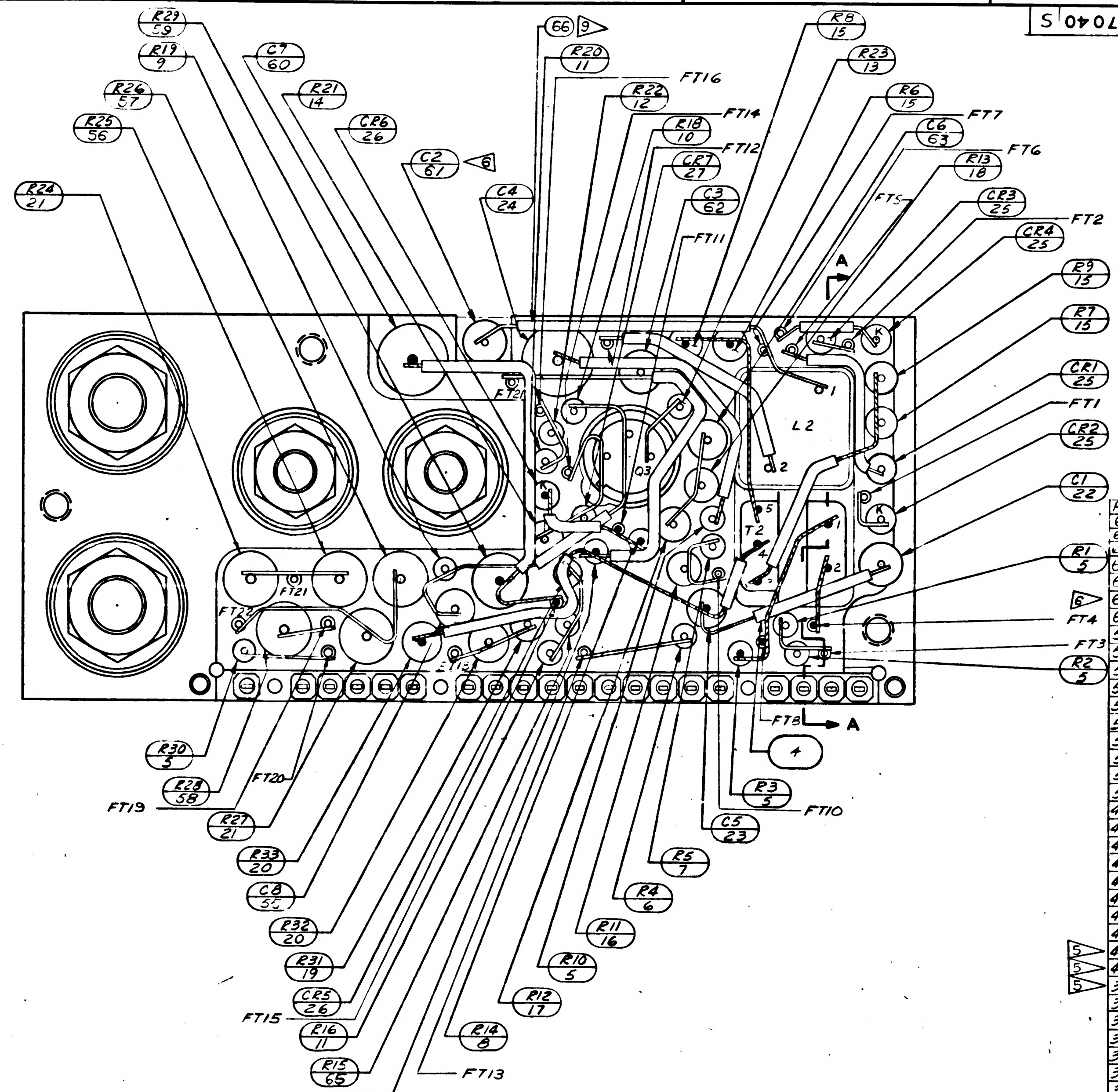
REVISIONS

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
D		REVISED PER TDRR [illegible]		[illegible]	[illegible]
E		REVISED PER TDRR 01448		[illegible]	[illegible]
F		REVISED PER TDRR 01714		6 28 63	[illegible]
G		REVISED PER TDRR 01671		[illegible]	[illegible]
H		REVISED PER TDRR 02747		[illegible]	[illegible]
J		REVISED PER TDRR 03091		7 17 63	[illegible]
K		REVISED PER TDRR C4115		10-24-63	[illegible]
L		REVISED PER TDRR 05327		12-9-63	[illegible]
M		REVISED PER TDRR 05408		[illegible]	[illegible]
N		REVISED PER TDRR 06271		[illegible] 64	[illegible]
P		REVISED PER TDRR 06893			[illegible]
R		REVISED PER TDRR 07277		8 APR 64	J J J
S		REVISED PER TDRR 07285		13 APR 64	JWP J.E.G.



1.560
1.540
.154 MAX UPPER LEVEL
.119 UPPER LEVEL
.077 MAX LOWER LEVEL
.042 LOWER LEVEL
3
1
1
2
39
L1 36
L2 35
1
T2 37
T1 38
40
41
64
53 20 REQD 7
.000 .015
52 20 REQD 7
.000-.030 23 PLACES
.000-.015 2 PLACES
4
.042 LOWER LEVEL
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL
3

SECTION A-A



R29 59
R19 9
C7 60
R21 14
R26 57
R25 56
R24 21
66 9
R20 11
R22 12
FT16
R18 10
FT14
CR6 26
C2 61 6
CR7 27
FT12
C3 62
C4 24
FT11
R8 15
R23 13
R6 15
C6 63
FT7
R13 18
FT6
FT5
CR3 25
CR4 25
FT2
R9 13
R7 13
CR1 25
FT1
CR2 25
C1 22
R1 5
FT4
FT3
R2 5
A
A
L2
Q3
T2
K
FT20
FT21
FT22
FT8
4
R30 5
R28 58
FT20
FT19
R27 21
R33 20
C8 55
R32 20
R31 19
CR5 26
FT15
R16 11
R15 65
R17 6
R14 8
FT13
R12 17
R10 5
R11 16
R4 6
R5 7
C5 23
R3 5
FT10

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

9 USE MIL-I-631, TYPE F, FORM U, GRADE C, CLASS I, CATEGORY I, IN 2 PLACES ONLY - SECURE IN PLACE PER ND 1002004.

2 MARK PIN NUMBERS .08 HIGH (WHITE) & SERIALIZE & MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023 CENTRALIZE AS SHOWN ABBREVIATIONS PERMISSIBLE

5 AR DENOTES AS REQUIRED

7 ASSEMBLE PER ND1002136 SOLDER PER ND1002

3 AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER ND 1002009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS (2) AND (3) INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

1 ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY.

ON ITEMS (2) & (3)

FT( ) INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR

B " BASE " " "

E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR

B_2 " BASE " " " " "

E_2 " EMITTER " " " " "

6 AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-PROCURE PER PS 1007040

6

C2	
PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

S	P
R	R
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

REV D REPLACES REV C

LIST OF PARTS AND MATERIALS

ITEM NO	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF		1010024	SCHEMATIC
66	AR	MIL-I-631	INSULATION SLEEVING #22
65	1	1006750-75	RESISTOR
64	AR	1006776-20	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-009	CAPACITOR
62	1	1010269-12	CAPACITOR
61	1	1010264-6	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	20	1006775	INSULATOR
52	20	1006782-5	CONTACT
51	2	MS20341-416B	NUT
50	2	MS20341-10B	NUT
49	1	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	1008071-5	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	1008071-2	WASHER, FLAT
5 41	AR	1006757-8	WIRE, ELECTRICAL
5 40	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
5 39	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010345-1	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-1	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-44	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

NEXT ASSY	USED ON
1007151	
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
+ xxx ± .005 +
− xx ± .02 −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN Buchler DATE 3/27/63
CHECKED E. L. [illegible] 3 APR 63
APPROVAL A KODEL M BLYSHAK
APPROVAL
NASA APPROVAL W J [illegible] 5-22-63
MIT APPROVAL [illegible] 29 May 63

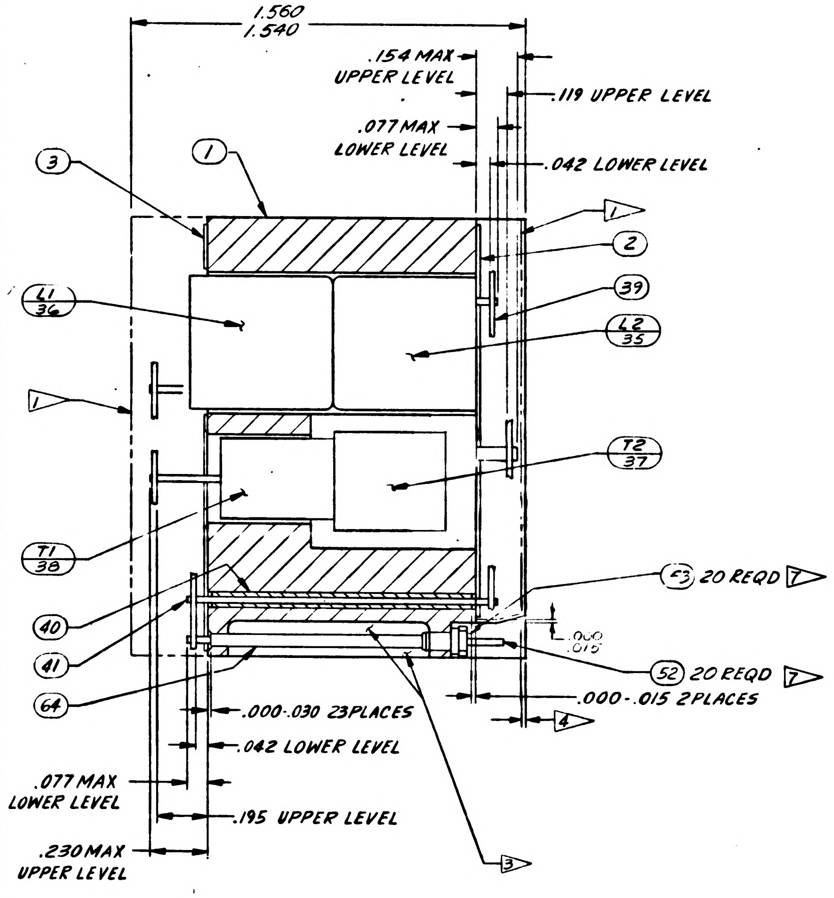
MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO
SIZE E 1007040
SCALE 4:1
SHEET 1 OF 2

1007040

SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
D		REVISED PER TDRR [illegible]		[illegible]	[illegible]
E		REVISED PER TDRR 01448		[illegible]	[illegible]
F		REVISED PER TDRR 01714		[illegible]	[illegible]
G		REVISED PER TDRR [illegible]		[illegible]	[illegible]
H		REVISED PER TDRR 02747		[illegible]	[illegible]
J		REVISED PER TDRR 03091		[illegible]	[illegible]
K		REVISED PER TDRR C4115		10-24-63	[illegible]
L		REVISED PER TDRR C5327		12-9-63	[illegible]
M		REVISED PER TDRR 05408		[illegible]	[illegible]
N		REVISED PER TDRR 06271		[illegible]	WK
P		REVISED PER TDRR 06893			WK
R		REVISED PER TDRR 07277		8 APR 64	J.E.G.
S		REVISED PER TDRR 07285		14 APR 64	JWP
T		REVISED PER TDRR 07304		16 APR 64	JWP PBR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1.540
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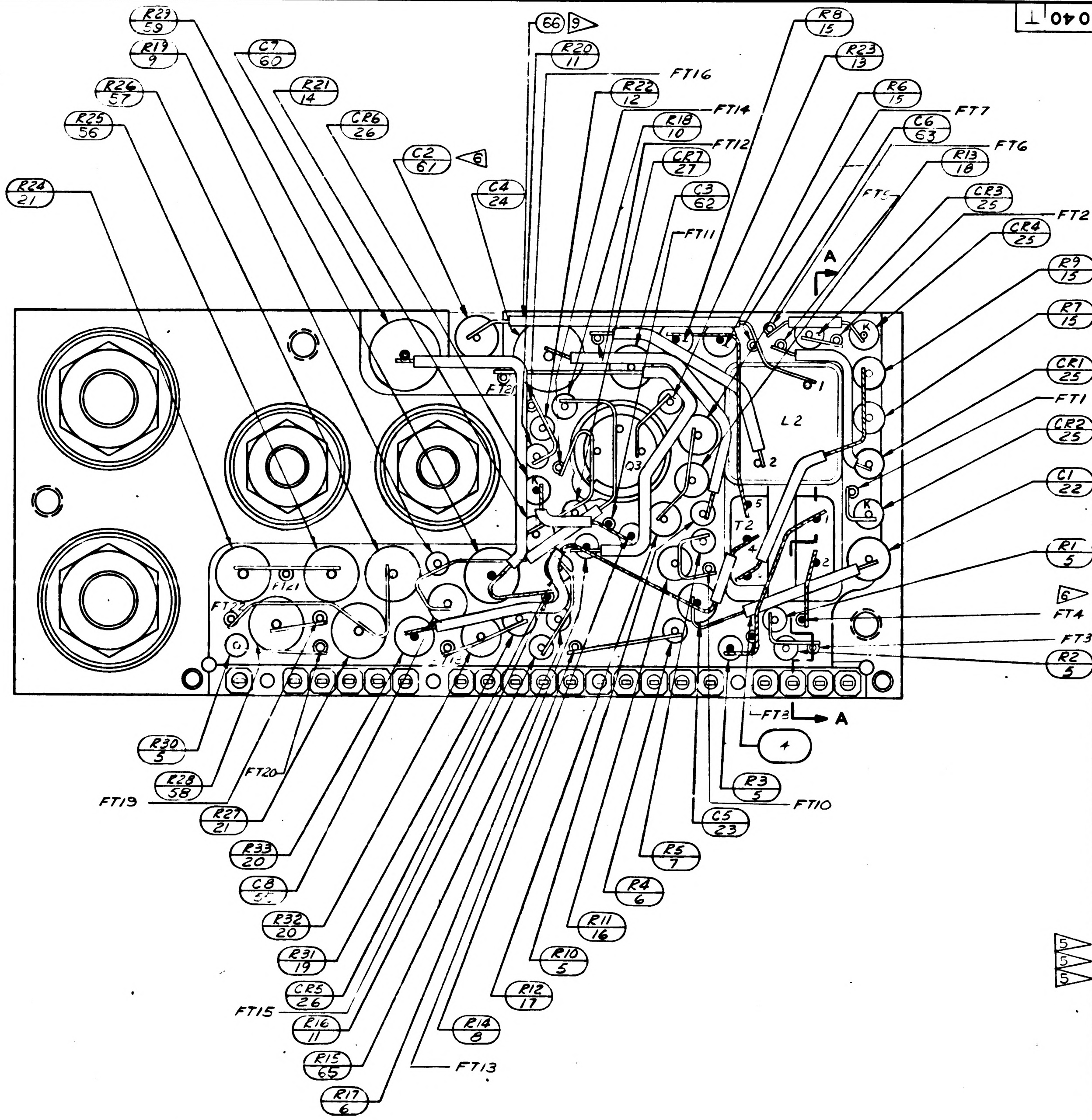
.119 UPPER LEVEL
.077 MAX LOWER LEVEL
.042 LOWER LEVEL
3
1
1
2
39
L1 36
L2 35
1
T2 37
T1 38
40
41
64
53 20 REQD 7
52 20 REQD 7
.000 .015
.000-.015 2 PLACES
4
.000-.030 23 PLACES
.042 LOWER LEVEL
.077 MAX LOWER LEVEL
.195 UPPER LEVEL
.230 MAX UPPER LEVEL
3

SECTION A-A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R26 57
R25 56
R24 21
C7 60
R21 14
CR6 26
C2 61 6
C4 24
66 9
R20 11
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R18 10
CR7 27
C3 62
FT16
FT14
FT12
FT11
R8 15
R23 13
R6 15
C6 63
FT7
R13 18
FT6
FT5
CR3 25
CR4 25
FT2
A
R9 15
R7 15
CR1 25
FT1
CR2 25
C1 22
R1 5
FT4
FT3
R2 5
L2
T2
Q3
K
FT20
FT21
FT22
FT8
A
4
R30 5
R28 58
FT19
FT20
R27 21
R33 20
C8 55
R32 20
R31 19
CR5 26
FT15
R16 11
R15 65
R17 6
R14 8
FT13
R12 17
R10 5
R11 16
R4 6
R5 7
C5 23
R3 5
FT10

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

ALL CONNECTION TO BE MADE BY WELDING PER ND 1002005

BLACK DOT AND CROSS HATCHED RIBBONS INDICATE UPPER LEVEL WIRING

9 USE MIL-I-631, TYPE F, FORM U, GRADE C, CLASS I, CATEGORY I, IN 2 PLACES ONLY - SECURE IN PLACE PER ND 1002004.

2 MARK PIN NUMBERS .08 HIGH (WHITE) & SERIALIZE & MARK ALL OTHER CHARACTERS .12 HIGH (WHITE) PER ND1002023 CENTRALIZE AS SHOWN ABBREVIATIONS PERMISSIBLE

5 AR DENOTES AS REQUIRED

7 ASSEMBLE PER ND1002136 SOLDER PER ND1002

3 AREAS TO BE FREE OF ENCAPSULATING COMPOUND

COMPONENTS TO BE CEMENTED IN PLACE PER ND1008009

MOUNTING TORQUE FOR ITEM (50) 12 IN-LBS ± 2 IN-LBS.

MOUNTING TORQUE FOR ITEM (51) 24 IN-LBS ± 2 IN-LBS.

BROKEN PATHS ON ITEMS ② AND ③ INDICATES SLEEVING.

UNLESS OTHERWISE SPECIFIED:

1 ENCAPSULATING COMPOUND MUST BE FLUSH TO .015 OF HEAT SINK PERIPHERY. ON ITEMS ② & ③

$FT_{( )}$ INDICATES FEED THRU.

K INDICATES CATHODE SIDE OF DIODE.

C INDICATES COLLECTOR LEAD OF TRANSISTOR
B " BASE " " "
E " EMITTER " " "

C_2 INDICATES COLLECTOR LEAD OF MULTI STAGE TRANSISTOR
B_2 " BASE " " " " "
E_2 " EMITTER " " " " "

6 AT FINAL TEST C2 TO BE SELECTED FROM CHART PER ATP-
PROCURE PER PS 1007040

6 C2

PART NO.	VALUE MF
1010264-1	.001
-2	.0012
-3	.0015
-4	.0018
-5	.0022
1010264-6	.0027

T	T
S	P
R	R
SHEET 1	SHEET 2

REVISION STATUS OF SHEETS

REV D REPLACES REV C

ITEM NO.	NO. REQD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION
REF		1010024	SCHEMATIC
66	AR	MIL-I-631	INSULATION SLEEVING # 22
65	1	1006750-75	RESISTOR
64	AR	[illegible]	INSULATION SLEEVING, ELECTRICAL
63	1	1010279-009	CAPACITOR
62	1	1010864-12	CAPACITOR
61	1	1010264-6	CAPACITOR
60	1	1010320-6	CAPACITOR
59	1	1010389-94	RESISTOR, FIXED
58	1	1010399-16	RESISTOR, FIXED
57	1	1010389-47	RESISTOR, FIXED
56	1	1010399-31	RESISTOR, FIXED
55	1	1010279-228	CAPACITOR
54	2	1008024-2	WASHER, INSULATOR
53	20	1006775	INSULATOR
52	20	1006782-5	CONTACT
51	2	[illegible]	NUT
50	2	[illegible]	NUT
49	2	1008025-2	BUSHING, INSULATOR
48	2	1008021-1	BUSHING, INSULATOR
47	2	1008021-2	BUSHING, INSULATOR
46	2	1008024-3	WASHER, INSULATOR
45	2	1008024-4	WASHER, INSULATOR
44	2	[illegible]	WASHER, FLAT
43	2	1008024-1	WASHER, INSULATOR
42	2	[illegible]	WASHER, FLAT
41 5	AR	1006757-8	WIRE, ELECTRICAL
40 5	AR	1006776-22	INSULATION SLEEVING, ELECTRICAL
39 5	AR	1006757-1	WIRE, ELECTRICAL
38	1	1010328	TRANSFORMER
37	1	1010327	TRANSFORMER
36	1	1010277-009	REACTOR
35	1	1010277-008	REACTOR
34	1	1010273-1	TRANSISTOR
33	1	1010437	TRANSISTOR
32	1	1010271	TRANSISTOR
31	1	1010269-1	TRANSISTOR
30	1	1010270	TRANSISTOR
29	1	1010345-1	TRANSISTOR
28	1	1010252-001	TRANSISTOR
27	1	1010286-9	SEMICONDUCTOR DEVICE, DIODE
26	2	1010372-15	SEMICONDUCTOR DEVICE, DIODE
25	4	1010392-1	SEMICONDUCTOR DEVICE, DIODE
24	1	1010320-11	CAPACITOR, FIXED
23	1	1010279-220	CAPACITOR, FIXED
22	1	1010264-9	CAPACITOR, FIXED
21	2	1010278-39	RESISTOR, FIXED
20	2	1010377-66	RESISTOR, FIXED
19	1	1010364-43	RESISTOR, FIXED
18	1	1010364-719	RESISTOR, FIXED
17	1	1010364-465	RESISTOR, FIXED
16	1	1010364-635	RESISTOR, FIXED
15	4	1010364-443	RESISTOR, FIXED
14	1	1006760-35	RESISTOR, FIXED
13	1	1006750-40	RESISTOR, FIXED
12	1	1006750-53	RESISTOR, FIXED
11	2	1006750-51	RESISTOR, FIXED
10	1	1006750-70	RESISTOR, FIXED
9	1	1006750-44	RESISTOR, FIXED
8	1	1006750-60	RESISTOR, FIXED
7	1	1006750-48	RESISTOR, FIXED
6	2	1006750-80	RESISTOR, FIXED
5	5	1006750-73	RESISTOR, FIXED
4	AR	1006776-21	INSULATION SLEEVING, ELECTRICAL
3	1	1015687	INSULATOR
2	1	1015686	INSULATOR
1	1	1015685	HEATSINK

LIST OF PARTS AND MATERIALS

NEXT ASSY	USED ON
1007151	

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS + − DECIMALS XXX ± .005 XX ± .02 ANGLES + −
DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS 9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE WISCONSIN
ACSP PN
DRAWN Buchke DATE 3/27/63
CHECKED B. L. Hint 3 APR 63
APPROVAL A KODEL J M BLYSHAK
APPROVAL
NASA APPROVAL W. J. Rhine 5-22-63
MIT APPROVAL W. 29 May 63

MANNED
SPACECRAFT CENTER
HOUSTON TEXAS

GIMBAL SERVO AMPLIFIER
MODULE ASSY

CODE IDENT NO.
SIZE E
1007040
SCALE 4:1
SHEET 1 OF 2

1007040

	1007040

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART NO.	DESCRIPTION	NO. REQ'D
1006782-5	CONTACT	23
1006775	INSULATOR	23
NAS1222-06E	HELI-COIL INSERT	3
NAS1022-C4	NUT	2
NAS1022-C3	NUT	2
1008024-2	WASHER-MICA	8
1008024-3	WASHER-MICA	4
1008024-4	WASHER-MICA	4
1008020-1	WASHER-PLAIN	2
1008020-2	WASHER-PLAIN	2
1008021-1	SPACER	2
1008021-2	SPACER	2

REF DES	PART NO.	DESCRIPTION	VALUE	TOL	RATING
R1	1006750-73	RESISTOR	51K	5%	1/4W
R2	↓ -73	↓	51K	↓	↓
R3	↓ -73	↓	51K	↓	↓
R4	↓ -80	↓	100K	↓	↓
R5	↓ -48	↓	4700	↓	↓
R6	1010364-443	↓	10K	1%	1/8W
R7	↓ - ↓	↓	10K	1%	1/8W
R8	↓ - ↓	↓	10K	1%	1/8W
R9	↓ - ↓	↓	10K	1%	1/8W
R10	1006750-73	↓	51K	5%	1/4W
R11	1010364-635	↓	100K	1%	1/8W
R12	↓ -465	↓	13K	↓	↓
R13	↓ -719	↓	274K	↓	↓
R14	1006750-60	↓	15K	5%	1/4W
R15	↓ -76	↓	68K	↓	↓
R16	↓ -51	↓	6200	↓	↓
R17	↓ -80	↓	100K	↓	↓
R18	↓ -70	↓	39K	↓	↓
R19	↓ -76	↓	68K	↓	↓
R20	↓ -51	↓	6200	↓	↓
R21	1006760-36	↓	1500	↓	1/2W
R22	1006750-53	↓	7500	↓	1/4W
R23	1006750-40	↓	2200	↓	1/4W
R24	1010278-	↓	100	↓	1W
R25	1010389-	↓	500	1%	3W
R26	1010389-	↓	430	1%	3W
R27	1010278-	↓	100	5%	1W
R28	1010389-	↓	50	1%	3W
R29	1010389-	↓	1	1%	3W
R30	1006750-73	↓	51K	5%	1/4W
R31	1010364-43	↓	82.5	1%	1/8W
R32	1010377-66	↓	10	.5%	1/10W
R33	1010377-66	↓	10	.5%	1/10W
C1		CAPACITOR	0.0047	10%	200VDC
C2		↓	SEE NOTE 4—		
C3		↓	.0082	10%	
C4		↓	35	↓	35VDC
C5		↓	.11	↓	50VDC
C6		↓	0.5	↓	6VDC
C7		↓	10	↓	50VDC
C8		↓	0.5	↓	50VDC

REF DES	PART NO.	DESCRIPTION	VALUE TOL	RATING
L1		REACTOR	25H	
L2		REACTOR	10H	
CR1		DIODE	1N486-B	
CR2		↓		
CR3		↓		
CR4		↓		
CR5	1010372-15	↓	HZ8544	
CR6	1010372-15	↓	HZ8544	
CR7		↓		
Q1		TRANSISTOR	2N2642	
Q2		↓	2N1259	
Q3		↓	2N1613	
Q4		↓	2N2151	
Q5		↓	TP4511	
Q6		↓	5506	
Q7		↓	2N1724	
T1		TRANSFORMER	DO-T23	
T2		TRANSFORMER	TZ-13	

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 00416 **DATE**

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

LIST OF MATERIALS

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS ± DECIMALS ± ANGLES ±
DO NOT SCALE THIS DRAWING

MATERIAL

HEAT TREATMENT

FINAL FINISH

MIT
INSTRUMENTATION LAB
CAMBRIDGE, MASS.
DWG. NO. CONTRACT

DRAWN ________ DATE ________
CHECKED D. R. Test 2-18-63
APPROVAL D. R. Test 2-18-63
APPROVAL ________
NASA APPROVAL 2/18/63
MIT APPROVAL G J Wilson 2-18-63

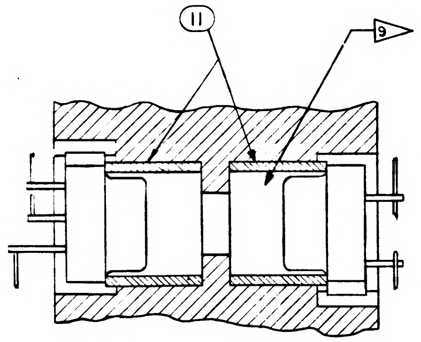
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

GIMBAL SERVO AMPL.
MODULE ASSY

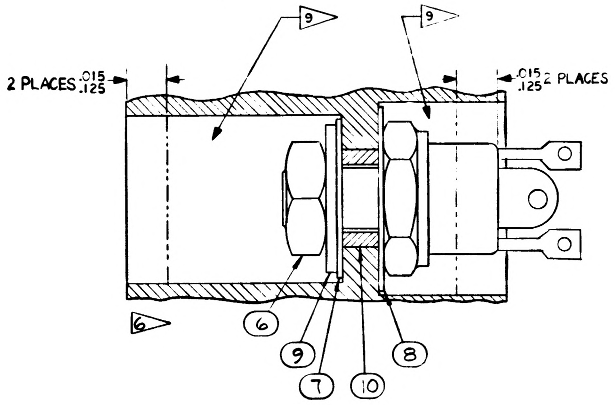
CODE IDENT NO.
SIZE C
NASA DRAWING NO. 1007040
SCALE
WT
SHEET 1 OF 1

1007044 N

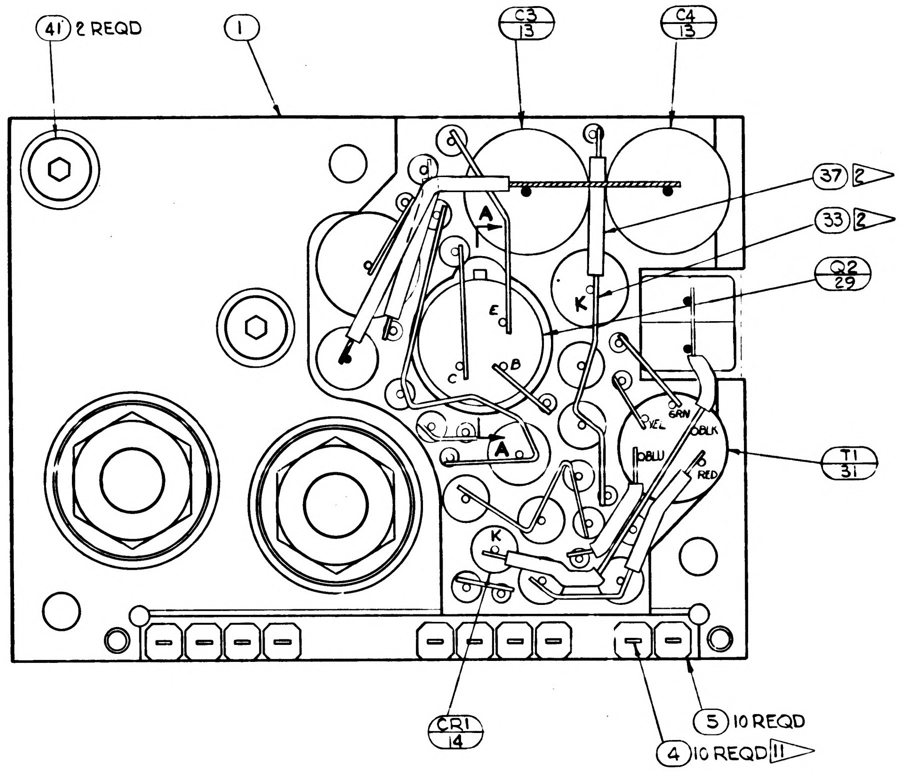
SYM	ZONE	DESCRIPTION	CHG NO	DATE	APPD
C		REVISED PER TDRR 01407		5/22/63	
D		REVISED PER TDRR 01718			
E		REVISED PER TDRR 02994			
F		REVISED PER TDRR 02296			
G		REVISED PER TDRR 04133			
H		REVISED PER TDRR 05432			
J		REVISED PER TDRR 05871			
K		REVISED PER TDRR 07285			
L		REVISED PER TDRR 10522			
M		REVISED PER TDRR 11000			
N		REVISED PER TDRR 17349			



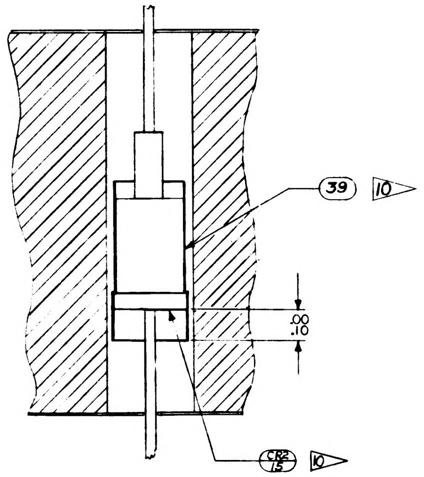
PARTIAL SECTION A-A


9
9
2 PLACES .015 .125
.015 .125 2 PLACES
6
6
9
7
10
8

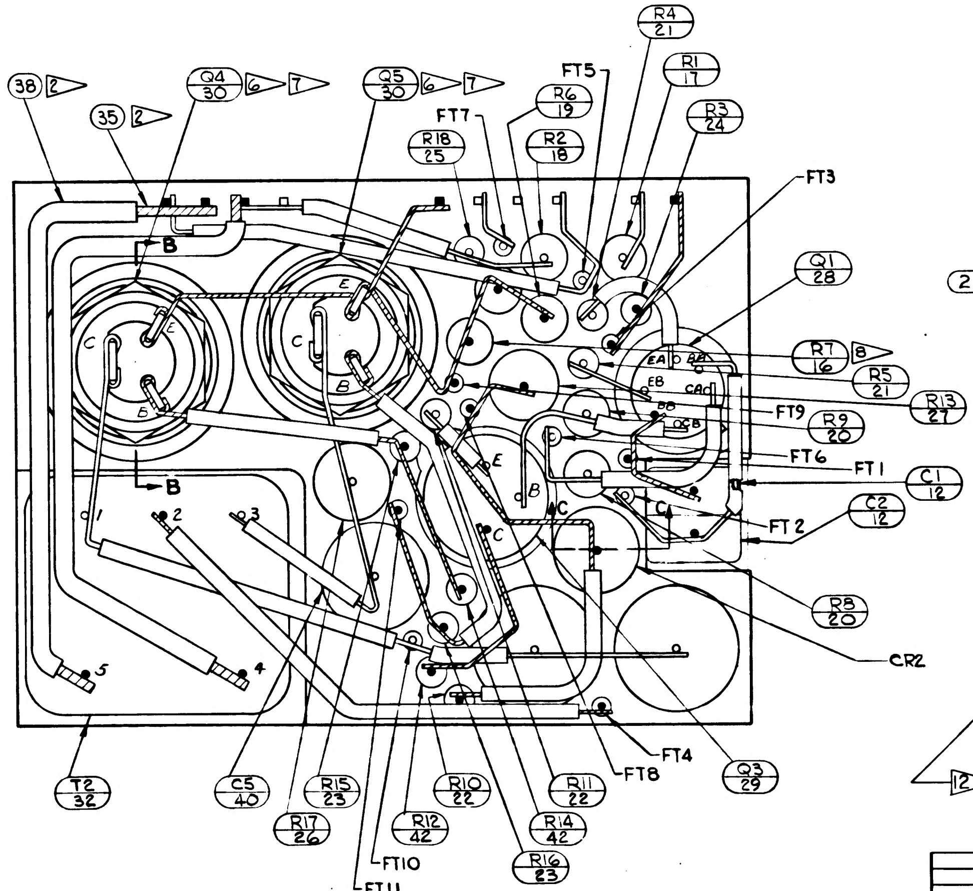
PARTIAL SECTION B-B
TYP 2 PLACES


41 2 REQD
1
C3 13
C4 13
37 2
33 2
Q2 29
T1 31
A
A
K
E
B
C
K
YEL
GRN
BLK
BLU
RED
CR1 14
5 10 REQD
4 10 REQD 11

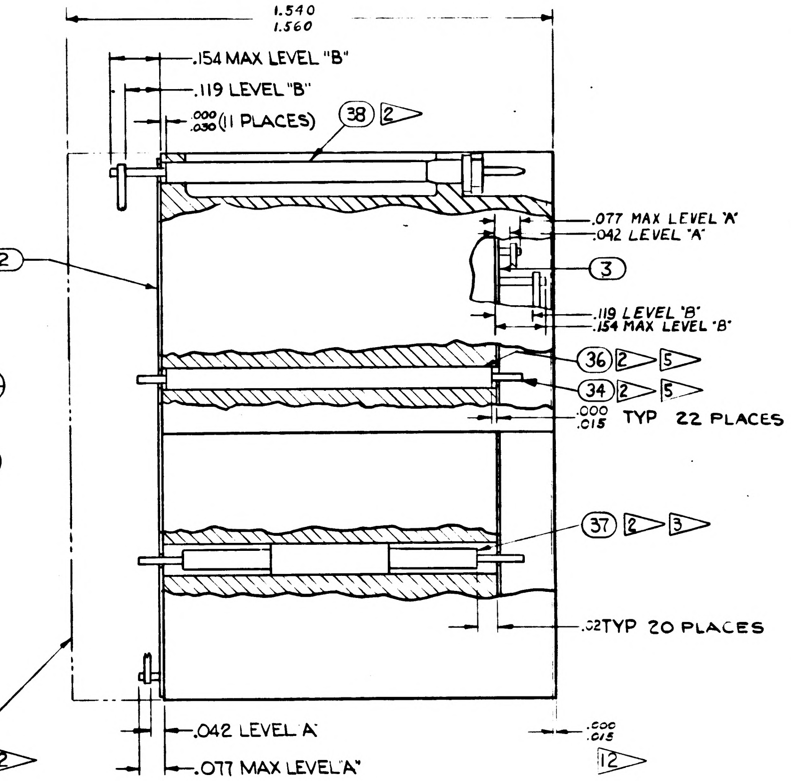
VIEW A-A
BEFORE ENCAPSULATION


39 10
.00 .10
CR2 15 10

PARTIAL SECTION C-C


38 2
35 2
Q4 30 6 7
Q5 30 6 7
R4 21
R1 17
FT5
R6 19
FT7
R18 25
R2 18
R3 24
FT3
Q1 28
R7 16 8
R5 21
R13 27
FT9
R9 20
FT6
FT1
C1 12
C2 12
FT 2
R8 20
CR2
B
B
E
C
B
1
2
3
4
5
FT4
FT8
Q3 29
T2 32
C5 40
R15 23
R17 26
R12 42
R10 22
R11 22
R14 42
R16 23
FT10
FT11

VIEW B-B
BEFORE ENCAPSULATION


1.540
1.560
.154 MAX LEVEL "B"
.119 LEVEL "B"
.000 .030 (11 PLACES)
38 2
2
.077 MAX LEVEL 'A'
.042 LEVEL 'A'
3
.119 LEVEL 'B'
.154 MAX LEVEL 'B'
36 2 5
34 2 5
.000 .015 TYP 22 PLACES
37 2 3
.02 TYP 20 PLACES
12
.042 LEVEL 'A'
.077 MAX LEVEL 'A'
.000 .015
12

1007151	
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON

FRACTIONS	DECIMALS	ANGLES
+	+	+
−	−	−

DO NOT SCALE THIS DRAWING
MATERIAL
CONTRACT NAS9-497

AC SPARK PLUG DIVISION, GMC
MILWAUKEE, WISCONSIN
ACSP PN
DRAWN S. Jone DATE 7 MAY 63
CHECKED 10 MAY 63
APPROVAL N. Burchick 10 MAY 63
APPROVAL A. R. Fost 24 MAY 63
NASA APPROVAL
MIT APPROVAL W. Kupfer 24 May 63

MANNED
SPACECRAFT CENTER
HOUSTON, TEXAS

AMPLIFIER 1% 3200 CPS
MODULE ASSY

CODE IDENT NO
SIZE E
1007044
SCALE 5:1
SHEET 2 OF 2

1007044 2 B